Eliciting and Describing Users' Models of Computer Systems

Volume 2 Transcripts

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Word Processing Study

Subject 1

1. copy file
(selects copy)
[Name of file to be copied:]
(enters STUDY.DOC)
[Name of file to be copied to:]
(enters STUDY.COP)
2. edit file
You want me to edit the copy? That's a non-document file then, so it's N [because extension isn't .DOC].
Well you want to edit it as a document, so you better rename it as something.DOC
(renames and opens copy)
3. delete char, insert word
(inserts word, overlooks char)
4. insert paragraph
Anywhere at the beginning?
Top right-hand like in a letter.
(moves cursor to the right in first line, starts typing)
That's on the same line as your text is now ...
Oh right (deletes characters) What do I do to move the text down?
Where are you at the moment?
In the first line.
And what can you do to get some space -
(moves cursor to the beginning of line, presses CR, moves cursor with TAB, inserts para)
5. move paragraph
(presses CONTROL-K) Now, I did something wrong - I CONTROL-K ... I thought it was the K's that block the text off Wasn't it CONTROL-K?
Yes - you've got the Block Menu up now ...
(reads menu) Is it V for MOVE?
You've got to mark the text first -
CONTROL-K B?
You are in the CONTROL-K menu already - you can select the beginning marker now - which one is that?
B (selects, moves cursor with ARROW KEYS)
There must be a quicker way of doing that -
(looks at the menu, uses CONTROL-F)
And now you want to mark the end -
I've lost the menu -
You haven't lost it - it returns to the Main Menu once you have selected a command.
(CONTROL-K, selects k to mark block) Now I've got to move this [positions cursor]. (CONTROL-K, selects C)
[paragraph copied to cursor position]
Ah, that was a mistake, I've copied it rather than moved it.
(suggests he deletes this in the following task)
6. delete paragraph
(deletes line-by-line)
Would there be another way of deleting a block of text like that?
I think is there is, but I haven't done it. You block the text again?
7. copy paragraph (address) into separate file (transfer task)
Do I just open a new file and call it address?
You can create a new file without leaving this document, by marking a piece of text -
I block it again first (inserts Beginning Marker, whole text marked) I thought it would just mark the beginning, the first letter, and now it's done the next paragraph ...
(explains)
So that will disappear when I insert the other one? (inserts End Marker)
Now you want to farm that out into a different file - it's in the K menu ...
(CONTROL-K) W - WRITE?
Yes, why that one
Well, it's not the whole file to be saved, it's not placing a marker, it will be something in the Block Options, and it's not COPY, and none of the others (selects WRITE)
[Name of file to write text to:]
So I just call it address? (does)

8. include file (transfer task)
CONTROL-K again? (selects, read Block Menu) It's another ... is it in the other menus?
No, it's in the K menu. You're now saying include an existing file in this document -
READING it?
Why do you think it's READ?
Well, I just want to have a look at it and make sure it's the right one.
If you select READ, it will import the file straight away. You have to put the cursor where you want it.
(does)
9. delete block of text
(deletes line and word-by-word)
10. save edited file
(CONTROL-K)
And to go to the Opening Menu is SAVE and?
(presses SPACE BAR) What do you want me to call it?
You've got to SAVE it first -
Didn't I save it then?
No, when you press SPACE BAR it cancels the menu - it's CONTROL-K and
(CONTROL-K, reads Block Menu) D? (saves file)
11. rename file
(renames file)
12. What does a word-processor do?
It's something that's not linked to a Mainframe computer - so you can take it anywhere you go. It's like having all your files on a small piece of disk. I don't really know enough about it to say what it can do.

Subject 2

1. copy file
(copies file)
2. edit file
(edits file)
3. delete char, insert word
(overlooks this one)
4. insert paragraph
Where do you want this?
Top right-hand corner, like in a letter.
(moves cursor to the right, presses UP ARROW a couple of times) Hm ....
What's the problem?
It won't go up.
Where in the document are you?
Line 1 ... so I've got to move the whole lot down?
What is the easiest way to do that?
Scrolling?
No (explains what scrolling does). How can you get extra blank lines?
I've done this, but I can't remember ...
If you put the cursor on the first character, and then press RETURN
(does) Ah! (moves up, presses CONTROL-F to move to the right) Why doesn't that work?
(explains)
(uses SPACE BAR, then TAB to move to the right, inserts para)
5. move paragraph
(marks para, positions cursor, reads menu) It's probably CONTROL-K (selects, reads Block Menu, selects MOVE)
6. 6. delete paragraph
(inserts Beginning Marker)
[text marked to end of following previously marked para]
Hang on, I don't want to delete that bit.
No, but you haven't inserted your End Marker yet. (explains)
(inserts End Marker and deletes para)
7. copy paragraph (address) into separate file (transfer task)
So you want me to copy my name and address into another file? Which one - what is it called?
How do you normally copy a piece of text?
You highlight it and then you select a command.
You don't have to leave this document to do this, you just choose a similar command that copies it into a new file.
(marks para) What now?
If you have a look at the CONTROL-K menu

(does) COPY FILE?
That will COPY the entire file ...
C?
That would copy this block within this document.
Yes, that's true ... WRITE? Yes? That's very logical (laughs). (selects WRITE)
[Name of file to write text to:]
(enters filename)
8. include file (transfer task)
(selects CONTROL-K and reads Block Menu)
Any idea?
Well if the last one is anything to go by, it could be anything. Well, it's probably a Block Operation ...
Last time we started with a block which we turned into a file, and now we are including a complete file into the document ...
So it's a file operation ... COPY? ... READ? If it's sort of the opposite ... (includes file) Why was it inserted down there?
'Cos that's where I left the cursor.
9. delete block of text
(marks block and deletes with CONTROL-K Y)
10. save edited file
(presses CONTROL-K and reads Block Menu, presses SPACE BAR) Where has it gone.
(explains) Which SAVE option did you want?
SAVE & EXIT? That would take me right out. SAVE & RESUME?
That would SAVE but you'd stay in this file.
Well, that only leaves one (laughs). Why is it called SAVE & DONE?
(explains)
11. rename file
(selects RENAME and renames file)
12. What does a word-processor do?
It's a machine for writing out pieces of text, and you can change things easily before you print them out. Unlike a typewriter - you make a mistake and that's it, it's printed - you can decide what you are going to write, change it, move it around, and then print it.

Subject 3

1. copy file
(types copy)
[warning: error has occured - not a recognised Wordstar command]
Isn't it COPY to copy a file? [trying to use DOS command]
You can copy the file within Wordstar - just get rid of the error message by pressing ESCAPE.
(does) Is it D to open a file?
You want to copy it first -
O then (selects and copies file)
2. edit file
(selects EDIT)
[Name of file to edit:]
Which one do you want me to edit?
The copy.
(enters filename)
3. delete char, insert word
(switches to type-over mode, types word over char)
4. insert paragraph
(presses UP ARROW a few times, cursor moves to the right)
You want to insert your address in the top-right hand corner -
How do I get above it [line 1] (reads Main Menu, CONTOL-H to move screen down, tries UP ARROW again) It still won't go -
(explains scrolling) So what do you have to do?
Insert some space at the top - how do I move the whole thing down again?
What's the easiest way to do that?
RETURN - I'm on the H (first char) at the moment - (inserts blank lines, moves up, moves to the right with TAB and inserts para)
5. move paragraph
(positions cursor, presses CONTROL-K and reads Block Menu, selects B to insert Beginning Marker, moves to end with CONTROL-F, CONTROL-K K to mark para; positions cursor and selects CONTROL-K V to move para)

6. 6. delete paragraph
(deletes line-by-line)
Is there any other way to delete a paragraph?
I suppose you could probably do the same - mark it and delete it, but I can't remember how to do that.
7. copy paragraph (address) into separate file (transfer task)
It must be K, I'm sure (presses CONTROL-K and reads Block Menu) COPY?
What do you have to do first with these operations?
Mark what I want to copy first (returns to file, inserts Beginning Marker)
[all text marked]
Interesting - it's highlighted it all from the beginning - I thought that only happened when you finished marking it.
Why do you think it's done that?
Maybe I haven't wiped off the last one -
(explains)
(inserts End Marker) To a separate file (presses CONTROL-K and reads Block Menu) Well I want to COPY it - but I can't see where it says to a separate file.
(explains what COPY does)
Must be one of these (File Operations) then -
Since you are marking a block of text in the current file, it's a Block Operation - it's WRITE.
WRITE? So W - (selects)
[Name of file to write text to:]
What shall I call it? (enters filename)
8. include file (transfer task)
(presses CONTROL-K and reads Block Menu) I can't tell from these File Operations which one includes an outside file ...
You're doing something that is similar to the operation you did before - you're reading in a whole file
Do I have to go and get the file first?
When you select the option, it will ask you which file you want ... it's READ.
Oh I see (selects READ and enter filename)
[file imported]
Can you see where it went?
Oh the cursor was there, that's why.
9. delete block of text
(marks block and CONTROL-Y to delete)
10. save edited file
(presses CONTROL-K and reads Block Menu) SAVE & EXIT?
Where would that take you?
Oh no, that will take you out to the A> cursor [operating system], that's not what we want. Is it S (SAVE & RESUME)
That would save but stay in the same document.
Must be D then (laughs) (saves file)
11. rename file
I have to OPEN it first, do I?
No, you can RENAME it without opening it first.
RENAME? (selects and renames file)
12. What does a word-processor do?
Good grief ... it makes it easy to type without thinking what your are doing, you just put the words on the page and you can tidy it up afterwards, you don't have to think about the formatting. You can make as many mistakes as you like without anyone noticing, 'cos you can wipe them out afterwards. And if you've got a basic letter and you just want to change the name and address, you can do that without typing it again and again, you just change the name and address.

Subject 4

1. copy file
(copies file)
2. edit file
So, load the copy? (selects EDIT and enters filename)
3. delete char, insert word
Just put my name where the cursor is now?
No, instead of the X.
Oh, sorry. (moves cursor and inserts word) Is that it?
Can you delete the X?
(does)

4. insert paragraph
(moves cursor to the right in line 1, presses UP ARROW a few times) Hm ....
Why do you think it won't go up?
'cos this is the top of the page?
So what do you have to do if you want some space on top?
Put in a space ... Do I just press the SPACE BAR? Can't I just scroll up?
No (explains). If you put the cursor on to the first letter -
(does) And now?
You press CR a couple of times and that will push the whole lot down.
(does) Oh I see.
Now you want to move over to the right -
So do I just type in lots of SPACES?
Or you can use the TAB.
(does, inserts para)
5. move paragraph
Unfortunately, I can't type in "no" [in response to "can you remember how to do that?"] (laughs). You mark it, don't you? (positions cursor) It's CONTROL-B, isn't it?
CONTROL ...?
CONTROL-K B! (inserts Beginning Marker, moves to end) CONTROL-K E?
You can look it up in the menu if you're nor sure.
(presses CONTROL-K and reads Block Menu) Oh, it's K again. (marks block)
And now?
Is that still in the CONTROL-K menu?
Where is it going to move it to?
Oh, I've got to put the cursor ... (positions cursor) And then it's (presses CONTROL-K and reads Block Menu) V (moves para)
6. delete paragraph
(deletes char-by-char)
There must be a quicker way to do this.
What, mark it and then delete it? Or CONTROL-Y. (deletes line-by-line)
7. copy paragraph (address) into separate file (transfer task)
(selects HELP menu) Hm ... I wouldn't know how to do it.
Well, you want to (explains).
CONTROL-K C?
That would be copying within the same document.
(moves cursor to para, tries to move it to right with TAB) How do I move to the right?
CONTROL-F?
(does, inserts Beginning Marker)
[all text marked]
Ugh! It's marked the lot! Is it because of the CARRIAGE RETURN? Have I done something wrong?
No (explains)
(inserts End Marker)
What you have to do now is go to the Block Menu and see if you can find the command.
(presses CONTROL-K and reads Block Menu) So is it just SAVE?
No - because you are taking a block of text out of the current document, it's a block operation.
Is it MOVE?
No, that's what you just did.
Must be WRITE, then. (selects and writes file)
8. include file (transfer task)
Do I have to leave the document?
No (explains)
(presses CONTROL-K and reads Block Menu) Can't see anything ...
It's one of the File Operations ...
COPY?
No.
READ?
Why READ?
'Cos you can read another file ... (selects READ and includes file) Oh - I didn't see where the cursor was.
9. delete block of text
(deletes line and word-by-word)
10. save edited file
Return to the Opening Menu ...
Where are the SAVE options?

Can I press F8 (function key)? CONTROL-O?
No. It's in the CONTROL-K menu as well.
(presses CONTROL-K and reads Block Menu) Shall I copy it first.
No.
SAVE & EXIT?
Where will that take you?
Out of the system? SAVE & RESUME?
Where will that take you?
Back to the start again.
No, that will leave you in the same document.
Must be SAVE & DONE then, I don't know what that meant. (saves file)
11. rename file
What did I call it first? (selects EDIT)
You don't want to edit it again ... ESCAPE will take you back
RENAME? (selects and renames file)
12. 12. What does a word-processor do?
Just allows you to put text in, juggle about with the text, put it where you want. And typing and moving around the screen, create your own piece of writing. And you can save it on disk, and use it any other time you want, and change it any time you want.

Subject 7

1. copy file
(selects COPY)
[Name of file to be copied:]
(enter filename)
[Name of file to be copied to:]
You want another name? (enters new filename)
2. edit file
(selects EDIT)
[Name of file to be opened:]
(enters filename)
3. delete char, insert word
Right. Is this Wordstar that I'm in now? (deletes char, inserts word)
4. insert paragraph
Would you like the address above this [first line]? Can I get it in above it? I don't know how to actually insert something above here - my cursor is right at the start.
You're at the top left now, but want some space before that - what could you do?
You want to move the whole block of text down, you want to create room at the top.
How could you do that?
(thinks) Well, I could INSERT a line - do a few SPACE BARS - (presses CR) Ah - great. (inserts a few blank lines, tries to move cursor to the right with RIGHT ARROW) Ah - it won't go.
Any idea why not?
No.
What can you actually do?th a cursor? What is it there for?
To mark a position in the text.
But you have no text up there - you've ...
Tabulate! (uses TAB to indent, inserts para)
5. move paragraph
That's K (CONTROL-K to bring up Block Menu, presses K) Ah - I put in KK instead of KB.
(helps him to remove it) Start again.
(inserts Beginning Marker and End Marker, positions cursor) Now - I can't remember what the command was to actually MOVE the paragraph. And the K menu doesn't help, I'm not sure ... (CONTROL-K). Is it MOVE? (presses V)
6. delete paragraph
(uses DELETE LINE)
Is there another way to do it?
Presumably by paragraph - it will be in the K menu. Could you do it by marking the paragraph and then a command ... (presses K X and exits program) Oh dear, I pressed the wrong one, I've got to get back into Wordstar (do?)
7. copy paragraph (address) into separate file (transfer task)
Right, so I've got to open another file?
Why?
I want to open another file - I want to go back to the ...

There is a way to save this out into a separate file without leaving this one - you can mark a piece and say ...

Is that in the K menu? Do you mark it again in the same way? (tries to move cursor with TAB) (marks para)
Is it the C [COPY] in Block?

No - that's within the same document.

Must be WRITE then (selects)
[Name of file to write text to:]
How many characters can you use in a filename?

Eight.

(enters filename)

8. include file (transfer task)

(CONTROL-K, reads menu) It should really be called READ - because it's the same as WRITE in reverse. (selects READ)
[file inserted at cursor position]
So it reads the whole file that I asked for straight in? Could I ask for a block from a particular file?

9. delete block of text

My initial response would be to use DELETE LINE and DELETE WORD - I know you can mark it and delete it, but I can never remember these K-K's and K-D's. (deletes line and then words)

10. save edited file

(CONTROL K, reads menu) It's D. (selects)

11. rename file

You want me to change the name? (selects command)
[Name of file to rename:]
That was COPY.DOC, wasn't it? (enters filename)
[New Name:]
(enters new name)

12. What does a word-processor do?

It's a very extensive typewriter system, where everything you ever wish to do on a typewriter is there - it's a typewriter, computerised. And also it's a filing cabinet, 'cos it can store as well.

What's different from a typewriter?

The ability to always correct errors - you can always correct.

Subject 8

1. copy file

(selects COPY)
[Name of file to be copied:]
(enters filename)
[Name of file to be copied to:]
What do you want me to call it?

I don't mind - NEW.DOC?

(enters new filename)

2. edit file

(selects EDIT and presses CR) Why won't it do anything?

(explains she pressed CR and therefore entered bank filename)

(selects EDIT and enters filename)

3. delete char, insert word

(deletes char, inserts word)

4. insert paragraph

What, at the beginning at the text?

Well, you obviously need some space ...

(moves cursor to line 2 and inserts blank lines)

You should try and put it before anything else, like in a letter.

???

(explains she has to put cursor at very beginning)

(does, inserts blank lines with CR) (moves cursor to right with TAB and types address)

5. move paragraph

So you want me to move this paragraph? Is it - well I think I can remember the instructions ... Is it K - B? (positions cursor and inserts Beginning marker) (moves cursor char-by-char)

Is there a quicker way?

Don't know (holds RIGHT ARROW down) (positions cursor, presses CONTROL-K K to insert End Marker)
Now I've got to move it down (positions cursor), and it's K V. (selects command and moves para)

6. delete paragraph

I can't remember how to delete. (moves cursor to beginning and deletes char-by-char)

There must be a faster way of doing this.

I can't do it without the instructions.
You've got DELETE commands in that menu up there ...
Ah - DELETE LINE. (does)
When you've got a block like that, you can mark it and delete it.
7. copy paragraph (address) into separate file (transfer task)
(types J) I keep pressing J to get HELP.
It's CONTROL-J for HELP
(Calls HELP Menu, reads it) Don't know.
What do you do when you copy within a document?
Is that what we just did previously?
It's a similar operation - you have to the piece of text you want and then select a command.
Can't I just put X and SAVE it?
You don't have to exit it to do that.
Is that K V or something.
That moves it within the same document.
So I've got to mark something (moves cursor to para, tries to use TAB then to move cursor to right)
(explains)
(positions cursor at the beginning) Is that K B then? (inserts Beginning Marker)
[all text marked]
Why does it do that?
(explains)
(inserts End Marker) Now I want to put it in a separate file ... CONTROL-D?
Why don't you have a look at the menu that contains the commands for COPY and MOVE?
(calls up Block Menu)
Which one do you think it might be?
Is it CONTROL-O or something?
No, that's a menu.
Can't we use COPY, then?
No, to copy it into another file ...
RENAME?
No - WRITE.
(selects)
[Name of file to write text to:]
???
What does it want to know?
What file do I want to put it into? (enters filename)
8. include file (transfer task)
Is that CONTROL-D?
What does that do?
That will tell me - show me all the different commands.
There is no CONTROL-D menu - CONTROL-D moves the cursor to the right.
So I'm trying to get INCLUDE.DOC onto this file, and this file is called NEW.DOC. So I want to COPY, don't I?
If you have a look at the previous menu - since it contained the command for saving a piece of text into a file ...
(calls up Block Menu, reads) MOVE?
No, you used that to move a piece of text within a file.
READ?
Why READ?
I can't understand why we don't use COPY in the first place, that's what you use for files.
No, within a document it's called READ.
(includes file)
9. delete block of text
(deletes char-by-char)
Isn't there a quicker way?
CONTROL-X?
How do you delete a whole line?
(uses CONTROL-Y, deletes the rest char-by-char)
10. save edited file
That's CONTROL-X, is it? No, it's not ... (CONTROL-K to see Menu) S instead of X you think?
Where does X take you?
Takes us back to the ... can't think. Doesn't take us back to the Main Menu, anyway. S? [SAVE & RESUME]
That would take you back to the document.

D then (selects)
11. rename file
(selects RENAME)
[Name of file to rename:]
What was it called?
NEW.DOC.
(renames file)
12. What does a word-processor do?
I think it's faster than writing, so if you want to wipe things off you can do that easily. You can also chop text up and move bits from one to another. It's faster, and you can delete things ...

Subject 9

1. copy file
(selects copy)
[Name of file to be copied:]
(enters STUDY.DOC)
[Name of file to be copied to:]
(enters STUDY.NEW)
2. edit file
(selects OPEN)
[Name of file to be opened:]
(STUDY.DOC)
Is that the copy?
Oh (changes to STUDY.NEW)
3. delete char, insert word
(backspaces character and adds name)
4. insert paragraph
(Moves to beginning of the text, tries to move cursor upwards) How do you scroll up?
What exactly are you trying to do?
Bring this [first line of text] down so that get the space to add ... (reads menu) SCREEN DOWN, is it?
[points out that he is in line 1, column 1) If you think about it, can you go up any further than line 1?
No you can't - transfer that [text in line 1] down here?
How can you do that?
Do you mark the whole lot and scroll?
What does scrolling do?
???
What you really need to do is insert a couple of blank lines - what's the easiest way to get a few extra lines?
Press RETURN?
What will happen if you press RETURN?
It will space it out (presses CR a few times, moves cursor up, uses TAB to move cursor, types address.)
5. move paragraph
You want me to move this one? See if I can remember how to do that. (positions cursor at the beginning of the paragraph). I really need my instructions, I can't remember the commands ...
If you haven't got your instructions, how can you find out which command it is?
From the menu ... (selects Block Menu, reads block operations) Beginning, end ... So it's CONTROL-K V.
But what do you have to do first?
Mark this piece of text. (Sets beginning and end marker [doesn't know how to move cursor to end of line]
What's next?
Mark the ... tell the computer where it want to go? CONTROL-K B to bring it down?
How can you tell it where you want it to go?
Using the cursor! (positions cursor)
And now?
I can't remember ... (calls menu up) V. (presses CONTROL-K V)
6. delete paragraph
(deletes character-by-character)
Isn't there a quicker way of doing this?
I need the actual instructions how to do it ...
You could look at the menu and see if there's ...
(reads menu) DELETE! (deletes word by word using CONTROL-T)
Can you delete a whole line at once?
(reads menu again) Yes. (deletes two remaining lines with CONTROL-Y)
7. copy paragraph (address) into separate file (transfer task)
Are there any instructions for doing this?

Well, you have copied paragraphs within the same document before - can you find out whether there's and option to copy it into a separate file?

Well, you have to name a file - don't I have make to a file first?

Maybe it will ask you ...

Oh, you mean you select the command and it says: "Name of file ..." I need another menu to do it ...

What do you normally do when you copy a block of text?

You've got to mark it ... (presses TAB to move cursor, text is moved) Rats!

What happened there?

Ah - I pressed TAB, but it pushes the text further out. (deletes extra spaces, positions cursor with cursor keys before first char selects CONTROL-K for Block Menu, then B)

[whole text marked]

Argh - what happened there?

(explains)

(inserts end marker, selects Block Menu with CONTROL-K)

Which one do you think it is?

(reads menu) It's C for COPY ... but that's within the same file ... don't know.

E: It's WRITE.

Oh really? I wouldn't have guessed ... (selects W)

[Name of file to write text to:]

You have to give it a name ...

Can I call it anything I want? (enters filename)

8. include file (transfer task)

So there's a file there you want me to include?

Yes - any Idea how to do it?

No.

What commands have you got?

(reads menu) Is it one of these [file operations]. It's not RENAME, is it? (reads menu again)

You've just written text out to a separate file, what did you use for that?

WRITE again?

IT's the last one ...

What, READ?

Well, it's the opposite of WRITE ...

Oh dear (selects command to include file)

9. delete block of text

[not attempted]

10. save edited file

CONTROL-K D [SAVE & DONE]

11. rename file

selects command

[Name of file to rename:]

(enters STUDY.DOC)

[New Name:]

What shall I call it?

How about your name?

(uses surname as filename)

12. What does a word-processor do?

It stores information ... basically, it's the same as using paper ... The computer doesn't actually do too many calculations ... well, it can do, in certain programs ... it's more for storing information in a much more compact form, documents and papers and files ... it helps you to compose what you are trying to write, 'cos you can come back to something and add new pages - if I had to do a dissertation in my 3rd year, it would be ideal, things you've missed out you can insert. You can save things all the time, so you don't loose anything. That's it, really.

Subject 10

1. copy file

(copies file)

2. edit file

Actually go into the copy? (selects edit)

[Name of file to edit:]

(enters filename)

3. delete char, insert word

(Deletes first line and adds her name)

4. insert paragraph
Do you want me to type my address? (pushes her name over to right using TAB, inserts a few blank lines and adds her address)
5. move paragraph
(moves cursor to beginning of block, CONTROL-K for Block menu, selects Beginning Marker, moves to end of block (word-by-word), selects End Marker)
So you have marked it now ...
(positions cursor, CONTROL-K for Block Menu, selects MOVE)
6. delete paragraph
(deletes line-by-line)
You have deleted this line-by-line -
Could I have deleted it with this [points to marked para]?
7. copy paragraph (address) into separate file (transfer task)
Do I need to come out of this file?
You don't have to - you can mark a para within a document and save that into a separate file.
(tries to move cursor with TAB) (inserts Beginning Marker)
[all text highlighted]
???
(explains)
(inserts End Marker, CONTROL-K for Block Menu) It must be C
That copies within in the same document, so it can't be the same for this ...
So is it a File Operation?
No - it's WRITE.
(selects WRITE)
[Name of file to write text to:]
(enters filename)
8. include file (transfer task)
I'm completely stuck now.
You're trying to include this file ... it's similar to the operation you have just done ...
So it's CONTROL-K (brings up menu) So would it be a COPY?
No - to include it in this file, you have to use READ.
(selects READ, enter filename)
Where did it put it?
Where the cursor was.
9. delete block of text
(sets Beginning and End Marker, CONTROL-K, selects DELETE BLOCK)
10. save edited file
(CONTROL-K) SAVE & EXIT - that will take me out to the Main Menu [the instruction says Opening Menu] won't it?
That will take you to the Operating System -
(selects SAVE & DONE)
11. rename file
(selects EDIT)
You don't have to edit it -
(CONTROL-U to UNDO) Hmm (reads menu) (Selects RENAME)
[Name of file to rename:]
(enters filename)
[New name:]
(enters new filename)
12. What does a word-processor do?
Oh goodness - I would say that it's very much like using a typewriter on a - with a computer. But you can actually store information on a computer disk. It enables you to move text around and to delete it, and it's more flexible than a typewriter.

Subject 11

1. copy file
(selects COPY)
[Name of file to be copied:]
(enters filename)
[Name of file to be copied to:]
I'll just check the name I want isn't used already ... (enters filename)
2. edit file
Open it? (selects OPEN)
[Name of file to edit:]

(enters filename)
3. delete char, insert word
(deletes char and inserts word)
4. insert paragraph
(positions cursor on later char in 1st line, presses UP ARROW) Can I use RIGHT ARROW now or will that just go into the next line.
Yes it will.
CONTROL-F (forward)
Where are you now?
Line 1
Is there any space above no?
No.
So how could you get some space up there?
Press RETURN.
But if you press RETURN now, where would the line be inserted?
????
You want to insert the space above to the first line ...
(moves cursor to the beginning and inserts lines, moves cursor to right) How can I go up there without it [cursor] going back to the beginning?
You can use the TAB (explains)
(positions cursor and enters address)
5. move paragraph
(positions cursor and presses CONTROL-K D) Oh that wasn't it - CONTROL-K D is for SAVE & EXIT.
What was it that you were trying to do?
CONTROL-K something ... CONTROL-K K is for the end (returns to file, positions cursor, CONTROL-K B to insert beginning marker, moves to end (word-by-word) and inserts End Marker, positions cursor) CONTROL-K V? (selects MOVE)
6. delete paragraph
(deletes line-by-line)
You deleted using CONTROL-Y - is there any other way you could have done it?
Could I have marked it as a block and then deleted it?
7. copy paragraph (address) into separate file (transfer task)
Hmm - so, would I make up a new file for this?
You will be creating a new file, yes -
Help! If I create a file and put it in, if I wanted to write a letter, how would the computer know that I just wanted this address and phone number?
You mark the address and phone no. in this file, and say "this is what I want to put into a separate file.
So I mark it the same way that I've marked things before? (inserts Beginning Marker, whole text marked) It's marked everything on the screen!
(explains)
(inserts End Marker) So if I press CONTROL-K (does, reads Block Menu) C.
No. (explains COPY) It one of the others.
WRITE? (selects)
[Name of file to write text to:]
(enters filename)
8. include file (transfer task)
So if I look in CONTROL-K, and see if there is anything - (does, reads Block Menu) There's nothing here (in Block Operations).
No, because you're importing an entire file, it's under File Operations.
COPY or READ?
It's READ.
(selects, includes file, cursor happens to be in correct position)
9. delete block of text
Wouldn't I want to delete all this? (marks block) Is it D? CONTROL-K something ...
You could look it up in the menu - it's Y.
10. save edited file
CONTROL-K D? That's SAVE & DONE ... (saves file)
11. rename file
(renames file)
12. What does a word-processor do?
Well it's a means of being able to produce letters, documents, and being able to correct it on the screen before you print it. It saves a lot of time and effort. You can re-format things.

Subject 12

1. copy file

(selects CONTROL-O and CR) Hm ...

I think you were a bit too quick there - you just pressed CR and entered no filename.

Oh I see (selects option)

[Name of file to be copied:]

(enters filename)

[Name of file to be copied to:]

(enters new filename)

2. edit file

(selects EDIT)

[Name of file to edit:]

Do I want to get rid of this?

No, now you enter the name of the copy -

(does)

3. delete char, insert word

(types word, deletes character)

4. insert paragraph

Do you want me to put my address up here on the right?

Yes.

(pressing UP ARROW) It won't go up.

Where in the file are you?

I'm at the beginning of the letter.

It won't move the cursor up - why not?

'Cos that's the beginning of the file.

Yes, any idea -

CARRIAGE RETURN?

Yes.

(inserts a few blank lines using CR, uses TAB to indent, enters para.

5. move paragraph

(positions cursor within para to be moved, CONTROL-O)

[Onscreen Menu]

Was that the wrong thing to do?

What were you trying to do?

Trying to mark the beginning - I thought it was O but it's not. (ESC to remove menu) Is it K?

Yes - but where do you want to put the marker?

At the beginning and at the end. Oh - (positions cursor at beginning of para, CONTROL-K, reads Block Menu)

B (selects B, moves cursor to end of para, inserts End Marker)

[paragraph marked]

I've got to move the cursor to where I want it (positions cursor, selects MOVE)

6. delete paragraph

(deletes line-by-line)

Can you think of another way of doing this?

Delete the paragraph, but I couldn't remember what that was.

7. copy paragraph (address) into separate file (transfer task)

(laughs) I can't find out how to do anything on this. [referring to instructions]

Well, it's similar to operations like COPY and MOVE, but you want it in a separate file.

So I create a file for my name and address?

Yes, but you don't have to leave this file to do that. You can mark a block of text and copy this into a separate file.

Is that COPY AND RESUME?

That's for copying the entire file ...

So I mark this (pushes TAB to move cursor and pushes text) Oops.

(explains)

(inserts Beginning Marker)

[all text marked]

Why has it done that?

(explains)

(inserts End Marker, CONTROL-K)

[Block Menu]

Any idea which it might be?

C?

You can't use that, since it copies within the same document. What else could it be?

MOVE?
That's what you did before -
Oh, sorry, yes ...
How about WRITE?
(selects WRITE)
[Name of file to write text to:]
(enters filename)
8. include file (transfer task)
Hm ...
It's a similar operation, but now you're calling a file to include ...
How do I get back to the beginning?
The beginning of what?
I want to find it from the Opening Menu.
You don't have to leave this file - where do you want to put it?
Below the paragraph (positions cursor)
Why don't you have a look at the menu and see if you can find a command -
Is it CONTROL-V?
No, it's in the Block Menu as well?
(selects Block Menu, reads) HIDE and DISPLAY?
You've just done WRITE to put it into a separate file - what's the opposite of WRITE?
Wrong (laughs) - WRITE ... MOVE?
No it's READ.
(selects READ and includes file)
9. delete block of text
(deletes line and word-by-word)
10. save edited file
(CONTROL-K, selects SAVE & DONE)
11. rename file
(selects RENAME)
[Name of file to rename:]
(enters filename and new filename)
12. What does a word-processor do?
It's just like a typewriter, isn't it? Well, it's more sophisticated than a typewriter - you can re-arrange paragraphs, and it's easy to get rid of mistakes you've made. You can print out as many copies as you like.

Subject 13

1. copy file
It's O, isn't it (selects COPY)
[Name of file to be copied:]
(STUDY.DOC)
[Name of file to be copied to:]
What shall I call it? (enters filename)
2. edit file
So I've got to load it in (selects EDIT)
[Name of file to edit:]
(enters filename)
3. delete char, insert word
(deletes char, inserts word)
4. insert paragraph
(presses UP ARROW a few times) Now this is the interesting bit - how to get it [the cursor] to go up? Does it means at the beginning of this text.
What is the problem?
I want the screen to go down, don't I? Shift everything back a bit.
Any idea how to do that?
To mark it and to move it down?
There's a quicker way of doing it.
Keep pressing CARRIAGE RETURN. But the CARRIAGE RETURN has got to be in front (at the beginning of) the row. (moves cursor and inserts blank lines by pressing CR) Do you want the address that this [right-hand] side? (presses RIGHT ARROW a few times)
[cursor moves down]
Oh!
Why can't you get the cursor over there?
(presses SPACE BAR) I can do it with that one.
Or?

CONTROL-F ... but that's for words, isn't it? [means because it move word-by-word] (uses TAB and inserts para)

5. move paragraph

(moves cursor to the beginning) Is it K, B? (inserts Beginning Marker, moves to end with RIGHT ARROW)

Is there a quicker way of doing that?

Yes - CONTROL-F. (inserts End Marker, inserts End Marker)

And now?

I move the cursor down to where I want it to be (does) I can't remember how to do it - it's not CONTROL-K, B is it?

You could just look it up.

Yes (CONTROL-K, reads Block Menu) V (selects MOVE)

6. delete paragraph

This is going to be interesting (presses CONTROL-K) How do you delete it (reads menu) without going back letter by letter?

If you look at the Block Operations -

It's T -

But what do you have to do first?

Mark the text. (does, selects DELETE BLOCK)

7. copy paragraph (address) into separate file (transfer task)

Do you make a file called address?

You don't have to leave the file - you can copy it from this document into a new file.

So I have to go back up (moves to para) So do I mark that piece of text? (marks para) So it's File ... (looks at Main Menu) Is it in K? (presses CONTROL-K, reads Block Menu) C?

No - that would copy it within the same file.

(reads again) I'm afraid I don't know which one it is - is it the RENAME?

It's WRITE.

(selects)

[Name of file to write text to:]

What shall I call it, just address or something? (names file)

8. include file (transfer task)

Ah - how do I do that? Can I get help from K - K seems to be very helpful (laughs) (CONTROL-K, reads Block Menu) Is it that H one ... or is it READ?

Why READ?

Because it means I can read other files. (includes file)

Why did it include it at this point?

Because my cursor was there.

9. delete block of text

(marks para, deletes)

10. save edited file

(presses CONTROL-K) I have to have a look at this ... It's SAVE & DONE, isn't it? (saves file)

11. rename file

So - (selects RENAME, renames file)

12. What does a word-processor do?

It's a lot easier to use than a typewriter, because you can move things around. And it's a lot more variable, because you can put things in without messing the paper up. I was a bit scared to begin with in case I might break something, but it's not easy to break things. It's a lot easier and quicker to get things done in a way. And it looks neater - they're a very good idea, really.

Subject 14

1. copy file

(selects command)

[Name of file to be copied:]

(enters STUDY.DOC)

[Name of file to be copied to:]

Will I call that by a new name?

You have to give it a new name ...

(enters NEW.DOC)

2. edit file

(selects edit)

[Name of file to be opened:]

(enters NEW.DOC)

3. delete char, insert word

(positions cursor, deletes char, enters text, hits CONTOL-K instead of SHIFT-K)

[Block Menu]

What happened?
I hit the CONTROL key instead of the SHIFT. (presses E and inserts End Marker)
What's that?
One of those things for block ...
Yes (explains why block marker was inserted, removes it.)
4. insert paragraph
Do you want it here [below the first line]
No, above the first line ... you need some more space at the beginning - how could you do that?
Insert a new line?
How do you do that?
Just press RETURN?
Where would it insert the line if you pressed the RETURN now?
???
Where is the cursor now? ... You want it above the first line.
(positions cursor at the beginning) It won't go any further up ...
No, you're right at the beginning ...
(uses CONTROL-M to insert blank lines) (tries to use cursor keys to move cursor to the right)
The cursor keys won't take you there - how can you get it over to the right?
Create a new margin?
You could - but there's a quick way of doing it?
(uses SPACE BAR)
(points out TAB key)
5. move paragraph
(moves cursor to beginning of para) CONTROL-K?
What would you like to now?
Mark it out - (presses CONTROL-K) I just want to look at the other menu to find out. (reads Block Menu)
CONTROL-K B?
But you've already pressed Control-K.
???
What did you do to get this menu?
CONTROL-K - so just B now? (does, moves cursor to end using CURSOR KEYS.)
Is there a quicker way of doing that?
Oh yes (moves word-by-word) CONTROL-K K? (does, para is marked.
What now?
(moves cursor to new position) Is it COPY?
What are you trying to do?
Can I go back to the instructions? (CONTROL-K, reads Block Menu) CONTROL ... V? (selects, para is moved)
6. delete paragraph
With those [commands] as well? (Inserts beginning marker)
[whole text marked]
Hm ....
What's happened?
I wanted to mark this paragraph.
(explains)
(inserts end marker)
Now you tell it you want to delete it.
(CONTROL-K, reads Block Menu, selects, D)
7. copy paragraph (address) into separate file (transfer task)
Is that in the same menu?
What do you have to do to copy it?
Mark the block that you want to copy. (marks beginning, moves cursor to end, presses CONTROL-K B again)
[previous beginning marker moved to end]
Why doesn't it mark it?
(explains)
(marks block) Will I have to open another file?
How are you going to find out what to do?
Go to the K menu (does, reads menu)
Which one looks most promising?
The file operations ... or ... Can we copy that onto another disk? [diskette]
You want to copy it onto the same disk, just a separate file. You have used the COPY and MOVE commands - maybe there is another one there.
(reads menu) WRITE? (selects it)

[Name of file to write text to:]
Just call it a new filename? ADDRESS.DOC (does that)
8. include file (transfer task)
(reads Main Menu) Open a file INCLUDE.DOC? Do I have to finish this first?
There is a file called INCLUDE.DOC which you can import into this document. You don't have to leave this document.
???
You just copied a piece of text into a separate file, now you're trying to do the opposite. Any idea how to do that? It's in the same menu ...
(CONTROL-K to call up Block Menu) Is it WRITE again?
That writes something from your current file into a new file - you want to call in an existing file ...
READ? (laughs)? I don't want to DELETE, or COPY ... (CONTROL-Y to include file)
9. delete block of text
You can delete the line, or mark it as a block again. (deletes line) Can I get rid of the rest by typing over with a SPACE BAR?
No.
10. save edited file
(CONTROL-K to call up Block Menu) Save and Exit?
Where will that take you?
The beginning?
What's the difference between the three SAVE options you have?
The first one (SAVE & resume) means you can go back to it, SAVE & DONE means that's the end of it - SAVE & EXIT - I'm not quite sure.
(explains)
11. rename file
(selects RENAME)
[Name of file to rename:]
(enters current filename)
[New Name:]
(enters new name)
12. What does a word-processor do?
Well, basically like a typewriter, if you're using it as a typewriter, it's got additional functions like when you make mistakes, you don't have to correct them straight away - you can correct them before they are printer out on paper. You can insert things ... the tabbing and all that, it's easier to do then on paper - you can lay it out beforehand. It's very efficient. It can do calculations ... I suppose that's the computer. It all on disk and in the memory - there's a program already done for you - I would work from my instructions. You've got a set of commands, and you just follow those.

Subject 16

1. copy file
(selects COPY)
[Name of file to be copied:]
(enters STUDY.DOC)
[Name of file to be copied to:]
Don't know what to call it ... (enters ANGELA.DOC)
2. edit file
The original, or the copy? (selects EDIT)
[Name of file to be opened:]
The copy.
(enters ANGELA.DOC)
delete char, add text
(deletes character, inserts word)
4. insert paragraph
(positions cursor at beginning, hits UP ARROW repeatedly)
What are you trying to do?
Trying to get further up to put my address ...
Which line are you currently on?
The top one ... so you can't go further ...
So what do you have to do?
I don't know how to get further up ...
You need some more space on top there, don't you? 'Cos you are on line one at the moment ...
So I have to move the text further down ...
Any idea how to do that?
It's not by marking it, is it?

No - how could you put some extra lines in?
I can't remember.
What happens if you press CR now?
Does it bring it down? (tries it) Oh I see. (inserts lines, presses RIGHT ARROW to move cursor to the right) [cursor goes down to next line]
Why does it go down when I press right?
(explains)
(uses TAB to position cursor, enters paragraph)
5. move paragraph
(moves cursor to beginning of para) CONTROL-K B, isn't it? (inserts marker) (moves cursor using CURSOR KEYS)
Is there a faster way of doing this?
Yes (moves word-by word) (inserts End Marker) (positions cursor) Right - is it just B? I can't remember. I just can't remember the command to bring it down [MOVE]
It's part of the K [Block] Menu, if you're not sure.
(calls up menu, reads it) B?
What does CONTROL-K B do? You've done that.
V (does)
6. delete paragraph
(deletes lines with CONTROL-Y)
Could you get rid of it as one block?
I wouldn't know how.
You could mark it as a block
Oh I see
7. copy paragraph (address) into separate file (transfer task)
Into a separate file? What do you mean, in its own file, so you can keep calling it back? Isn't it just like a new file, you make it ...
What you want to do here is copy it out from this file - you don't have to leave this file.
Do I mark it in some way? (tries to move cursor with TAB and pushes text)
(explains)
(insert beginning marker)
[whole text marked]
Why did it do that?
(explains)
(inserts End Marker) Is it in K? (call up Block Menu, reads) What is the difference between File Operations and Block Operations?
(explains)
So I don't want to do that (File Operations)
It's WRITE.
Ah ... (selects)
[Name of file to write text to:]
Oh I see (names file)
8. include file (transfer task)
So that will be in the K Menu - calling in an outside file. (selects Block Menu - reads) So is it READ?
Why do you think it's READ?
Because I want to see it. (selects READ)
[para inserted at cursor position]
Can you see what happened there?
Has it gone over [overwritten] something?
No. It's just inserted it right in the middle of this paragraph - why?
Because the cursor was there.
9. delete block of text
(deletes using DELETE LINE and DELETE WORD)
10. save edited file
SAVE & DONE, is it?
If you want to go to the Opening Menu ...
Ah - X, is it?
Where will that take you?
Hm - the operating system?
Yes. So which one do you want?
SAVE & DONE (does)
11. rename file
(selects command)

[Name of file to rename:]
(enters filename)
[New Name:]
(enters new filename)

12. What does a word-processor do?

I suppose I would liken it to a typewriter, with a keyboard and a memory or something ... it's much more flexible, though, you can correct mistakes and that ... you can store things ... re-format things ... What I found difficult is things like spaces and that, when you're keying in things, and it won't accept it - little things like fullstop and colon when you're naming files are very important.

Subject 17

1. copy file

So it's COPY FILE? (selects COPY)
[Name of file to be copied:]
(enters filename)
[Name of file to be copied to:]
Does it not matter what I call it? (enters NEW.DOC)

2. edit file

(opens file)

3. delete char, insert word

(deletes char, inserts word)

4. insert paragraph

Do you want it as if it was a letter? It [the cursor] won't go up, 'cos it's at line 1 already. If I press CARRIAGE RETURN, will that insert lines? Do I have to go to the beginning [of the line]? (moves cursor and inserts lines, moves up and moves to right with SPACE BAR).

You can use the TAB -

(does, inserts address)

5. move paragraph

(positions cursor, CONTROL-K B to insert Beginning Marker, moves word-by-word, CONTROL-K K to insert End Marker, presses CONTROL-K and reads Block Menu) You want it down there? (tries to move cursor)
[system error]

I don't think it likes you moving the cursor while it's waiting for a selection.

(positions cursor, presses CONTROL-K V to MOVE para)

6. delete paragraph

(marks para, presses CONTROL-K and reads Block Menu, selects Y to DELETE marked block)

7. copy paragraph (address) into separate file (transfer task)

So can I copy the paragraph while I'm in this file - I don't have to go out? So if I just mark it? (moves to para, tries to use TAB to position cursor) Argh!

What happened?

I've inserted some spaces (deletes those) Can I use those (RIGHT ARROW)? (does, marks para, presses CONTROL-K and reads Block Menu) So I can just press C?

That would copy it within the same document.

O?

That will copy the whole file ... Since you mark a block in the current document to start with, it's a Block Operation.

???

Well, it's not COPY and not MOVE -

WRITE (selects WRITE and enters filename)

8. include file (transfer task)

So can I stay in this file, and look at it?

You can just call up the file from within this document.

Hm (reads Main Menu) There's nothing here.

It's similar to the operation you just did before.

I just don't know how you can do it and stay in this file.

By telling it "I want to include a file" and it will ask you for the name.

HELP? Or is it in K? (presses CONTROL-K and reads Block Menu) I don't know ... presumably it must be a File Operation ... so is it just READ?

Yes. Why do you think it might be READ?

'Cos you can read the text of the file. (includes file)

9. delete block of text

(marks block and deletes it)

10. save edited file

(presses CONTROL-K and reads Block Menu) So just X?

Where will X take you?

Oh, that will go to the Operating System. D [SAVE & DONE] - (does)

11. rename file

(selects RENAME and renames file)

12. What does a word-processor do?

I would say that it's quite like a typewriter, in that you use a keyboard the same as a typewriter, and you can see what your typing on the screen. But the advantage is you can always edit it, change the spelling, change the format, and it's a lot easier than on a typewriter. And if you can type, it's a lot quicker than writing.

Subject 18

1. copy file

(copies file)

2. edit file

(selects OPEN)

[Name of file to edit:]

(hesitates) So, which one ...

The copy -

(enters filename)

3. delete char, insert word

(inserts word, deletes char)

4. insert paragraph

(presses UP ARROW, cursor at end of line 1)

[cursor moves down]

Oh! (returns cursor to line 1 and tries again) Hmm -

What's the problem?

I've got to move the screen up ...

Where are you at the moment?

Is it right at the top?

That's right - so what do you want to do?

Move the text down ...

What is the easiest way of doing that?

Just using this [CR]?

Yes.

(inserts lines, moves cursor to right with TAB, inserts address)

5. move paragraph

(moves to beginning of para) Is it CONTROL-K B? (inserts Beginning Marker, moves to end using CXONTROL-F) K, K? (inserts End Marker) Down here? (positions cursor) CONTROL ... K, C? Is that to COPY it.

C is COPY - look it up if you're not sure ...

(hesitates) What's that, by doing the K? (CONTROL-K, reads Block Menu) MOVE, so it's V. (moves para)

6. delete paragraph

All this? DELETE ... by line or by block?

Which ever you think is faster.

(inserts Beginning Marker)

[text marked to end of following, previously marked block]

Oh!

What's happened?

It's done all of that.

(explains)

(inserts End Marker and deletes para)

7. copy paragraph (address) into separate file (transfer task)

So I need to bring a new screen up? Would I have to mark it and then tell the computer to copy it? So I've got to bring the screen up [scroll]. (tries to move cursor with TAB)

(explains why she can't use TAB)

So how would I get there?

CONTROL-F.

(marks para)

Now you have to find out what command is for copying it into a separate file ... where do you think it might be?

Block?

Yes, it is in the Block Menu.

(CONTROL-K, reads Block Menu, points to marked para) So you want me to copy that into an extra file? COPY?

That's within the same document ...

This one? (points to FILE COPY)

That would copy the entire file. Since you are copying a block from a current file, this is classed as a Block Operation ...

Ah - it's not MOVE, is it? HIDE?

What about WRITE?

Oh. (selects WRITE)

[Name of file to write text to:]

So I'm creating a new file now, so I have to give it a new name? (does)

8. include file (transfer task)

So I've got to get into the other file, INCLUDE.DOC.

All you have to do is tell the system that you want it included in this document.

Hm ... I can't think how to do that.

It's the reverse operation of what we did previously.

So CONTROL-K? (brings Block Menu up, reads) It's not HIDE & DISPLAY?

It's a file operation.

COPY?

That will copy the whole file.

IT's not DELETE ... READ? (selects READ, enters filename)

Why did it insert there

??? ... 'cos I had the cursor there?

9. delete block of text

10. save edited file

SAVE ... Q was it?

Which menu contains the SAVE options?

O?

No it's in the K menu.

(presses CONTROL-K) D is it? (saves file)

11. rename file

E (selects RENAME,

[Name of file to rename:]

(enters new filename, CR)

[New name:]

Oh.

You've got to enter the name of the file you want to RENAME first. If you press ESCAPE and try again.

(does and renames file)

12. What does a word-processor do?

Well, it's easier ... it's got lots of different uses. It's easy to type letters, 'cos you can save so many things on it. You can move things around ... it's basically like a really really complex typewriter, I suppose, it's got a lot more uses than that. If you want to go back and delete things or change them, you can do it. Or if you have a file in there and want to update it, and you can print it off.

Subject 20

1. copy file

So O (selects O)

[Name of file to be copied:]

(STUDY.DOC, CR)

[Name of file to be copied to:]

So I can call it anything? (enters filename)

2. edit file

So shall I edit STUDY or this one? (opens copy)

3. delete char, insert word

Right. (deletes char, inserts word)

4. insert paragraph

Do you want it up here, where it usually goes in a letter? (presses UP ARROW a couple of times, then RIGHT ARROW)

[cursor moves down]

Uh - oh dear. (Returns cursor to first line.) So I have to move it all down, or can I just ... I'm at the beginning ...

If you want to add anything on top -

I have to move it down? CONTROL-B do I use, or [wants to use MOVE]

What is the easiest way to push the text down?

Just add spaces, I suppose. (presses CR, moves cursor up and tries to move it to right with RIGHT ARROW]

[cursor moves down]

Oh. Do you want it on this side? (uses TAB, inserts address)

5. move paragraph
I'll have to go to the other menu, yes? (presses CONTROL-O) Oh I didn't want that, did I? (ESC to return to file) Is it the K menu? (presses CONTROL-K for Block Menu) That's it (reads). Right ... do I do the CONTROL-B first?

You've already pressed CONTROL-K, so -

Oh, all right (selects MOVE)
[No block marked - press ESCAPE to continue]

(explains text needs to be marked first)

Oh, ok. I'll have to get back to it (inserts Beginning Marker, moves cursor to end (word-by-word)) What was the thing for the end, I can't remember.

You can look at the menu

(CONTROL-K, selects K)
[para marked]
Where do I have to move it to? (positions cursor) Here? (CONTROL-K v to move para)

6. delete paragraph
(deletes line-by-line)

You have deleted this block line-by-line - is there any other way you could have done that?

Could I have marked it and then deleted it? But that would have been slower, wouldn't it?

7. copy paragraph (address) into separate file (transfer task)
So I open a new file?

You don't have to - you can mark a piece of text in the document you're working on and save it to a separate file.

Oh I see. (moves cursor and, presses CONTROL-K) I can't remember the second letter.
[all text marked]
How can that happen - how can it mark the whole lot.

(explains)

(inserts End Marker) Copy it into another file ... (looks at Main Menu) I can't see anything like that.

It's in the other menu.

(CONTROL-K, reads Block Menu) C.

You have used COPY before - that's copying within the same document ...

???

It is a Block Operation, because you take a block of text from the current file -

WRITE? (selects)
[Name of file to write text to:]
So I've got to give it a name for the file ... (enters filename)

8. include file (transfer task)
So do I go back to the CONTROL-K menu? (Read Block Menu) I still do want W [WRITE], do I?

No, you want to do the reverse operation.

DELETE?

You want to include an existing file in your document.

None of these [options] seem to fit it. DISPLAY? READ, what's that?

That's it.

(selects R)
[Name of file to read:]
(enters filename)
[file included at cursor position]
Where have I included it ... because I left my cursor there. So if I just mark that and move it where it's supposed to go (does)

9. delete block of text
(deletes line and words)

10. save edited file
CONTROL-K X, isn't it? (presses CONTROL-K)

Where would that take you?

(reads menu) So if I do D?

11. rename file
Now I want to rename so (selects RENAME)
[Name of file to rename:]
What was the name of this file?

(tells her)

(renames file)

12. What does a word-processor do?
A way of typing out letters and correcting letters, by computer, and it's meant to be quicker (laughs) ... would be if you got used to it. And you can print from it ...

Spreadsheet Tasks

Subject 1

[empty spreadsheet]
(points at screen) OK so we've got 2 columns obviously when it comes on later we can alter the width of these if we want to and we've got a list down here so we could have something like a list of names and the type of training each person's doing (points to cursor) so that's where the cursor is that purple blob there.

Enter text

So come down to there. (points to input line) And this is what is actually going to be typed in. It shows you what is going to be typed in and press CR and we get a name in so the first thing is to give it a title - training study, if you want to do it in capitals it's this that's this (points to SHIFT)

(types "Training study 1988", CR) [title longer than 12 chars, displayed across A1 & B1]

(points to title) That actually can extend across the size of that but it will come up. Now the best thing to make this (the title) stand out we could miss a column (means row) and then come down

(moves cursor to C1)

Now we want a heading for that .. in capitals

(proceeds to type in text headings C1 to C4 under subject's instruction, then moves cursor to D1)

(points to headings) We'll make that stand out so we'll underline that so you do that by SHIFT and capitals that would be a continuous line

(types) how long for?

10, I think it is, each column It doesn't matter, you can do it in one go by going straight across (the columns)

(produces line of dashes) shall I ... ?

yes, press CR [underline displayed A4 - D4] (somewhat surprised) oh, it worked That makes that stand out now we can enter some names

(proceeds to put in names under subject's instruction in A, then moves to B5)

Enter numbers as text

So just enter in 3,4,5,6 miles

how do I enter it? Just 3, or 3 miles, or ...?

Just - 3m is what I'd do

(types "3m", CR)

["Illegal character"]
yes, made a mistake, sorry. It has come up as a number now press UNDO to continue - that's my mistake, sorry can't remember how to get out. Press UNDO twice. Now it is down as a NUMBER but it should be down as TEXT because there is a letter in there. So F7 will reverse it to text and now press CR and it will come up. It is a mixture of NUMBERS and TEXT and we had it as NUMBERS and we've got to reverse it round to show, otherwise when it comes to calculations it would ignore the m.

so we have to use F7? (presses)

[warning bleep]
no you do it (F7) after you've put it (entry) in

(enters data as text, as instructed)

So we've got what each one can do, so we could, say, take the averages so we can see what each person can do above or below the average. So first we can underline all that to separate any calculations we might do

the same way? Can we not copy the underlining that's already there?

We could, but it seems such a simple thing to do so I would just -

SHIFT and Capitals? (proceeds to produce a line of underscores)

Formula

I've now got to remember, if you go down to this (A11) ... now I've got to remember how to count ... let's type out average for that column

(types "Average", moves cursor to B11)

I can't remember how we total up, what I want is the MEAN, mean being the average so if you type in mean, M E A N OK and now we're going to give it an instruction of what we want the Mean of so we put it in inverted commas, so it's the mean of and inverted commas specifies which area we're doing. So put inverted commas first ...

(types)

right we've got B5, type in B5, and then to the way of saying 'to' is the colon, to B8, and CR,
(presses CR entering MEAN"B5:B8")
[displayed in B11]
sorry I forgot to toggle it, this time we want it to be numerical so all it's done at the moment is just typed in there, this time we want it to be numerical because we want it to calculate so if you type it in again, right and close inverted commas and change it over, right it's numerical and press CR.

(types same again, toggles to NUMERICAL, presses CR)

[BAD COORDINATE]

I don't know what I've done wrong. I'm absolutely stuck

one thing I've seen before, is it double quotes or a parenthesis?

Oh it might be, you might be right.

Shall we hit UNDO, hit UNDO again. Normally I just work from the instructions.

(types "MEAN(B5:B8)")

That is still in numerical so - presses CR

[?n?]

It doesn't like that

Enter numbers

think it doesn't like it because we've got the things (points at entries in B column) in as well. I think that's going to be a problem all the way along (points at other data entries) (realises that he has "mixed" numbers in with text) It's going to be a big problem there because I don't know how it's going to total that. Let's move along to this because it is all (figures) it might take that one.

OK (moves cursor to D11)

Do exactly the same, mean, and then you type in the co-ordinates which are D5 to D8 and reverse it over to numerical, see what happens

(tries to enter formula)

[?n?]

It won't because it's got the X (e.g. 6X400) (realises that all the data that have to be entered again) I've completely wasted your time. I think what we'd have to do is leave everything out - the one that identifies the distance, just have the numbers and then you can do it and what you can always put back in is the typing, well you can put in brackets, long run in brackets miles, minutes (suggests all data entries have to be retyped as pure numbers)

shall we do that then? If I go over and just type the numbers ...

(retypes data - numbers only in B column)

Now come down to the average (B11) again and try it. Type that in again, MEAN. No you didn't reverse the text, ... CR.

[average displayed in B11]

Change width

Oh we've got it. Now we've got a bit of a mess here (column labelling in B3) so we'll come out of there for the moment and we'll make this a bit wider, this column. So if you press the menu, that will take us back to the menu. Now what we're looking at is the FORMAT and the way it's made up so you can either move it along to format or you'll notice there's only one alphabetical, there's only one of each so you can just type F because it will not go down and then across, it will go all the way across (etc). If you wanted "WINDOW" or something you'd have to go all the way through to find it. So just type F it will go straight there.

Now the width first of all so that's - just press, you're on the width so stay on WIDTH and press CR. Now at the moment it is 12 long, that's a bit narrow, let's make it 20. Just type in 20. Right. So we just do this column. It's got one in already so just type CR.

[column set to 20]

Change attributes

Right, now that's fine, we've got a wide enough column but everything is over to the right (numbers adjusted to the right of the column) so we'd like to move it into the middle, so we'll stay in FORMAT, right, now that's the ATTRIBUTES. We've done the width so move across one and look at the ATTRIBUTES Now this, the instructions are here at the moment it is at the RIGHT so we can either have LEFT, CENTRE or RIGHT.

what does the 2 and the minus mean?

2 is the number of digits you've got after the number which we'll leave in because we want that for 3.50 If we wanted an exact number we could move that to nought. Now you use this to move across OK but we want to stick, if you notice when you move that you've got instructions coming up on the left as to what that particular question mark stands for, well we only want the first one again. Move back. Now the way you'll move the instructions up and down is the space bar. So you've got LEFT, CENTRE, RIGHT, LEFT, CENTRE. That's it .. question mark.

We've got the centre so press CR. So that applies to area - you can move the cursor up or down so move it up, right so we've got it to apply to this area, B5. Now we want it to apply to the whole area, to that column, so if you press the colon again, so that tells us from B5 to whatever the area is, so if you move the cursor that will automatically give us the rest of the space Yes, right and now press CR

(moves cursor from to B11, CR) that's quite good that

That, the other thing we want to do is we can have the order - they're not in any order are they? I think if you press O for Order

(selects option)

so what do we want over what area - B, A5 so we want A5, now we want it in alphabetical order so go to the left and up.

(selects area)

Right and now move it straight down .. and CR - CR always gets you on to the next instruction. Column, so that's what we want. Ascending or descending. Ascending would start you with alphabetically the first name
[orders rows alphabetically by name]
OK now we can move on we've got the averages we can move onto the circuits now -
(change width of C and D column)
Yes, we've got that. Now what's happened now is the whole menu [model] has now become too big for the screen so if you want to see what's left, press CR, sorry press arrow indicator again to the left, sorry you've come up in the menu. Right we'll go back to edit for now, press CR, just quickly if you want to see what's to the left, that's it so it's moved us down that way as well. So we'll do circuits exactly the same
(changes entries in C and D columns)
Copy formula
Before we centralise these we might as well work out the MEAN We can COPY this (formula) so come back out to the menu and we've got the instruction COPY, right so we want to copy, oh I've got to get this right, copy from area C10, that's what we want to COPY, that mean, so press the CR for that. And we want to COPY to base co-ordinates, we want to copy the whole of this column. I think that's it just to D10, press CR, we want all of those and we want the relative values
[mean appears in D11]
(CENTRE figures in columns C and D, patch up underlining which has been spoiled by widening columns)
Save
So we go back to the menu, we want to come out and save what we've done, so it's just Q,
(selects QUIT) [returns to spreadsheet main menu]
oh, press CR, I'm not sure I hope it's saved

Subject 2

Now what we have here, a spreadsheet is basically just this big square and what we have is a series of rows and columns and rows are numbered 1, 2, 3, 4, like, down and columns are lettered A, B, C. So right let's get in to start off with.
[empty spreadsheet]
Enter text
That's your basic spreadsheet. Now what we do is this pink highlight [cursor] there - we can move it around. If you use the [arrow keys] there, you see it moves round. If we put it in the space where we want to write something and then we put in the input, and it will come up here and then CARRIAGE RETURN and it will come up where the highlight is. Ok so if we start on the second line down
(moves cursor to A2)
If you type in names (instructs co-experimenter to enter text labels in A2-A6)
(once does not move cursor before next entry, overwrites previous one)
You just typed it in over the top because you didn't move the highlight down. If you move the highlight down it will always go in and if there's something underneath it it will obliterate it.
If you move the cursor to B1 -
(does)
Enter numbers as text
If we put the date on top there [as column heading] and then we can put the times down underneath. I don't know, call if the first of the twelfth, second of twelfth, we go three columns across, CARRIAGE RETURN.
(types "1-12-88", CR)
["-99" appears in B1]
(laughs) minus 99
toggle (thinks) Try F7.
[does not reason about why system has performed a calculation] - (does)
[warning beep]
[system doesn't allow to toggle entry now, would have to be done before entering; if he would make any edits first, toggle would work]
Tricky, what did we do? Try again, type it in again then try again.
(does)
["-99" again]
(thinks) Right so if you type in January, February, March ...
Enter numbers
(enters text labels in B1-D1, and numbers in B2-D6)
Right in column E there we could put their average time overall or go for their improvement from January to March. So if you go to E1, type in 'improvement'
(enters text label)
get the main MENU up, so if we go to ... F8 -
(does)

Insert row
(reads MENU) how do we do this? (thinks) right I'll be thinking about that, in the meantime - while I'm thinking about that - if we INSERT a line between row 1 and 2 so we move the rest of it down. We could put a line in underneath just to separate it out and make it look a bit smarter, so if we go to FORMAT.
[Format Width Attributes Filler_char Data_type]
(reads options) Mmmm. We don't want to go into FORMAT, go to UNDO, (reads MENU again) go INSERT, that's the one
(selects INSERT)
[Insert Row Column]
right we want to INSERT a ROW
[Insert row(s) starting at: 1]
we want to INSERT 1 ROW starting at 1, that's right,
[Insert how many rows/columns: 1]
and we want to INSERT 1 ROW.
[new row inserted above row 1]
There you go. So it has moved it all down one and now we can put another one in underneath to make it look a bit better.
[which is what he originally said he wanted to do, but choose the wrong insertion point]
So if we go to that again, INSERT a ROW,
[Insert row(s) starting at: 1]
starting at number 3
(types "3", CR)
and one
[new row inserted between rows 2 and 3]
there you go, wasn't too difficult.
(reads MENU) The only way I can think of doing it is go to A3 move the cursor along to A3,
(does)
get rid of the MENU, UNDO, F2, and if you go SHIFT [underscore], put in 11
(enters 11 "_")
that's it and then RETURN,
[line of "_" entered in A3]
that's it, now go into the MENU, so it's F8 again, you want COPY,
[Copy from area: A3]
COPY FROM AREA A3 that's right, just CR
[Copy to base coordinate: A3]
TO BASE CO-ORDINATE A3, colon, E3, ... just E3.
(enters "A3:E3", CR)
[line of "-" A3-E3]
So it looks nice and pretty.
[used COPY instead of FORMAT, FILLER_CHAR]
Formula
Now what we've got to do is work out this improvement, and I still haven't got a clue ...
The number of seconds? (thinks) Take away this one from that one (points)
Yes, we go A3 - there's a function for doing it we put B4 minus D4. B4 minus D4 then we COPY it into the other columns - (thinks) let's go for help, sounds pretty good.
(experimenter tells him that all he has to do is enter subtraction as a formula)
All right - If you move the cursor to E4 where we are going to put it in. So if we go B4 minus D4
(types "B4-D4")
Now we want to make that, we don't want it TEXT to appear up there - we want a NUMERICAL value to appear, so if we change it using F7 that should -
(toggles)
there we go we've got a NUMERICAL value, hit CR and cross your fingers -
[result appears in A4]
There we go - crikey it did it! (laughs)
Copy formula
So if we go back to the MENU now, F8. So if we go to COPY again - With our little spreadsheet it may have just been quicker to put it in but if you've got a huge spreadsheet, you know with lots and lots of numbers you can just do it once
(selects COPY)
[Copy from area: A4]
Yes we're going to COPY FROM AREA - E4, RETURN
[Copy to base coordinate:]
TO BASE CO-ORDINATE E8, RETURN

[Copy Values All]
We want to COPY ALL of it, not just the VALUES
[Copy Relative Absolute Prompted]
and we want it to be RELATIVE to each one, we don't want the ABSOLUTE COPY otherwise it would copy what E4 is so we want it RELATIVE to each row. So if you imagine if you've got a huge spreadsheet it would be much quicker and with me being a bit rusty as well ...
We can put the average for January, February, and March - Move the cursor along to A9 (instructs subject to enter another line of "_" using COPY, and enter text label in A10)
(moves cursor to B10)
OK if we go back to the MENU -
(can't find MEAN in MENU, experimenter tells him it's formula)
MEAN OK if you type in M-E-A-N and open brackets, we go is it B4 colon B8, close brackets, we want the NUMERICAL value we don't want TEXT so F7, CR
[result appears in B10] OK so the average for January is that
If you go into COPY now and we'll - (instructs to copy to C10-E10)
Save
SAVE this, so we can come back to it another day - We're going to QUIT/SAVE so we just go Q. We want ah (reads options) OPTIONS, OPERATING SYSTEM

Subject 3

Spreadsheets are rather like the microfilms in the library, you know you have large sheets with the lists on on very small pieces of paper and you can move it around the screen, it is actually bigger than the screen. You see a little bit of it and you can move it around because the whole thing is bigger than the screen.
[empty spreadsheet]
Enter text, enter numbers
The cursor on the screen, when you type anything in that is where it is going to come up and before you type anything you have to make sure the cursor's in the right place otherwise you might be typing over information you've already got by accident, that's the pink thing which moves around. (instructs co-experimenter to enter text labels in B2-F2 and A4-A9) Now we just make up some figures of what we've sold ... (instructs co-experimenter to enter numbers)
Oh, you've still got the CAPS LOCK on ... (moves cursor) apparently, it doesn't make any difference [with numbers]
Change attributes
(enters numbers in B4-D9) Can we get rid of these trailing numbers?
The decimals? Yes, you've got to change the FORMAT so the first thing to do is to get the MENU which is F8, we're changing the FORMAT so you want to put F for FORMAT, now we want to do - good grief ... the ATTRIBUTES, hit the A, the first one
(selects FORMAT, ATTRIBUTES)
[NUM [R 2 -] LCR1[????????]]
there are different kinds of aspects, I can't remember - if you press the SPACE BUTTON it moves it along to different kinds of aspects of it under the question mark. So push that once, that means you see, push it again, C that means it is going to be in the CENTRE of the column which is quite a good idea move it on to the next one
how do you move it?
move the cursor keys, (points) no go back one, push the SPACE BUTTON I think it's the right one, keep pushing, no it's not that one, move the space back again to the LEFT, push that one,
what are we looking for?
we're looking for a nought because it asks us whether we want it DECIMALISED
this seems to be F, C and blank
try that one. OK, ... that one, nought, is that ... yes, can't remember, push RETURN see what happens
[Format applies to area: F9]
oh right area that applies, this is better, we want it to apply to all these numbers so if you move it to the first one and start there then we can copy it across the rest of the numbers so put the cursor there on the first number
(moves cursor to B4)
and push RETURN and see if I've got it right, 'cos I can't remember ...
(CR)
[entry in B4 centred and no decimal places]
so now I want to COPY it to the other numbers, so select COPY from the menu which is C
[Copy from area: B4]
from area B4 then you push RETURN
[Copy to base coordinate: B4]

now it's asking you where to coordinates so do B4 again and if you do a SHIFT and colon that means that where you are copying it to which is, I can't remember if you do it like this but you can try putting it down to "Saturday" [row 9], press F9 [coordinate not function key], to do it all, press RETURN.
[Copy Values All:]
You want to do all of them so press A for ALL. Can't remember what VALUES ALL means -
[numerical entry "10" appears B5-F9]
[used COPY to "copy format of entries" - to change format of entries, instead of using FORMAT ATTRIBUTES, FORMAT APPLIES TO AREA]
Oh dear, never mind, we'll start that one again ...
can we get rid of that, what I just did now?
I'm not sure if you can get rid of what you just did, you must be able to,
[there is no UNDO function]
all the numbers have gone, never mind, we'll type all the numbers in again so we want to get rid of the MENU, then you press the UNDO button, right so now we've got to type in all the numbers again, leaving some spaces
Blank
How do we leave spaces [empty cells] now that we've got number in?
delete it
delete
push the DELETE button, will it work, no, um,
[could overwrite current entry with a blank one, or edit current entry]
get to the MENU, might have some delete thingies on it, F8, press DELETE which is D
(selects DELETE)
[Delete Row Column]
shall we delete all of it
no, we don't want to delete a row or column
no, we just want to delete the thingies in it -
(experimenter advises her to use BLANK)
we want BLANK, so I'm going to go back to the MENU in fact, F8 to bring the MENU back
(F8)
[warning beep]
oh - it didn't take any notice of that how do we get blank?
(experimenter tells her to use UNDO)
oh UNDO, F2 to get out of that, now we want BLANK which is B.
[Blank applies to area: C5]
May as well blank most of it.
shall we blank the middle bit?
Right so put a colon for where you want to blank it to and type in the number for where you want to blank, which one, E9.
(enters C5:E9)
[Verify blanking area: C5:C9]
[first time subject comes across having to confirm something in this application]
Now just push RETURN I think
[area blanked]
we've got to get out of the MENU which is F2 for undo. Now just type in some numbers.
(enters numbers, leaving some cells blank)
Change attributes
We need to go back to taking off the decimal points so push the MENU button to get the menu back, push the FORMAT button, because we're going to FORMAT, so that's F, we are going to do ATTRIBUTES, ENTER
[NUM [R 2 -] LCR1[????????]]
push the SPACE button un til the C come up so that's in the CENTRE
(selects CENTRE)
keep moving the thing, stop and change that to 0 now RETURN
(sets decimal points to 0)
[Format applies to area: D9]
if we move it back to where we want it to apply to, same place we blanked C5 to E8, RETURN now we want to - oh, it's done it already, that's rather nice ...
[seems she thought she would have to COPY again, does not seem to understand that you can change format for a range]
[all entries centred and without decimal points]
Formula
now we want to try and find out how many, what the average number sold per day is

You move the cursor to where you want to do the sum so we want to do it under Saturday to work out what was sold today so if you move it down -

(moves cursor to A12)

write in MEAN, RETURN

(does)

["mean" in A11]

that didn't work ... - oh I know, sorry you're going to have to redo it because you are dealing with NUMBERS as well as TEXT you have to push this so it takes this into account because at the moment it is just understanding words and it can't deal with numbers at the same time so push F7

(does)

[warning beep]

oh dear! you get rid of MEAN, write mean again don't push RETURN push F7

(does)

[indicator changes to NUM]

I hope this is going to work, now push RETURN

(does)

[Bad coordinate] [did not enter any coordinates, which is the problem]

How to come out of it try pressing DO I don't know is it, try UNDO

you haven't told it what we want the MEAN of ...

oh we haven't have we

(experimenter tells her she has to enter coordinates after MEAN)

Is that before you push F7? ok, afterwards - So we're talking about this column here so it's sort of B4 to B9 so if you type that in, the TO you write with a colon, you are going to move the cursor to - hang on .. Let's try it there B4 with a colon which means to, B9, RETURN,

(enters "meanb4:b9", RETURN)

[Bad coordinate]

[brackets missing]

no that's not going to work either, brackets, OK, where has the cursor gone, press RETURN to get rid of ... if you move the cursor back you type in a bracket, overwrite, ... other bracket and RETURN.

[result appears in A11]

Copy formula

I've put it in the wrong, because I've told you to put the cursor in the wrong box, but that is the formula you want, now you want to COPY it across the various columns, so you want the MENU, so you can get the COPY command, F8, COPY again, so it is either moving the cursor or pressing the C

(selects COPY)

[Copy from area: A11]

COPY FROM AREA A11, that is right, so RETURN,

[Copy to base coordinate: A11]

COPY TO BASE COORDINATE so you want to move it along to F11

(enters A11-F11, RETURN)

[Copy Values All]

RETURN, VALUES, we did it ALL last time which means the same number I think

[value "10" in A11-F11]

no wrong one again ... [ALL would have been right - last time she was copying a number, not a formula - but since the numbers are displayed, she thinks she made the same mistake]

let's go back again to COPY A11 again to F11, RETURN, try ALL,

[doesn't change]

not much use either ...

[because in the last attempt, she overwrote formula with number 10]

Save

Do you want to SAVE it, choose the QUIT and SAVE direction from the MENU which is, just push the Q, and now you want to push that, I'm not quite sure why but MODEL SELECTION and now you want to get into the OPTIONS so you can choose to get out of the thing so push O, now you have to get back into the OPERATING SYSTEM which is O again

[remembers procedures, but not where to apply them; when operations go wrong, she starts changing procedures]

Subject 4

The spreadsheet allows us to program information into the computer and it will be displayed on the screen, allow us to manipulate the data, move it about, so that just like writing an essay or whatever on paper, but it's in the computer you can put the words into the computer and move them about. Format a table or a chart or something.

[empty spreadsheet]

Enter text, enter numbers

This is the spreadsheet, it consists of rows and columns, and so you just create your own table or whatever to, so you've got the columns and rows if you want to create a table to show a certain thing you can just program it in, and it comes out. If we move the cursor down a couple of spaces -

(moves cursor to A3)

and type in "Monday" and press RETURN

(does)

Now that's come up there - whatever you type in is going to come up where the cursor is so if you type in "Tuesday" now, remember to move the cursor down one (instructs co-experimenter to enter text labels in A3-A6 and B2-E2)

Now we've got the figures for how much stock we've sold each day - (instructs co-experimenter to move cursor to B3, type "50" and RETURN)

[entry 50.00 in B3]

Now that's come up there [numerical entry in B3] and we don't have to worry about being offset in the column here because we can format it later, so if we then move down here

has that added two noughts?

That's just in case, it assumes that you want decimal places, but after we've gone through it we can format it and knock off the two noughts. Right then if we go down "Tuesday" and say twenty five pounds -

(enters numbers in B4-E8)

Insert row

Right now we've got everything in, but it looks untidy so if we tidy up the table, the spreadsheet and it just looks nicer and it's easier to read and everything. First we could leave a space in between the title of the column and the first figures, I think it would be useful because it runs in a bit there [between rows 2 and 3] so if we insert a space between the title and where the figures start it would be better. I can't remember So if you move the cursor to where you want the space which would be on A2

(moves cursor to A2)

no down one

(moves cursor to A3)

and then (thinks) perhaps we don't want a space ... press F8, these function keys here get us the MENU up so if you press F8, and we've got the MENU here and each option will do a different thing to the spreadsheet To put a space in we (reads MENU) if we choose the INSERT option, so we can either move the cursor and press RETURN or press I which will select that as well.

[Insert Row Column]

Right - then we want to INSERT either a ROW or a COLUMN. We want a ROW there so we then get a blank, so if we press ROW and RETURN.

[Insert row(s) starting at: 3]

(hesitates) So now is says where do you want the row starting from. It's got it starting at 3 so press RETURN.

[How many rows/columns: 1]

How many rows and columns, well it's already got 1 in there so that's ok just press RETURN.

[new row inserted between 2 and 3]

Change attributes

Next thing I think would be to put the figures in the centre of the column just to make it easier to understand, so for that choose a different command (reads MENU) so we want FORMAT - which is the way that everything is set out on the screen. So it's the way the actual data is, so either move the cursor or press F.

[Format Width Attributes Filler_char Data_type]

To put the figures in the CENTRE we need to select ATTRIBUTES command, so, yes, press RETURN.

[NUM [R 2 -] LCR1[????????]]

Now these funny things down here tell us different commands that we can actually do. (points to first "?") That stands for LEFT CENTRE and RIGHT so we want the CENTRE and each one of these question marks gives us a different command. So if we move the cursor to the 3rd question mark along. Each one is a different command but we only need the CENTRE one so -

(moves cursor along "?"s, returns to first "?")

Right if we press the SPACEBAR and again, CENTRE, that's right, right underneath the cursor we've got a C which stands for CENTRE, so we've chosen that, so if you press RETURN.

[Format applies to area: A3]

(hesitates) Right if we put a command in we should have the cursor in the right position and we've got it in the wrong position at the moment so if we delete that A3 and then move the cursor along to B4, right, press RETURN

(does)

[entry in B4 centred]

right then it's put the figures for B4 in the centre so now we can either do that all the way down or we can copy the - no we can't .. so we select the FORMAT again to put the figures in the CENTRE, so RETURN again, ATTRIBUTES, press SPACE BAR twice, that's CENTRE, now press RETURN,
[Format applies to area: B4] now format what area B4, by pressing RETURN now it just does B4 which you've already done, if we want to do the whole column, if we press colon, right and now we move the cursor down with the arrow key to the end of the column, right now press RETURN
(does)
[entries B4-B7 centred]
and that's told it to put the thing in the centre of B7, so if we move the cursor along to the second column.
(repeats for column C, D and E)
(instructs co-experimenter to centre text entries in B2-E2 in one go)
[seems to assume that range can only be defined for one row or column at a time]

Formula

We can use the computer to calculate things from the data, perhaps what the average amount of cereal you're selling in the first half of the week or whatever. so, if we perhaps want, say, the average takings on Monday, so could be used for the average for each day ..
could you add them all up so you could see how much you took ?
Right if we do how much money we've taken each day, so if we get rid of the MENU, press F2, now to calculate something you have to put in an equation so if we, when you put the equation in, you put an equation in, say, to work out the average or addition of the lot, the answer will be displayed where the cursor is, so first we should put the cursor where we want the answer to appear which would be
(moves cursor to F4)
.. yeah. And we want those added up - (thinks) so if we put total - we have to pick an equation which will actually perform it for us. Umm, if we type in "total" -
(is not sure - experimenter tells him its SUM)
SUM, right, so if we type in SUM, then press SPACE BAR and then we want it added up from B4 through to E4, so type in, sorry capital B delete [doesn't matter whether it's capitals or not]
B4, colon, E4.
(enters "sumB4:E4")
Now if we put that in now because we're in TEXT mode it will actually come up where the cursor is whereas usually we type in data and it comes up
so -
so if we did it now it would actually come up because we've not told the computer it hasn't got to go in. Usually if we want anything typed in, in there, press RETURN and it will go in
so it will actually print that?
It would actually print that so if we want to distinguish that we want the calculation instead of just it thinks we want that written in so if we press F7
(does)
now it's got NUMERICAL command which means that you are calculating something from the data and it won't actually print it up there, it will work it out for you, so in NUMERICAL then press RETURN.
[Bad coordinate]
It doesn't like that one - ah if we press F2 again to UNDO
[warning beep]
try F2 again, right if we delete the B4 colon E4 and now move the cursor with the arrow key and move it along to B4 -
(can't see what's wrong with the formula - experimenter tells him it's brackets)
yes sorry we need brackets as well, so if you move the cursor back to F4, press open bracket B4, colon, E4, close bracket,
(enters "sum (B4:E4)")
now press, no sorry, we have to toggle it again, just press RETURN
[Bad coordinate]
Unfortunately we've put a space there which we shouldn't have done so press F2 again, right and again, now delete the brackets, if we delete that, then open bracket, B4, colon, F4, right then press RETURN.
[result appears in F4]

Copy formula

Right now it has summed that lot. Now do the same for each row so if we just calculate the sum of each row but instead of going through and actually putting that formula in for each one, I know it's not much at the moment but if you had hundreds of rows it would take too long, you can actually COPY that formula throughout the whole rows, so select the MENU again, F8 and the COPY command, press C.
[Copy from area: F4]
Right now it says COPY FROM AREA F4, so at the moment that equation is in section F4, so it asks if you want to COPY that equation, so we say yes, press RETURN.
[Copy to base coordinate: F4]

Now copy to base coordinate. It says where do you want that copied to, so we want it to the end so we press colon which is to and then move the cursor down to the last column and then press RETURN.
[target coordinate overlaps base coordinate]
[Copy Values All]
Now it says, we press ALL, we want that displayed in every, in all of them, so press RETURN
[Copy Relative Absolute Prompted]
and then RELATIVE, press RETURN again
so it hasn't just copied ...
it's totalled them for all, and adjusted ... then, put a heading for that row [column F] perhaps we call that "turnover"
(does)
and if we CENTRE that [entry F4 - doesn't CENTRE rest of column 4]
Save
If we want to SAVE it if you press Q which is QUIT/SAVE then the easiest way, if you press O for options

Subject 5

[empty spreadsheet]
Enter text
We can move the cursor around (demonstrates using arrow keys) and if we want to put anything in it appears first in the input box (points) what we type in there is going to appear where the cursor is. So perhaps if we have say five people, five subjects first, put them in, any names
(enters names in A4:A8)
Enter numbers as text
If we have them running different distances, perhaps if we do 100, 200, 400 say, so if you label the columns, start with 100, metres.
(moves cursor to B3, enters text label "100 metres")
Then RETURN.
(does)
[Bad coordinate]
It is not going to fit in is it. I don't know what has happened but F2 is UNDO
[warning beep; edit <left> <right> <insert> <delete>]
oh right it is not going to take 100 metres so just put 100 m say, change that
[thinks it's length that is the problem]
what do I do now?
EDIT - yes just press RETURN
(does)
[bad coordinate]
[nothing changed] - (UNDO)
[warning beep]
yes, right DELETE, so pick DELETE
How?
Just move the cursor along
(tries, nothing happens)
I don't understand ... and then, press CR, what happened last time we did that?
press CR and ...
so we want to DELETE the S really [of "metres"] don't we. Try it. 'Press do or undo to continue'. What to do is move that, try ... (presses CR)
[bad coordinate]
(UNDO)
[warning beep]
maybe we should just delete that (uses BACK SPACE to delete "metres")
yes, of course, BACK SPACE, if we just put an m in there, that's what we want.
(does, CR)
[bad coordinate]
Why won't it go in?
I think it's because of the "m", it wants a number, just a number
Do you think that's right? If we change it by F7 to text, will it take it m then, or will it confuse it, F7,
(presses F7)
[warning beep]
no it doesn't want to play does it?
(presses UNDO)
["bad coordinate" disappears]
(presses F7 again)
[NUM toggled to TXT]

(CR)
["1oom" appears in A3]
Enter numbers
If we want to do it, ok and then RETURN, so yes if we want to do it, we have to put it in as text, we use F7 (instructs to enter text labels in C3 and D3, and numbers for times in B3-8, C3-8 and D3-8)
Now, if we want to work out the average, it's going to have to be 400 metres, so if we move the box, the cursor, to where we want the result to go in, well we could type in average couldn't we, we could name it in this column here. Or just put MEAN, it will fit in.
(enters text label in A9)
Formula
OK, move the cursor to where we want the MEAN to be put in,
(moves cursor to B9)
and what we want to do is to tell it to work out the MEAN don't we. So the instruction is MEAN so if we just type in MEAN then open brackets and we want to tell it to work out the mean from one figure to the next so if we give it a starting co-ordinate which is B4 and then colon and then down to B8, close brackets, and we want to count numbers not text, so we want to change that with the F7 button, RETURN, did it.
[mean appears in B9]
Copy formula
Now we could do that all again for the next one without doing the same thing so if we find the MENU, F8 and we want to COPY so search again to find COPY and then, if you just type c in there it will be quicker,
(selects COPY from MENU)
[Copy from area:] right we want to COPY what's been done in a previous box so you want to COPY what was done in B9 so from B9 and then RETURN
[Copy to BASE COORDINATE]
and we want the BASE CO-ORDINATE which is where we're at now, so C9 is correct, so now you want a colon and where we want it to go to, so if you move the cursor along to where you want it to be, no, it wants to be copied from the base co-ordinate C4, so we want to work out from C4 to C9 again, so, yeah and then RETURN,
is that right
yeah go on RETURN. We want to COPY, ALL, then RELATIVE,
[?n? displayed in C4:C8]
why has it done that? [gave C4:C9 as target coordinate, instead of C9] I don't know why it's done that. We have to put some numbers back in.
(types numbers back into C4:C8)
I don't know whether we can still COPY now what we did before or whether we have to go through the whole process again.
Shall we try?
Try to COPY. Get the MENU. COPY again.
[Copy from area:]
try again, and it was C4 to ... where? (enters C4:C9)
C9? Did it ask you for a BASE CO-ORDINATE?
C4 to C9 is what we did before and it went wrong didn't it?
Yes, from now it is calculating, so we want to be in that mode don't we. Try RETURN again? Shall we try it?
I don't know, that's precisely what we did last time. What might have been wrong with it?
Oh, yeah, right we want it just to go from C4 to C8, last time we asked it to count C9 and there wasn't a value in C9 so that is what it got confused about, ... to C8, [accurate diagnosis] and now try RETURN.
[Copy to base coordinate:]
Right, COPY to BASE CO-ORDINATE. No this is going totally wrong
[accurate diagnosis] - shall I UNDO?
Yes, UNDO if it will let us. I think we should have another go. Right FROM AREA, We want to COPY the MEAN, so we want to copy what the MEAN was, B9 to , from C4 to C8, [same mistake again] RETURN, we did all last time, RELATIVE, no ... Stupid thing!
(replaces numbers)
MENU again, so COPY
(selects COPY from MENU)
[Copy from area:]
COPY FROM AREA, it must be B9, I'm sure, RETURN yeah. COPY TO BASE CO-ORDINATE which is C4, we put in last time, which it didn't like did it. I think, C4 ... last time we told it to ... so surely this time it should go from ...
so what do I type?
C4 to C8
(Experimenter intervenes and points out mistake)

COPY it to, right I see, we want to, C9 we want, which is COPY TO BASE CO-ORDINATE
[mean appears in C9]
it did it!
Save
Right and then we're going to QUIT and SAVE are we, so we're on the MENU now so pick QUIT and SAVE, RETURN, mmm I think OPTIONS, I think that saved it. (not sure)

Subject 6

[empty spreadsheet]
We could put the names of drinks down here [column A] and then across how many bottles we've sold for each day ...
If you tab down a couple of spaces we can leave room for a title later on if you tab down to 5
(moves cursor to A5)
Enter text, enter numbers
If you type in now, it will enter here (points to input line) it will only come up on the screen once you've pressed RETURN so if you make a mistake you can delete and you can type it again, so if you type, say, "whisky"
(does)
and then just a CARRIAGE RETURN
(does)
["whisky appears in A5]
and then say if you then tab down and enter more otherwise you'll delete what you've just done, tab down one more and then we'll just do,... and then CARRIAGE RETURN again and then if you tab down again and enter more (instructs to enter text labels in A5 to A9, numbers for bottles sold in B5 to B9)
Change width
What you want to do is FORMAT it because we want to widen the column so you could press, to save time press F, and that will automatically select whichever one begins with that letter,
(selects FORMAT)
what you need to alter is WIDTH and its on that so RETURN.
(selects WIDTH)
[Set width of the column to:]
It's currently set on 12 we want it to be slight narrower I should think ... no point in a whole wide column being used so we could narrow it down to 8, say, so give it 8 then a CARRIAGE RETURN
(does)
[set how many columns to this width?]
just the one column,
(enters 1)
so that's now done it and if you press F2 that will then remove the MENU, so any time to call it up is F8 then to get rid of it F2.
You can go up here [B2] and enter a title for the column
(enters text label B2-B4)
We want to divide each column so it's clear, so there's a separation there, so what we need to do to do that is put some sort of FILLER CHARACTER down in between the two columns, to do that we need to enter another column between A and B and then reduce it to the WIDTH, to one, to one letter and then we can enter in a FILLER CHARACTER, lets say, the two dots, the colon, so if you call up the MENU again then FORMAT, now we want the FILLER_CHAR,
(selects)
[Set filler to:]
now we have to decide what we're going to use as the FILLER CHARACTER so we use, right, then -
Insert column
oh we didn't put the column in did we?
A good example now of how to use the UNDO. If you do something like I've just done and you get to the wrong thing and if you press F2 that will then get you back to the MENU again.
(does)
Now what we need to do is call up FORMAT again, so CARRIAGE RETURN, so whatever stage you are then at, if you make a mistake you can get out of it by just UNDO.
What we want to do is INSERT so F2 again and then, press the letter I, it will save time, we want to INSERT a COLUMN this time so ... then CARRIAGE RETURN. It inserts columns always to the left of the one the cursor is over so that is where we want it so that is Ok so if you, just the one column, so if you CARRIAGE RETURN again
(does)
[new column inserted between columns A and B]

Change width

You see it's already, that's it, and now we want to FORMAT it so if you press F and WIDTH is what we want to do so if you set it to 1, RETURN, and just one column

(does)

[column B set to width 1]

So that's ok, now we'll use it like that. Now the easiest way actually, the way I've done it, if you just get rid of the menu, UNDO F2 and if you tab up to B1

(does)

Filler character

for the FILLER CHARACTER use the colon so if you press just one, just enter one and then RETURN,

Now if you now call up the MENU again F8 and COPY. We want to COPY from area B1 and CARRIAGE RETURN, COPY TO the next CO-ORDINATE, now if you take it down 1 to B2 because we want to copy it from B2 down to B8 so if you type in colon

Why?

because that is the area you are copying it to, the colon is for B2 to ... now you can either type in B8 or you can tab down to where you want, stop, now press CARRIAGE RETURN it will

[":" copied to B2 to B8]

[copies character instead of using FILLER CHARACTER, even though he selected it earlier]

Change Attributes

If we now, divide across now, we can now divide across or we can move on or leave that to the end ... it will save time otherwise we'll be doing that every time you're entering. If we now, we've got these extra figures on the decimal points because it's not going to be 6 point something bottles so if you'd like to call up FORMAT again

(does)

and to do this we need ATTRIBUTES and that will hopefully do it

(selects ATTRIBUTES)

[TXT [2] LCR1[???????]]

Now this key here (points to input line) the left hand side one is, determines where within the column the figure will be so at the moment it is on the left hand side and we want it to move across so if you press the SPACE BAR you'll see it comes up LEFT, moves it to the LEFT, CENTER, RIGHT

(toggles with SPACE BAR, RETURN)

[Format applies to area:]

(tries to position cursor)

[warning beep]

Ah - we'll have to (presses UNDO) that will do it properly now move the cursor again, FORMAT, ATTRIBUTES (returns to attribute selection)

now that shows you it being on the RIGHT hand side of the column which is where it is at the moment we would like it to be in the CENTER so if you tab on the SPACE BAR, press the SPACE BAR and it will say where it will be if you change it If we then move it using the arrow keys - if you keep moving it across the figure above the question marks if exactly what figure we've got so at the moment it's on the right hand side of the box, it's got 2 decimal points, the thing at the left hand side here explains what you'd actually want to ... so if you move it along one more it gives a choice of how many decimal points you can have it's up to nine - we ideally want it at nought decimal points, so no you're ... using the SPACE BAR again, the first one should be nought that's all we want at the moment so if you RETURN

(toggles "?" to "0", CR)

[Format applies to area:]

it shows C5, we want if from C5 to C8 because our concern here, so if you enter that and then, and then RETURN

(does)

[column C reformatted] so now you've got rid of all the decimal points and it's all centred.

(instructs to enter prices in column D)

If we now calculate the number, the amount we make per week ...

We want to be able to multiply the numbers by the price ...

Formula, Toggle display

I can't remember exactly how we did it, yes if you call up the MENU, you need WINDOW, just press W, and VIEW, V, EQUATIONS is what we need, so RETURN, right and then you can just UNDO, get rid of the menu

I can't remember, I'm trying to remember which way round it is, it's just the SUM, SUM is what we want

(experimenter intervenes and tells him to enter formula to multiply)

Well if you tab up to the top one [E5] and enter in, because that is where we want the actual answer to come, if you see what I mean, and if you then type in what you want here, C5 and star D5, now at the moment it is entered in as TEXT because the first thing you did was a letter, not a NUMBER so you have to toggle it by pressing F7 and make it NUMERICAL, well make it a calculator and then RETURN

[formula displayed in E5]
That's exactly what happened last time when I did it ... if you now have to press WINDOW, VIEW and EQUATION.
[result of multiplication now displayed in E5]
That's what happened last time I did it. It does the calculation for you. What we now want to do is rather than go to something and, well it wouldn't take long with this one but if it was a large spreadsheet it would take ages is now to COPY that instruction so we need to call up the actual formula otherwise what we'll have is just 42 in each box, so if you, whenever you've got an equation, the result of an equation you then go through the WINDOW, VIEW, EQUATION, it will put on the screen what the actual formula was
[formula displayed in E5 again]
[wrong - it would copy the formula, not the result]
Copy formula
so if you do that then we can COPY that for C6, C7, C8. Right now if you'd like to select COPY initially, from area E5, if you press CARRIAGE RETURN and then tab down one and to E8, RETURN, COPY, ALL, that's it, RELATIVE
What's the difference?
don't know to tell the truth.
[formula copied to E6 to E8]
Now if you now press WINDOW, and then VIEW, and EQUATIONS it should
[results displayed in E5 to E8]
Save
To SAVE what we've just done you have to select QUIT and SAVE we now want OPTIONS because that gives the choice of saving WITH or WITHOUT SAVING
[OA menu displayed] [WITH SAVING or WITHOUT SAVING only when model has been saved at least once]

Subject 7

[empty spreadsheet]
Right this is the basis for our spreadsheet. You can work in rows and columns and by moving cursors we should be able to move this indicator around, so if you just try that out.
(moves cursor about)
Now you have to decide on the sort of information that we are trying to present, for example, the suggestion was a sweet shop. For a sweet shop we could have - for different columns, name of sweet ... if we shift this [cursor] down, to leave some space, so we can put a title in later ...
Enter text
Type in name of a sweet it will appear here [input line] and then we transfer it up to here [cursor position A4] when we are sure it is correct
(types in "names", CR)
[text label appears in A4]
now you have to move it [cursor] down before entering the next one (instructs co-experimenter to enter text labels A4-D4)
now this is the basis for what we are going to do so if we return to the first column and how you return is by using these keys [arrow keys] here. And perhaps to clarify the titles away from the data you're going to put in we move down one to leave a space. So now we need some products. (instructs co-experimenter to enter text labels in A6-A9)
Enter numbers
And now we have to create some data, say cost price, roughly the value you'd expect less say 3 pence (instructs co-experimenter to enter figure in B6)
Now what you'll notice is that if you start putting an input in with one of the numbers you may not have spotted it but this little indicator here [above input line] switched from txt which stands for TEXT to number, NUMERICAL sorry. I'll explain a little more about that later but it is worth observing that... yes switched into another mode so if you just carry on putting in prices (instructs co-experimenter to enter numbers in B6-C9)
Formula
Now what we could do here is if we wanted to work out profit margin [text label of column D] mmm, I'm just trying to work out how it's done. See, there is a method whereby you can get the _computer_ to work out how much the profit margin is. By subtracting the values in this column from the values in that column. Now I'm not sure, I'm trying to think how it's done, I'll think about it. Maybe we can try some later on. For now we'll just work it out in our heads (works out difference between C6 and B6, instructs subject to enter result in D6)
[subject has clearly stated that he knows he should use a formula, but doesn't seem to make a great effort to remember/work out how to do it]
(instructs subject to enter other results in D7-D9)

Now we've got our database, as it were, we can actually start to play around with it. Before we start to manipulate what we've got here it would be good if you saw the MENU of options you've got, so F8 MENU, present you with all the options.
Now I don't understand every single one of the options, but I understand most of them so if you were to go for, ... what I'm really interested in doing is calculating the MEAN of these prices so we know the average price of the products in the shop. I think to do that we start off by using, let me think, WINDOW, so if you want to just move the cursor, as you are doing now, or the other option is to, each one of these options has a different, they're in alphabetical order so if you really want to be quick you merely look at the option that you are after and press the first letter - and it takes you straight there.

(selects WINDOW) [Window Split Unsplit Connect Titles Edge View]

Now what are we after, we might be getting ourselves in a bit of a mess. Ah yes I have - Consider that little bit we've just done as an exercise in going to a different option, now if we return back to the spreadsheet I think I can remember how you manipulate data just on the screen.
[WINDOW and VIEW to toggle formula/results display]
So you want to get back, press UNDO and that will take you back to where we were before, and you want one step further so another UNDO.
This is something that is particularly unfriendly about this system, if you're in the MENU and you want to start manipulating data by moving this cursor around, you can't, you have to press UNDO, which is something to bear in mind - that the UNDO key is always there.
How is it done ... oh yes, as I was saying earlier this indicator here [just above input line] transfers itself between NUMBER and TXT, for instance if I press U it will stay TXT but if I were to delete that and press 6 it will change to number. (demonstrates) Now the key that we use to switch between the two if we want to tell the computer, if we want to command the computer to change I think is F7, (presses F7)
[warning beep]
[correct key, but cannot toggle without anything on input line]
no it isn't ... it is one of these keys, a toggle key (tries F3)

Llet's see if I put something in and then try. (types in a letter, presses F7)

[indicator switched from TXT to NUM]
Ah yes, you need something.

(presses CR) Oh dear - I've just inputted it.

Ah if you accidentally put something in to a box [cell] and you don't want it there, what you can do to reverse that is keep the cursor there and then simply blank it out using SPACE BAR and RETURN and now you can re-insert what we had before.
[could simply overwrite incorrect entry by entering correct one]
Now what I'm going to do is to show you how to use a formula and these formulas are mathematical and they can be used to manipulate the columns. The one I'm going to try and do is to get the mean of the cost price. So what I'm going to do first is to move the cursor to there [A11] which is where I want the data [result] to go in. Now what I want you to do is to type the word MEAN M-E-A-N. OK. Space. Now what we're asking it to do is to make a mean of a list of figures. Now in order to tell the computer which figures you want you have to list them. You don't have to list every single one you merely list the co-ordinates at which the list starts and stops, which in this case is B6 and B9 so in order to do this if you just type in B6, now the notation that you have to use in order to tell the computer that it's a list you've got here is colon, so if you find the colon function, then the final co-ordinate which in this case is B9.

(types "mean b6:b9" as instructed)

Now what the computer is obviously thinking is that we're trying to insert text into the spreadsheet. Now clearly that isn't true, we're trying to introduce a formula and the way that you can tell the computer that it's a formula and not text is by toggling using F7

(toggles)

so now it is a numerical thing. So if you press RETURN, with any luck you'll get,
[Bad coordinate]
oh dear mm it says it's a bad co-ordinate ... B6 to Obviously we're going to have to press UNDO, we've got no choice. Try UNDO again, that's better. I'm trying to think what's going wrong .. (looks at formula again) Mean, B6, B9 - I'm not sure what's wrong here.

mean .. do we need to put it in brackets?

I'm trying to remember - I'm pretty sure there's no brackets involved ... - ok let's try brackets.

(enters formula with brackets, toggles, CR)

OK let's try again ...
[result displayed in A11]

Copy formula

Now what you've obviously got here is the mean of these, ok, so now what we can do is COPY this formula and make it apply to this column and this column [C and D] Now the way to do this is rather than do each one in turn which is a possible option if you want to. What we can instead do is to go to the MENU and use the COPY option.

C (selects)
[Copy from area: B11]
Now once again, it's a little while since I did this and I'm trying to remember what happened. Copy from B11, yes.
Is that - B11 - that's where we are now? (moves cursor about, indicator changes correspondingly)
That's correct, yes. You can actually change the position ... I think the way it works is that you merely press RETURN
[Copy to base coordinate: B11]
oh dear ... now here we have to indicate that you are trying to COPY what happens in this. yes, that's all right, we've done it correctly. Now what, here we have to once again delineate - yes that's fine, what we want to do here is, once again, inform it of, once again delineate the list, I think what happens is, mmm... I think what we do is
[warning beep]
no we don't list the co-ordinates we're trying to find the mean of in this case. You can see it's going ahead. (enters "D5:d9 as target coordinates, CR)
[Copy Values All]
I'm not sure if it's going to turn out how we want it, but basically now it's asking us two options here. I don't understand what they are but basically for the task we want to do we don't merely want VALUES we want them ALL, for some reason. (CR)
[Copy Relative Absolute Prompted]
RELATIVE in this case. I don't understand all of these options but when I was being instructed how to use this in this situation we were just told to proceed, I think it was yes we had to use RELATIVE. I'm not a very good teacher in this case because I don't understand.
[list of ?n? displayed in D5-d9]
Ah yes, we seem to have made an absolute boo boo. Mm this is experimenting. If we try again, yes and this time
selects COPY
[Copy from area: B11]
is that copy from area B11?
I'm trying to think whether the error is at this stage or the next stage ...
(experimenter tells him it is at next stage)
So the error is at the next stage. OK so if we just continue past this and find out what we did wrong. (presses CR)
Yes I think I've remembered what we did wrong. Instead of re-defining the list what it's asking is how far do you want to extend this copying process, in which case since we've now lost our numbers if we just extend it from here to here. So it's C11, colon, and if you move back this way, no it should be from B11 if you delete and try again, then move the cursor back to there, to C11
(enters target coordinates B11:C11, CR)
Yes we want ALL, RELATIVE
[result displayed in C11]
Formula
And there we are. Now if I hadn't made that initial cock-up I could've proceeded across [D column] and also calculated the profit margin
could we work out the profit margin [in D6-D9] like you've done here with a formula?
Yes, you can but the actual notation of it? I might need help on as to what the formula actually is
Do we just use a maths option? Minus, isn't it?
Yes, we seem to have the relevant keys ...
I would imagine what you would, perhaps one way of doing it, and since this seems to be our experiment column, we'll either have to enter them all again or play around. Yes and then move yourself up [to D6].
Now I'm trying to think whether you'd have to clear the n [?n?] away first, if I can just try this. I think what you would have to do is we would have to enter obviously as you said another formula which in this case would presumably be B6 minus - sorry C6 minus B6, if you try that, see what happens.
(enters "C6-B6")
I'm not sure, 'cos I've never done this. Ok, now thinking of it as a text entry, obviously you want to toggle that away and let's see what happens.
(toggles, CR)
Come on - work!
[result displayed in D6]
Copy formula
Yes it worked. Now presumably we could COPY this formula vertically, just as we did the last one horizontally. So if you RETURN to the MENU and move to the COPY option. Yes we want to COPY from area D6 to basically the whole of this. It would presumably be D6, colon, to D9. Let's try that, ALL, RELATIVE. OK. Excellent.

[formula copied to D7 - D9]
(instructs co-experimenter to enter text labels)
Filler character
Now that you've seen some of the basics of what you can do in terms of data manipulation it might be a good idea if I just briefly show you how we can improve the presentation of what we've got, because if we were to say print this out to present it to a shop manager it might be nice if we could insert a few lines to make it clearer. Now if you return to the MENU I'll show you the option we can use. If you go to FORMAT
(selects FORMAT)
[Format Width Attributes Filler_char Data_type]
Then it should present you with some OPTIONS you can use to change the FORMAT. First is the WIDTH. Now you can use that to alter the WIDTH of COLUMNS or ROWS. I won't show you that one now, what I want to show you is the FILLER CHARACTER, so if you shift across. That's the one.
(selects FILLER_CHAR)
[Set filler to:]
Now what I'm asking it to do is fill an area with one character in order to try and form a line. Now there are several characters that work better in this case so we set it to,
What are we trying to fill here anyway?
What I was thinking of was if we could insert a line across row 5. Now we might have made an error already because we might have to have the cursor in the right place you proceed. [current cursor position is A11] So if we can actually backtrack, so if you come out of what we tried to do
(presses UNDO)
and again it will take you back to the spreadsheet, if you shift it to, that's right, move it up to 5.
(moves cursor to A5, MENU, FORMAT, FILLER_CHAR)
[Set filler to:]
Now the character we can set it to, to do a vertical line, how about this one [-] should produce a line.
(types in "-")
[Format applies to area: A5]
Now it is asking what area do we want to apply this to, now in this case, A5 to wherever, D5.
(enters, CR)
[line of "-" appears A5 - D5]
Right there it goes. Now we have a line.
Save
Right, if you want to SAVE the option you move to is QUIT/SAVE which you can get to quickly by using Q,
(selects QUIT/SAVE)
[Quit and Save: Options Context Save_Backup Save_New_Model]
Now what do we want, we want to SAVE to a model
(selects)
[Save to what model:]
It wants a name ...
We've already got a name
Maybe I'm wrong, try to move back and go to QUIT/SAVE (presses UNDO)
[spreadsheet and menu]
that's not consistent - it didn't take us back to the last one [stage]
[it very often does not]
No you're right. (selects QUIT/SAVE again)
[Quit and Save: Options Context Save_Backup Save_New_Model]
I don't know how you do this. How embarrassing. I'm sure it is SAVE_NEW_MODEL, it seems the logical thing to do ...
unless it means save it as a new model, not save this as the old one
I think out of desperation we should save it as a new model as I can't remember what we're supposed to be doing
(does)
Mmm options good

Subject 8

[empty spreadsheet]
Let's do theatre tickets You put right down here (points to A column) the days of the week - that [points to highlighted cell] is is cursor you use these keys to bring that down you can move sideways if you want
Enter text
we can type in a heading if you want
(types "Theatre tickets for George Michael")
and just press RETURN or no - let's try it (seems insecure, but presses CR, text entered)
Maybe if that [heading] was in the middle it would look nicer, so wipe that off and try again, DELETE.

Delete row
Call the MENU up (presses F8) and DELETE a whole line. You don't want to blank a word or whatever you want to DELETE a whole line so it is DELETE. (selects DELETE from MENU) There and accept that, and it is a ROW, not a COLUMN. So RETURN.
[Delete how many rows?]
1?
Yes, just one, and RETURN. And it is just 1 row so choose 1.
[row 1 deleted]
I think it would be nice if we had it in the middle (moves cursor to C column, types title in again)
[could have moved the heading by inserting 2 columns to the left of A]
We can start with the days now (moves cursor to A4)
(enters days in A4 to A9)
right across there, we can put the prices put "Performances" there [A3]
(does)
Blank
Actually we could DELETE that, BLANK it, if you want to get rid of one word, use BLANK (selects BLANK from MENU)
what does BLANK do then?
Well, I want to get rid of "Performances" because I want to put a colon there, but I'm not sure if I put colon again it will get rid of that so I'm just going to BLANK that word, so I'm going to BLANK the word and put it back in again and say colon
So it says area A3 and that's A3, so it's what we want, so that's got rid of that so we can go back by pressing UNDO and type Performances again, if you would, colon ...
[wants to add colon quickest way would be to edit the entry]
(enter text labels in row 3)
Do you think that looks a bit squashed? You can always create a space, instead of having to DELETE that to create a space, so go back to the other MENU (does, reads entries on menu) and for space ...
It's not there
Insert row
(reads MENU) INSERT, I should think, if you just press I, instead of going right down there.
(does) do we want a COLUMN
Just a minute, we don't want a COLUMN do we .. we want a ROW, press RETURN
starting at 4?
yes, RETURN
1 or 2?
1 so just press RETURN Do you want more space or do you think that's alright? Ok we can go back, UNDO.
Enter numbers
(instructs to enter numbers in C and D for Prices and Numbers Sold)
Formula
Revenue. Let's think how that works Because a spreadsheet really should do everything for you so you don't have to work anything out for yourself. So if you go back to open MENU, hopefully there should be something there. Right ... (reads MENU) I'm not too sure. Can you think of anything there we could use, well RECALC probably, no that is to RECALCULATE something that has gone wrong, I should think
I can't see anything, can you not think of the way to do it
I can't remember, try HELP, seeing as I can't do anything I'll just press H and see, RETURN. (selects HELP from MENU)
Math expressions, functions, is that the one
Let's go back again (presses UNDO, reads MENU again) Try ORDER RETURN. No I'm not sure what ORDER stands for (selects ORDER)
[Order over area:]
maybe that's ordering things in alphabetical or numerical order
(presses UNDO)
[warning beep]
(presses UNDO again) If you have any problems just press UNDO and that should sort it out.
(reads MENU again) Well we need something to count from one area to another, to work out revenue but I'm not sure if that's going to work here. Let's see. You can work it out yourself but that's not what a spreadsheet's there for it's supposed to do things for you ...
(experimenter intervenes and asks her to multiply figures, but she cannot work out how to do it)
You just work that out, OK I'll just UNDO this. So it is numbers from one column times prices, so we can just work that out ourselves I think.
Can you not think how to do it using the spreadsheet?
I can't remember what she said, but that you can do it that way and maybe you can.
Why has it got fifteen thousand there, that last work?

Save

Right if you want to QUIT and SAVE, go to the MENU, you go to QUIT and SAVE and you just press RETURN, and you choose one of these, choose OPTIONS and then to get out you go right down to the operating system

Subject 9

[empty spreadsheet]

Right, this is your spreadsheet. You put information in here. It's for putting information in ... you can make calculations. It is basically word processing so you just format it all, so you can show that information in the best way you can, so when you put it out on the printer it is all very clear and you can work out averages and means and ... It is basically like putting information in, the one we did in class was exam marks, so you have subject across the top and members of the class, what they got, you worked out average mark for the year per student, average mark per subject, number of subjects each person takes

so you're making a table?

basically yes, you're making a table. So, and then just use this [cursor] to go where you want. (demonstrates use of cursor keys)

shall we just name some sweets? (types "Sweets")

Enter text

you see you type it here (points to input line) as soon as you CARRIAGE RETURN, it will go to the point where the cur- the bar is, (presses CR and enters text label in A1) so you can come out of that (moves cursor to A2) and it will still stay there do about 5 I suppose ...

(moves cursor to A3, enters text labels in A3 - A7)

Right this is your MENU button over here [F8] so press this one here (does)

[MENU displayed]

Filler character

and this gives you all the options you have to use in that matrix, so say you want to blank something out you go to BLANK, FORMATTING it - sort of jiggling it about so it looks neat, PRINT so you can print it, INSERT is insert extra COLUMNS, ROWS and things. I'll show you, so go to FORMAT.

(selects FORMAT)

[Format Width Attributes Filler_char Data_type]

Right this is WIDTH so you can change the WIDTH of your COLUMNS or WIDTH of your rows, [nonsense - only of columns] ATTRIBUTES, I'll come to that later.

FILLER CHARACTER - go to FILLER CHARACTER. If you want dividing lines in between the data

(selects FILLER_CHAR)

[Set Filler to:]

that's the one, so SET FILLER TO - you can put anything, it's up to you, star or something, SHIFT and ..

(selects "=")

[Format applies to area:]

That applies to area A7 because that's what it's on at the moment. So you don't want the line there, so say you want it dividing - that's the title of your column [in A1]

(moves cursor to A2)

then area A2 to where you're going to finish it so to F2 so the way you do that is SHIFT colon, then put F2 in, so it will draw the line from there to there.

[line of "=" appears A2 - F2]

In the same way you can make your lines down that way and this will sort of split it up. That's one thing you can do with it ..

Change attributes

What else - go back to that again [FORMAT] Now ATTRIBUTES,

[NUM [R 2 -] LCR1[????????]]

these basically are loads of functions in here [question marks] that you move by pressing this one here [SPACE BAR], so.

what's LC..

LEFT, put data to the LEFT of the column, C is CENTRE and R is RIGHT so we haven't got any information in there so go along so each question mark gives you a different function basically it's a very useful tool, move one, right this one, just put the pound sign or dollar sign next to it, decimal places rather than figures, convert it to decimal or percentages. Put it in percentages, actually converting percentages it will put percentage on the end, it says, something .. it'll say, say 5700 per cent so after that you've got to divide it you can't actually convert it straight into percent so that's a bit ..

Anyway the way this is going to be used is to mark and present the data more clearly. The whole idea of this program is basically. So, I don't know what she wants ...

we could do costs and selling prices ... how do you get out of that [ATTRIBUTES]?

Oh yes UNDO. Any problems whatever, that will take you back to the MENU, the original MENU. And UNDO once more, and you're back to square one. Put cost price ...

(enters text label in B1, and numbers in B3-B7)

They [numbers] are all to the RIGHT, aren't they? Are you going to CENTRE them - so you go back to the MENU, FORMAT, go to FORMAT,
[Format Width Attributes Filler_char Data_type]
so it's ATTRIBUTES,
[NUM [R 2 -] LCR1[????????]]
it is this C, RETURN.
[Format applies to area: B7]
FORMAT applies to area B7, delete that [B7]
(deletes with BACK SPACE)
go up to the top of the column, so it's B3 to, which is colon again, to so come down to .. yes, Right, RETURN.
[numbers in B3:B7 centred]
It has CENTRED those now, get rid of that again, UNDO.

Change width

Do you want to, it looks like these columns might be a bit too skinny, we won't have enough room in there for the next one. So that's FORMAT once again. F8, right so it's WIDTH
(selects FORMAT, WIDTH)
[Set width of this column to: 12]
set WIDTH of this column to eh -
(points to input line) this says 12, now does that mean it is 12 now?
I'm not sure, it's how many characters you can fit in I think (counts) yes that's 12 obviously, so set it to 15 perhaps,
[Set how many columns to this width?]
set how many columns, (counts) set all six
(enter "6", CR)
[columns B - G set to width 15] has it changed them? yes it has ...
[wanted A widened as well, but since cursor was in B, this was the first column]
this one has [B], but this one hasn't [A]
that's because - that [the cursor] was located in B it counted from there onwards ... [correct diagnosis] it doesn't matter, really
so go along to your selling price ... (instructs co-experimenter to enter text label in C1, numbers in C3 - C7)

Blank

I have made a mistake [while inputting number] how do I change that?
Go to MENU and work your way to BLANK, that will blank out, C4, yes
[entry in C4 blanked out]
so I do it again now?
yes.
[would have been much quicker to just overwrite current entry by entering new one]

Change attributes

Right so now you can start ... it's those bloody formulas ... I've forgotten how to do these - basically the idea is to put a formula rather than working out yourself what the profit is, put a formula in, - which I do not know - and the computer will work it out for you and print the result up there. CENTRE that first ...
(selects FORMAT, ATTRIBUTES)
[NUM [R 2 -] LCR1[????????]]
(selects "C" for Centre)
[Format applies to area: C7]
(hesitates)
Doesn't matter which way you go, actually -
(enters "C7:C3") up to there?
yes
(CR)
[Improper coordinate. Bad syntax or out of range]
Ah - no. UNDO. You must go the other way around.
(enters range correctly)

Formula

Now you can start working out things like average cost price, average selling price .. I can't remember how you do that ... What else could we do?
If you work out the selling price minus the cost price
OK, you can do it in your head but there's a formula for the way that you do it and I can't remember .. I need my notes really
(experimenter tells him what the formula for average is)
We'll do the MEAN first.
label it? (enters text label in A9, moves cursor to B9)

Right put MEAN B3, open brackets, B3 to B7, RETURN, see what that does.
[Formula appears in B9]
No - oh no, we didn't switch it to NUMERICAL, so BLANK that.
[unnecessary to blank, could just be overwritten by new entry] - (selects BLANK from MENU, blanks B9, types "MEAN(B3:B9)")
This key over here [F7] is called a toggle key, see that [formula at input line] is TEXT input so it will just put in as it is what has been written down there ... so if you press that it will change to NUMERICAL input which will actually do the calculation for you, hopefully it will work,
[result displayed in B9]
There you go, so you want to CENTRALISE that now ...
(CENTRES figure)
Do the same for the selling price .. (instructs subject to re-type formula instead of COPYING it)
Save
So right you've got to SAVE it now so it will all get stored on the disk in the computer. So go over to QUIT and SAVE, doesn't go down, no. Go to OPTIONS that will tell us what we can do

Subject 10

[empty spreadsheet]
This is a new spreadsheet and you can see each space on the spreadsheet has its own co-ordinates, so that would be A1.
Now we can enter things into this by typing what we want to enter and it will come out on here (points to input line) so you can go back, you can correct it, when you want it to go in the spreadsheet, press RETURN and it will come up on the spreadsheet
where
It will come up where the cursor is at that time.
So if we start, say a few lines down. You can actually move this [the cursor] by using these keys [cursor keys].
(moves cursor to A5)
Enter text, enter numbers
So if you put the products in this column - (instructs co-experimenter to enter text label "beer") Just type and press RETURN and it will come up.
If you wanted to correct that if you wanted to put lager, say, instead, you could leave the cursor where it is, type in lager, press RETURN and it will come up. So if you want to put the next item in... (instructs co-experimenter to enter text labels in A5-A10, and A4-C4 and numbers in B5-C10)
These [numbers] aren't centred, later on we can actually centre them. When we've completed the spreadsheet we can go back and centre everything.
Right now we can calculate the profit. I can't remember how ... if you just -
[seems to try to work out how to get profit calculated]
Oh we could calculate the average retail price I suppose. If you go a couple of rows down
(moves cursor to C12)
Formula
now we can calculate an average by - first of all if you go into the MENU, press F8
(does)
[MENU displayed]
and this gives you all the - no you don't want to go into the MENU, sorry, press UNDO which is that one...
What you actually want to do here is calculate the average of everything, I can't remember how to do it - help!
(Experimenter tells her she has to use a formula)
If you type MEAN and then open brackets and then as each of these has it's own co-ordinate so this will be C5, so if you type in C5, then we want the mean here to here so a colon will - C5 to and then the very last one is C10 and then close the brackets again. Now this [next to input line] is still showing TEXT because we started typing and the first thing we typed was a letter rather than a number it still thinks it is TEXT, so if you press RETURN now all it will come up with here [C12] is mean brackets which is not what we want, so we want to change it to a NUMERICAL entry. So to do that if you press F7 you'll see this change
(does) so that now says it's a numerical entry
So now it will actually calculate the mean from here to here if you press RETURN it should could up.
(presses CR)
[result displayed in C12]
That's the mean price. We could also do that for the cost price as well, so you type mean again then this is B5 ...
[does not COPY here]
(types correct formula but forgets to toggle)
right if you just type again
(re-enters, toggles, CR)
[result appears in B12]
We can work the profit out on each so start a new row [means column]

(moves cursor to D5)
I've forgotten how to take away [subtract] help!
(experimenter tells her she just has to subtract)
(thinks) Oh - I see So - it is just C5 - B5, I hope
(types)
and then change it to NUMERICAL.
(toggles, CR)
[result displayed in D5]
Yes it worked

Copy formula

Now rather than doing that separately all down there we can actually COPY that so it will do the same thing, so if now we go into MENU, we've actually got COPY here, now you can do what you did, which is move the cursor along or you can just press C.
(selects COPY from MENU)
[Copy from area: D5]
Right it wants to know the areas - You want it copied from D5, so that's ok, just press RETURN again.
(does)
[Copy to base coordinate: D5]
Now we want to copy it from here to here, so move the cursor down one, now use the colon again, then you can move the cursor down to here [D10] You will see it come up. That is it, now press RETURN I should hope ...
[Copy Values All]
you want ALL, so if you move
(selects ALL)
[Copy Relative Absolute Prompted]
and RELATIVE, just press RETURN
what's that?
what does it mean? I'm not particularly sure.
(selects RELATIVE)
[formula copied to D6-D10]
So now it's given a profit for everything it has gone to and copied the formula for each row.
So now we want to come out of the MENU, so press UNDO. Then we can actually calculate the mean profit again, so if you type in now mean and then D5, D10 and then you want to make it into NUMERICAL before you press RETURN
(enters formula successfully)

Change attributes

Then perhaps what we could do is to CENTRE .. so it looks better. If you want to go into MENU again, go to FORMAT,
Use F again, like with C
yes. Now if you go to ATTRIBUTES, we can CENTRE columns
(selects FORMAT, ATTRIBUTES)
[NUM [R 2 -] LCR1[????????]]
Now this for each question mark (points) will do something different. If you press HELP it will show you -
(selects HELP, reads help screen) change?
change means the SPACE BAR. So if you want to press that you can actually move this up and then you can see (demonstrates) that is the first question mark. Move it down, just press down,
does that tell us...
yes that tells us what all the question marks do you'll see this come up to the left of the question marks. You see you can even put pounds in here That's as far as it goes. Press UNDO, that will take us back. These are the question marks. Now it's on LEFT or CENTRE or RIGHT so if you press the SPACE BAR you'll see this change.
(scrolls through options)
so what are we going to do - centre?
CENTRE, so leave it at C, move along, we could add a pound sign to it yes, move through until the pound sign. Now press RETURN and it should ask you what area ... - (does)
[Format applies to area: D12]
what area you want the format to apply to. So if we do it column by column, so go back right up to profit, because we want to centre the word [text label in D4] as well then use the semi colon (sic) again
(enters "D5:D12" as instructed)
RETURN
(does)
[entries in column D centred, numbers with pound sign]
Now we can do each column, so go back into FORMAT - same again?

[could have done columns B-D in one go - does not seem to be aware of this and does them one by one]

Filler character

Now we could separate the columns, so go back into MENU and you can put lines, go back to FORMAT and you'll see it's got FILLER CHARACTER, so if you want to move the cursor along to there and press RETURN. It will ask you what you want to use so

what do we want to use this for?

We can use it to separate this column from these columns, we could have a line of stars or something ... yes [just for indicators] ... so it could be anything.

(selects FORMAT, FILLER CHARACTER)

[Set filler to:]

are we going to do it vertically?

yes - use the "1" or something

(selects "1")

[Format applies to area: B1]

Insert column

Now you want to say what area it applies to so if we just say it applies from here to here, A4 - Ah, I think we're going to have to actually create a column there before we can get it in. Sorry about that, if you press UNDO, it will actually bring you back into the MENU again.

FORMAT - no we want to INSERT, so UNDO again, INSERT so I.

[Insert Row Column]

We want to INSERT a COLUMN.

(selects COLUMN)

[Insert columns starting at: B]

Now it always inserts to the left of the cursor so that should be OK.

[Insert how many columns:]

So it's just the one column.

[new column inserted between A and B]

So now we've got a new column.

Change width

Now if we go back to FORMAT, really it is a bit - when we put the FILLER CHARACTER in it will fill everything in that column, so really the column is too wide, so we really want a WIDTH of one so we just get one FILLER CHARACTER. So if we actually go into WIDTH

(selects WIDTH)

[Set width of this column to: 12]

you see at the moment it's 12 so if we use just 1.

(enters "1")

[Set how many columns to this width? 1]

And how many columns, so just one.

[new column B set to width 1]

Now we can go back into FORMAT, use FILLER CHARACTER

(selects FORMAT, FILLER CHARACTER)

[Set filler to:]

(selects "I")

[Format applies to area: B4]

yes, now you can use colon again and just move down until you get to the last co-ordinate

RETURN?

Yes and it should -

[Filler character inserted B4-B12]

Save

We want to SAVE it so we want to go into QUIT/SAVE, so you can press Q to get into that you want OPTIONS and RETURN

Subject 11

[empty spreadsheet] This (demonstrates use of arrow keys) moves your cursor through the columns, up and down and left or right

Enter text, enter numbers

(instructs to enter text labels in A5 to A12 and B4 to D4 and numbers in B5 to D12)

now say we wanted to find the average price of all the different items here (B column) we could label a column AVERAGE (types "average") no actually I don't want to do this (deletes by BACKSPACE)

if we wanted to put a column of the highest priced items in the shop and the lowest priced so HIGHEST PRICE

(enters text label in A14)

Formula
and in here (moves cursor to B14) we want it to list the highest price of all them so you have to put in a formula so MAX for highest priced and then we want it between this 75 pence and 6.50 (points to B5 and B12) so that is column B5 so you put B5 to, which is colon, to B12, (enters formula for maximum) so ... close brackets and because here it says TEXT because the first thing you typed in was a letter so it automatically thinks its going to be TEXT that is going to go here but it isn't it's the formula and the actual thing that is going to go there is a figure that you want so you have to press F7 (toggles) which is going to change this to a number which is going to printed there, which is the case for all formulas because it's going to be a number that is printed there
[displays correct result in B14] and it puts you 6.50 because that is in fact the highest price
and then the same thing if you wanted lowest price, do exactly the same formula (enters text label in A15, moves cursor to B15) but instead of MAX we put MIN (enters formula, RETURN)
[formula displayed in B15]
no don't want that, how do we do this? I forgot to toggle it because if you forget to toggle it it puts what is actually written rather than the answer to the formula, so F7 changes it to a number (retypes formula, toggles)
[result displayed]
and you've now got 10 pence for a packet of crisps.
Change width
Other possibilities are, say you wanted this eventually printed out so you want a line coming down here so what you want to do is close this column to 1 character so you can insert one character all the way down to finish it off so ... now F8 is the MENU so it gives you all the commands you can do so if you wanted to change the WIDTH of this column which command do you think you would have to move to
format?
so if you do what ... and then WIDTH obviously, you want WIDTH,
(selects)
[Set width of this column to:]
so set the WIDTH of this columns to one
(enters "1")
[Set how many columns to this width?]
how many columns to this WIDTH, just one
(enters "1")
Filler character
and you've now got that column there is just one figure thick, one character thick. So now you actually want to insert a line coming down So if you - (tries to move cursor) now before you can start moving the cursor around again you want to get rid of this MENU because otherwise using these arrows just moves the cursor along so you have to UNDO which is whenever you use a command and you want to get rid of that command you want to go back to before or if you do something you don't want to do you press UNDO and that will get rid of it, (F2, moves cursor to E1). So now you want to insert a FILLER CHARACTER which you can do down here so if you get your MENU again, in fact it's not INSERT that you want, you want FORMAT again
(selects)
and this time you want FILLER CHARACTER,
(selects)
[Set Filler to:]
SET FILLER, so now it wants you to tell it what FILLER CHARACTER you want because there isn't actually a straight line or anything so the nearest you probably get is an L a little L, I'm not quite sure, yes if you just press little L
(enters "l")
[Format applies to area:]
the FORMAT applies to, well you obviously want it from the top to say about 17, which is E17 so you want it from E1 which is where the cursor is, to E17, so to is, what is to, applies to area E1 because the cursor is there and then move the cursor to where you want to finish it and it will change with it and then press RETURN
[line inserted in E]
and you press UNDO
[line is stuck next to right-justified figures in column D]
Change width
if you thought that, if you think that is too close to the figures and you want a little gap, so you now want to expand the WIDTH of the D column just so that there's a little more room at the side so if you now try using your MENU to maybe add a couple of characters extra to the D column
(selects width of 8)
that's eight, you don't actually want it to be eight you wanted it to be eighteen I presume so it was 16, so try UNDO, press UNDO and try again from FORMAT see you want 18 and just the one,
(does)

[column D widened to 18, but since figures are right-justified, they still stick to the line]
in fact it's, yes in that case it might be better to in fact widen the E column that might have done it but anyway,
[no, since "1" is text, and text is left-justified]
Insert row
I'll just go through a few more of these If you wanted to INSERT here a column [between C and D] you'd go to the INSERT command
(selects from MENU)
and it's a COLUMN rather than a ROW you want
(selects)
[Insert columns starting at:]
and when you insert, it will always insert to the left so you've got the cursor in the right place [D column] it will insert to the left
[Set how many columns to this width?]
You just want one.
(enters "1", RETURN)
[new column inserted between C and D]
So now you've got an extra column if you wanted another column of information.
Copy formula
Going back ... (moves cursor to B14) let's say you've got this formula which is the highest price and you wanted to know, you wanted that formula to apply to that column [C] and what were the other columns, selling price and amount sold, so you want also the highest amount sold so you want this formula to apply to the next three columns [C to E] as well so you go back to your MENU and you COPY this formula for these columns, so it's now COPY command,
(selects)
[Copy from area:]
from area, well the cursor's on B14 which is where the formula actually is so you want to COPY FROM so that's right
[Copy to base coordinate:]
COPY TO, well you move your cursor to the first column where you want it to COPY to, which is ... to C14 to E14 isn't it so and then move it to E14 right
(enters coordinates)
[Copy Values All]
right next thing it says COPY the VALUES or ALL, well you don't just want the VALUES of the formula, you want ALL of it so,
(selects ALL)
[Copy Relative Absolute Prompted]
and RELATIVE, ABSOLUTE or PROMPTED you want relative
Why?
I thought you were going to ask me that, well it's not ABSOLUTE because it's going to change with each column, it's RELATIVE to what the figures are in the columns so it's not going to COPY absolutely what's already got in the B column because the figures are different here RELATIVE to what figures you've got in your columns so press relative then right
(selects RELATIVE)
[?n? in D14]
as you haven't actually got anything in this column it's put this little question mark in the column because it doesn't actually know what to do so once you've filled in that column you could go back and redo the formula for that one but there isn't actually anything in that column, ... right
Save
You finished all you wanted to do today on it so you want to now leave the spreadsheet but you want to SAVE what you've done today, so which one do you reckon will SAVE, right,
(selects QUIT and SAVE)
move to OPTIONS

Subject 12

[empty spreadsheet]
(points to empty spreadsheet) If you go down a few lines, to A5
(does)
Enter text
and then let's type in a list of products and their cost-price and selling price just think of a few names - beer (points to A5) That's a cell and anything you type down here once you press RETURN it will go to the cell you're in. So if you press RETURN and then travel down the line with the [cursor] key otherwise it would come up over the beer. Wine ...
(types in text labels in A6 to A10)

we have to put prices in we'd have to go across, and then up to the top (B5) I suppose - how much would beer be just invent a price for beer ... if you go up a line, and type in cost-price, and then across a cell, and selling price

(enters text label "cost price" in B4, "selling price" in C4

[last letter "e" is not highlighted since text label is one letter too long]

then across one

(moves cursor to D4)

(hesitates) The cell is not wide enough - if you just put a space in, because it's going to go over the "e" otherwise and then afterwards we could make the columns wider. Put in amount sold

What do I type?

space and then 'amount sold'

(does, CR)

[enters " amount sold" in D4, "e" erased]

[no concept of space as character] oh dear that'll do for now

Enter numbers

and if you go to B5 and put in a price

75? Shall I just put in 75?

Just put 75 and then return. Don't know if we should put "p" Yes, 75, then RETURN.

(does)

[75.00 in B5]

Oh God. Perhaps we should have put nought point 75 I don't think it would have cost that much. O.75.

Just type over it?

Yes.

(enters 0.75 in B5, proceeds to enter numbers in B5:B10 and C5:C10)

Change width

Perhaps we should make the columns wider. If you want to make anything wider or if you want to do a reformat. We have to call up your MENU and it gives you a selection of items that we could pick to widen columns, just reformat the page, do different things on it and to pick the menu is F8 which is there.

(calls up MENU)

What one is it? I think it is FORMAT, so if you go along with this button to FORMAT, I think that allows you to re-format your page, make it look different, then press RETURN. Then it asks you what you want to change and you want to change the WIDTHS of the columns Which is WIDTH so if you press WIDTH. At the moment all the columns are 12 so I think we need to make it, at least one more, let's make it 14 or 16. So if you, it's 12 there so if you press 1 and 6 to type over it. Then press RETURN. How many columns. If you move it back to the beginning, the cursor, oh no you can't do it. Press that one see if it

[warning beep].

I think we shouldn't have had that [the cursor] there [A column] we should have had it in a different place. Well if there's 4 columns, if you press 4 and see if it works. Did it work on all of them or just one?

[C where cursor was plus 4 set to width 16]

so if you want to UNDO something it is F2. Press F2 and that gets rid of your menu. If you move the pink thing, the cell, back to the beginning and then we have to do it again to get those two done again. Then F8 and FORMAT, WIDTH again, then change it to 16 and then 2 and that should change those 2

[A and B column set to width 16]

Amount sold, if you go across to D

(moves cursor to D5) (enters numbers in D5:D10)

Formula

Then we have to work out different things, profit per item. We've got to work things out now. When you're working things out numerically because we're in TEXT here we're putting in TEXT words, when you're working something out numerically you have to toggle it to get it into NUMERICAL so you can work out equations and maths and that and that is F7, if you press F7, mm doesn't like that. Perhaps if we move it, can you move the cell down?

[warning beep]

I don't know why that has happened. [can't toggle since there is no input to toggle]

(experimenter signals end of session)

Save

We're going to save now so you need your MENU, F8, what we want to do is SAVE it and leave and the command for that is QUIT and SAVE which is that one there so if you just press Q, QUIT and SAVE, we want to SAVE the NEW MODEL [this would be renaming, she doesn't realise that] so if you go along to the end and RETURN and then the model is off licence I don't think it is so if you put that, mm can you press F2 again and we'll go back. QUIT and SAVE, return. OPTIONS, can I have OPTIONS, sorry. I'm not sure it's saved .... [doesn't realise that model is saved when exiting for first time]

Subject 13

The idea of the spreadsheet is so that you can store data over a wide range and also to be able to calculate averages and minimums and maximums, to get into the programs what you have to do is, the date's already in, you can fiddle the date but the month has to go at the beginning

[empty spreadsheet]

This is what the actual spreadsheet looks like. Vertically there's an infinite number of columns going down and across also so and you can see that they're numbered like and letters, and I think it goes on to lower case letters and so on, so you get an infinite number of letters.

Enter text

Would you like just to type some names in just put the names down here (points a column A) but if you leave two lines at the top we can enter the dates that the races were run on

(moves cursor to A3, types name)

What you do is that name you've typed there, if you press CR will go into that space (A3) - there. There and if you want to move the cursor down one you can type in another name. Press CR again, press the cursor down again, because if you actually want to do a correction you keep the cursor on the place you want to correct and re-type it and press CR, so it's quite easy to correct, it's not deleting letters or anything, do you want to put some more in

(enters names A3-A8)

Enter numbers as text

You can enter dates, we go up here [B2] and you can enter dates and shall we just put in that something (types date) 3 days like that

(presses CR)

[Illegal character]

Illegal character problem ... press UNDO (presses UNDO function key)

[message disappears, warning beep]

It doesn't like me It really doesn't like it does it?

I think it's because you're in NUMERICAL mode (points to input line)

Right. Switch to TEXT. (presses F7 function key) I didn't think you were supposed to know anything about this and then if you just continue

(types in dates in C2 and D2)

Enter numbers

(moves cursor to B3) Now we've got to put some numbers in ... if you just toggle and put some numbers in for each of them don't know what's realistic for 100 metres ... let's say 14 that day (types 14, TOGGLE to TXT, CR, moves to B4, enters numbers as text in B3-B5)

I'm not sure you want to put that in as TEXT you want NUMBERS if you're going to calculate things on it

I think if it goes in as text at the moment it's alright, I think so, I'm not sure but I'm going to pretend it is. Just do ...

(continues entering numbers)

try and put it in as a number and see if it makes that horrible beeping noise ..

(enters as NUMBER)

[number appears, right adjusted rather than left]

oh it doesn't. So I suppose it doesn't really matter.

something like that (fills B column with numerical entries)

Formula

shall we calculate the averages for that day? Before we go and make up numbers for the other days. I'm just trying to remember how to do it. Let's go down a line and put the average there. Do you want to type "AVERAGE" in?

("AVERAGE" label in A 10)

(moves cursor to B3) Right we want to calculate, it's to get an average, we type in MEAN (types) and then you put a bracket (does) and then you type in the square that you're in, which is B3, which is where you want the mean to start. Then you put a colon and you type in the number of the square, B8 which is the last one we want to calculate. Then you put the bracket there then, because that's a TEXT entry and if it's a TEXT entry it won't do anything because it doesn't know and we're actually wanting to do something mathematical so we change it to NUMERICAL which comes up here (presses F7, points to left of input line) it shows you there, I'll just move the cursor down here (moves cursor to B10) because that is where it will write the average and then press CR and it should do the sum for us.

[result 14.40 appears in B3, overwriting original numbers-as-text entry]

It's put it up there hasn't it? Because I moved the cursor afterwards. If I'd moved the cursor before it would have written the average in there. I can't remember, we said 14 for that one so if we move down to here and write 14.40 in we know that's the average. [only over B6-B8, since it did not calculate text entries, but she does not notice that] (types 14.40 in B10) Then we can come back to here and just type 14. (moves back to B3 and enters "14" as number)

Change attributes
Would you like to make it so that it's all central? Right press MENU which is the F8 key and then it will come up, FORMAT, so yes - you actually know how to do this don't you? We want to go on to ATTRIBUTES so do you want to press that one which is ATTRIBUTES and it's at the LEFT at the moment, so here you see it tells us it is LEFT, CENTRE, RIGHT, so to get it, so that's the letter it is on at the moment, so do you want to put it in the CENTRE?
so it's on that now, CENTRE, So we press RETURN. And it is saying does this apply to B5 but the area we actually want it to apply to is B3 to the area, where is it going to? B10, so we want a COLON, and we can move with the cursor down to where we want it to go and press CR and they're all in a line in the centre.
Insert row
Do you want to put a line in here in between? So what we first want to do is to put an INSERT so you want to go to INSERT, press or you can move the cursor onto insert. Press CR. It says do you want to insert a ROW or a COLUMN. Well if we're up here I think we want to really insert a ROW don't you?
Yes
ROW, starting at 10, but we don't want to start at 10 do we, we want to start here, it always inserts above the cursor or to the right of it so we want to start at 3, so do you want to press CR again, and we want just to insert 1 so you see it's inserted a ROW,
Filler character
o what we want to do is go onto FORMAT again, in the menu, no, yes, that's the one and instead of ATTRIBUTES this time we want FILLER CHARACTER, that one,
(selects)
what do you want to do for FILLER CHARACTER?
I don't mind, equal signs or minuses or stars, how about stars?
OK. That applies to, shall we go from A3, it's going to look better isn't it?
(moves cursor)
We want first of all to put a COLON in, otherwise it will say just A3,
(types colon)
and then we can move that, shall we go to there, do you want to press CR
Change width
do you want to write a column in here so that the dates are separated from the names
(INSERT column) That's a bit too big a column isn't it, so I think what we'll do is go to FORMAT again so press F, there, set it to WIDTH this time, WIDTH of this column is 12, do you think 1 is alright, then we can put a row of stars going down.
Yes, why don't we do that ...
[Set width of this column to: 12 (cursor on 1)]
(presses DELETE, erases the 1, presses DELETE again)
warning beep]
No, if you just press the one and then CR (types 1, so back to 12, but doesn't notice)
[Set how many columns to this width?]
if we just press CR ...
[system proceeds, but width remains unchanged]
That was wrong ... (hesitates, can't work out what went wrong) if we go back to FORMAT again (selects FORMAT, WIDTH)
[Set width of this column to: 12 (cursor on 1)]
(types 1, which substitutes 12, and changes width)
Filler character
There (relieved) shall we set to FILLER CHARACTER? So if you press F again (select FORMAT, FILLER_CHAR)
[Set filler char to?]
do you want stars again?
Shall we do that?
Yes. (types *) It applies to B3, now we want to go up to 1, (moves cursor to B1) now do you want to press a colon? down to where we stopped (B11), right, it's put some stars in, is there anything else you want to do?
Formula
Shall we get the minimums and maximums?
Yes why don't we do that?
So, we want first of all to get rid of this menu so to get anything off the screen that you don't want press F2 which is UNDO. I'm trying to remember - right, bring the cursor down (to C12), put it here so it will actually print here what we want.
Do you want to do the minimum or the maximum?
Why don't we do the minimum and maximum? ..

If we do minimum first we want to type "MIN", do you want to type "MIN" and we put it in a bracket and then the squares are B4 colon B9 (wrong - the figures are now in C since a column has been inserted) close your brackets and you want to make it on a numerical one and then press CR. Doesn't like that does it?

I'm not sure, did I mis-type anything? B4, ah it's actually C4 isn't it?

Yes - (half relieved, half irritated) So we try again sorry if you type C4 not B4 because the last one was B4 (when they entered the formula for average)

(proceeds to enter, forgets to toggle)

ah unconverted

so we need to remember to press the NUMERICAL thing don't we. Then CR. It might actually do it for us. So that's the minimum time, that's who was fastest, shall we do it with max (proceeds to enter formula for maximum)

(enter figures in D column)

Can we do the averages, the maximum and the minimum for those ones?

Yes, it's the same, except for being C it's D this time. So averages - do you remember?

(enters AVERAGE, MIN and MAX)

Shall we move this to here (F3) and get it to tell us what the MINIMUM for each person is

So we want to type in MIN don't we. C4 to D4 (types in formula) so that is the minimum time she did.

can we do that for all of them?

Copy formula

We can do that and make it a bit easier for ourselves by putting it to COPY. Which is there so press CR. (reads)

[COPY from area: F4]

we want to copy FROM AREA F4 because that is the value we want (presses CR)

[COPY to BASE CO-ORDINAT]

Well we don't want, so F4, so we move down (moves cursor to F5) and then because we want it to COPY to all of them so we press the colon, go down to the bottom one we want it to COPY, which is that one, (moves cursor to F9) press that, we want to COPY ALL

What's the difference between ALL and VALUES?

I don't know. We want to COPY, I think it might mean that we want to copy the whole equation down and not just the numbers. We want to COPY RELATIVE because we want the equation to alter itself for each different line, so we want to COPY RELATIVE and that's everbody's

That's very good

(centre the figures in the column, and tidy up other columns)

Save

What we do to SAVE the spreadsheet is you want to move the cursor onto QUIT and SAVE and you can either do that by pressing Q or by moving it

You have to move it all the way

Yes

and then CR

yes, and then it will tell us, we want to go to OPTIONS, I think, no we didn't, I've done that wrong, haven't I?

Subject 14

[empty spreadsheet]

I think the best thing to do is, have - I don't know ... beans, Heinz, different brand names across the top, if you put something like Coke, Pepsi, My Mum's something like that, if you go down a bit more and leave a space at the top,

(moves cursor to A4)

Enter text

you may as well put Coke or Cola or something like that.

(types "Coke")

In fact, just put "drinks" there.

(backspace, types "drinks")

CARRIAGE RETURN.

(does)

["drinks" appears in A4]

(instructs to enter further text labels in B4 to D4)

Actually I'm just thinking that would be better down the side, there, say have about four different shops and different prices there and then calculate the average price, do you know what I mean

yes, so what ...

If you put Cola and 4 different drinks down there, shop 1, shop 2 ...

Delete row

so how do you get rid of these [text labels in A4 - D4]?

or you can just DELETE that one you're on at the moment, if you press MENU, F8, there is a DELETE command there, press D or highlight it.

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(selects DELETE)
[Delete: Row Column]
We want to DELETE, might as well delete the ROW, that's already highlighted [row] so RETURN just the one
[row 4 deleted]
right so go back to A1
(tries to move cursor)
[warning beep]
just press UNDO to get rid of that [the menu]
CARRIAGE RETURN
Enter numbers
(proceeds to enter text labels in A4 - D4 and A6 - A9 and figures in B6 - D9)
We can make a column here (points to A) for the average price the shops sell ... so if you want to put a title there first in D4 just do average or mean or something like that right.
(enters text label "average" in A4)
Formula
Can you press MENU, call the MENU back, we want a formula for that. (reads MENU)
Yes if you press UNDO again. I think it's MEAN and then bracket, we want to print these across so B6 - and the a colon, and obviously then D6, close brackets and then you have to change that to NUMERICAL, press F7, and move the cursor down to D6
(does) Why did we choose that [numerical]?
Choose that? Because otherwise it reads it as TEXT and just prints it there. CARRIAGE RETURN.
(does)
[result appears in A4, overwriting text label]
Why did it do that?
[because cursor was moved after formula was typed, but before it was entered wouldn't it be better not to allow cursor movements halfway through?]
You could just try and print average there again
(enters text label in E4 again)
and just go over that and move it down now
(enters formula in E6, toggles, CR)
[result displayed in E6]
Copy formula
and you want to COPY that formula now for the rest of them. So, if we get the MENU again and get the command COPY
(selects COPY)
[Copy from area: E6]
you want to COPY from area, yes, that's right, just press CARRIAGE RETURN.
(does)
[Copy to base coordinate:]
Copy to - E9, I think it is - E6, then press colon and just go back on that to make that last one E9. Then press RETURN, ALL so either a or highlight it, you want RELATIVE so CARRIAGE RETURN
so what does that do?
[results appear in E6 - E9]
I think that's right
so what's that done?
it's calculated the average selling price of each drink
Change attributes
what we can do now is sort of tidy it up a bit and get that CENTRED, to do that you call up FORMAT.
(selects FORMAT)
WIDTH.
(selects WIDTH)
Umm, actually, I don't think we really need to change the WIDTH, so just UNDO that.
And it's FORMAT again, it's ATTRIBUTES then.
(selects ATTRIBUTES)
[NUM [R 2 -] LCR1[????????]]
Right, we want to change that - to change the question mark, you use the SPACE BAR
So what are we changing here?
Try it, it gets centred (toggles) That's left and then C, that means the margin on the right and on the CENTRE so we want C, we want to get rid of the noughts as well, so if we go to there, that's the decimal point column, change it to nought and CARRIAGE RETURN ...
(selects)
[Format applies to area:]

We want it from B4 to E9
(enters)
[columns B to E displayed in new format]
Filler character
Lovely! Right, you can use different characters to put a frame around it if you want it's FORMAT again and FILLER CHARACTER
(selects FORMAT, FILLER_CHAR)
[Set filler to:]
yes, do you want a margin right round that way? do it ...
we'll just do a line round there [row 5] and a line down here [between columns D and E] to separate the titles from the numbers ...
right, to you want to put the highlight round there
(tries to move cursor)
[warning beep]
Sorry - that's going to be a problem it wants a character
(selects "-")
[Format applies to area:]
now we have to say where it's going you'll have to move the cursor
(moves cursor to A5)
if you can use the colon again, E5
(enters A5:E5, CR)
[Filler appears A5 to E5]
You can have one down the side [between columns A and B] and to do that you have to shift the thing along a bit. If you choose like something like that to have a line down ... because it like the whole block, so you want to reduce that to having just one character so we'll have to shift everything along a bit by using FORMAT again.
(selects FORMAT)
[which she will need later to change the width]
Insert column
Oh - actually can you put UNDO and then INSERT, you want an extra column between A and B,
[Insert Column starting at:]
if you move that along to B I think that will insert it to the left then just CARRIAGE RETURN, right
[Insert how many columns:]
Just the one, so RETURN
[column inserted]
Change width
and so we want to reduce that to just one using FORMAT and WIDTH, you want it just 1, RETURN.
[column reduced to width 1]
Filler character
And then you can put whatever you want in ... and it's FILLER CHARACTER.
(selects FORMAT, FILLER CHARACTER)
[Set filler to:]
which one?
either that or that [single quote]
[Format applies to area:]
do you want to move it up another one, B4 ... to,
colon?
B9, oh, has that gone right down.
[filler char appears B4 - B9]
oh yes. ... that's ok. Is there anything else you want to calculate?
say we bought cola and water and beer from shop one, how do we work out the price of all the things together?
Formula
oh right, do you want to get the answer down there then? [bottom of column A] right so you want the sum of all of them. Press UNDO to get rid of the MENU and formula for that would be COUNT.
- So I have to move the cursor?
Yes, you'd better.
(moves cursor to C11)
COUNT, bracket, C6, colon, C9 and change it to NUMERICAL and CARRIAGE RETURN
(does)
[result "4" in C11]
oh that's just counted how many things there are ...
[COUNT just counts the number of entries]

I think it's probably SUM then if you want to try that
(enters formula for sum)
[correct result appears in C11]
Copy formula
you can COPY that formula for the rest of them, you get the MENU and there's a COPY command there, CARRIAGE RETURN,
(copies "from C11" to "C11:F11")
we want to F11 so colon, ALL, RELATIVE.
[formula copied successfully]
That's that, only thing is that hasn't, do you want to tidy that up?
We'll get rid of the noughts, just FORMAT again, ATTRIBUTES, and it's just the same as the other one, that's it. to, oh C11 to F11, that should do it now.
[figures in row 11 centred and no decimals]
Save
If you get the MENU up again, it's the QUIT and SAVE option, OPTIONS

Subject 15

[empty spreadsheet]
This thing [cursor] moves up and down you can place it anywhere you want (demonstrates use of cursor keys)
Enter text
To write anything in, you type it out down here (points to input line) press RETURN, and it will go wherever the pink thing [cursor] is
We want a list of several names, we want to start down here
(moves cursor to A4)
we want to write out a list of names
(enters text labels in A4)
you have to move the cursor down before you enter the next one
right (enters text labels A5 - A8)
Enter numbers as text
and we want to list distances across the top
(moves cursor to B2)
So you start with a 100 m or something
100 metres? (types "100 metres", CR)
[Bad coordinate]
You pressed - we want to UNDO that press F2
[warning beep, system goes into edit mode]
UNDO again you want to change that, F7 I think, from NUMERICAL you can't put numbers and text in as numbers
(toggles) I see so NUM is for numbers and this is for TEXT?
yes - press RETURN now
[text label "100 metres" entered in B2]
[successful application of toggling]
now we want to put in the distances people run 200, and F7 now 400 (instructs co-experimenter to enter text labels in C2 and D2)
Filler character
You can make it pretty and underline it all if you want I've forgotten how to do it now ... if you bring up the menu and there are a lot of things you can do there we can underline by using FORMAT, so if you move the thing [cursor] along
(brings up MENU, selects FORMAT)
um ... select FILLER_CHAR
[Set filler to:]
right what do you want to underline it with?
star?
SHIFT, star
(does, CR)
[Format applies to area:]
so we want it from A3 to whatever you want, E3 or D3, use the colon for to
oh one is the beginning and one is the end? (enters range)
yes, then RETURN
[line of filler_chars appears in A3 - D3]
ok, amazing. Then you could put in a line there [between columns A and B] if you want to. Do the same again
Use FORMAT again. Just do FORMAT, select FILLER CHARACTER
[Set filler to:]

two stars again now you want it putting, oh dear ...? can't put it in there, can we? UNDO
we need a space to put it in so we need to move all this really, just put another block [column] in
[error diagnosed, procedure abandoned, restarts]

Insert column

so we .. so we can put it down there so INSERT, just press I,
[Insert Row Column]
we want a COLUMN,
[Insert Column(s) starting at: D] [current cursor position]
starting at B
(types B, CR)
[Insert how many columns?]
just one
[new column inserted between columns A and B]

Change width

now that's [new column] too big for putting a line there, so we want to make it smaller, so if we go back to FORMAT then we can change the WIDTH of the line so
(selects FORMAT, WIDTH)
[Set width of this column to:]
we want it very small so 2 will be ok maybe just one?
(enters "2")
[Set how many columns to this width:]
one
(types "1", CR)
[new column B set to width 2]

Filler character

now we can put in the line, so if we press FORMAT again and we want FILLER CHARACTER
(selects FORMAT, FILLER_CHAR, selects "")*
[Format applies to area:]
you want it from there down to here, yes B1 to
colon? to B8? (enters area, CR)
[2 stars each in B1 - B8]
yes, we want to stick in some figures now so you want to get out of the MENU first so press UNDO so we want to put any old figures under these so think up some figures, for the times (instructs co-experimenter to enter number in C4 - E8]

Change attributes

Now you can make that a bit better by putting underneath that [figures under the text labels in columns C - E] because it's pushed them all to the side [right-justified] we want to make it a bit neater by putting them underneath
so if you bring up the MENU again, F8, you want FORMAT again, I think ATTRIBUTES - yes I think it's ATTRIBUTES
[NUM [R 2 -] LCR1[????????]]
now you press the SPACE BAR, it's got several things underneath the question mark there, you want C for CENTRE
so L is left, ...
So we want CENTER
(toggles to "C")
so if you press RETURN again,
[Format applies to area:]
it applies to the whole lot there so start from C3 or something, C4 and then down to wherever
(enters area, CR)
[figures centred in columns C - E]

Formula

We want some averages now so, we'll put the average down here, so write in average
(enters text label in A10)
yes UNDO then put your two stars in B - just type them in (laughs)
[shortcut to enter them as text, instead of filler_char]
*(enters "**" in B10, moves cursor to C10)*
Now we've got to make up a formula for the average, I can't remember how to do that I think it's mean, type in MEAN, now we want a mean of all these figures here, so we want to put some brackets in, from C4 to C8
(types formula)
but we want this in NUMERICAL, and it's in TEXT now, so if you press F7 because if it's on TEXT it would just put in what we'd written there (points to input line) but if you do it on NUMERICAL it puts in the actual mean and it works out, press RETURN,

(toggles to NUM, CR)
[average displayed in C10]
Copy formula
we should have moved it all after we'd finished this so now we want to do all three and instead of just doing all three you can COPY the formula we've got there and put it under those two [columns D and E]
so bring up the MENU again and you want COPY
(selects)
[Copy from area: C10]
so we want it from there, so if you just press RETURN [Copy to base coordinate: C10]
and we want it for these two so you want D10 and E10
so what are we copying, we're not copying the ...
no we're copying the formula MEAN, .. to E10
(enters D10:E10) but the original formula had C4 to ...
[Copy Values All]
if we press in VALUES then you'd get that, but we want ALL, which is the actual formula which is still underneath there [the result in C10] so we press ALL, then we want the RELATIVE values, not the ABSOLUTE
right, so that's what takes account of it being in a different column?
yes we want to move those in the CENTRE, (centres C10 - E10)
could you work out the winner?
Yes you could have the minimum time.
is there any way you could say?
If we put in the minimum we discover the minimum time is 48 and come down here so if we put winner in we can put in the minimum score and just come up with the score, but if you want to put in the winner of the race [i.e. the name of the person] you could just type it in, right so you want to put the minimum score, so we want
minimum (enters text label in A12, formula in C12)
yes, min, bracket,..C4 to C8, change to numerical
[result displayed in C12]
so you want to COPY it to the others now, so you want MENU again
[copied to D12 and E12, centred]
could we SAVE it
Save
yes, to QUIT/SAVE, so if you just press Q, you want OPTIONS, and we want OPERATING SYSTEM

Subject 16

[empty spreadsheet]
Right, what shall we do? You can name things down here (points at column A) the articles we need and along there numbers or prices for certain articles If you put in 2 or 3 of those If you press the arrow key and bring it down a bit ...
Enter text
A record shop, let's have albums and prices We put the name of the albums down here (A column) and then we can put the prices along there Put the name of the group just type it there [input line] and then CARRIAGE RETURN
(enters text labels in B7:B11, moves cursor to C7)
Enter numbers
OK, put 4.89 in there, CARRIAGE RETURN.
(types 489, CR)
[489.00 appears in C7)
489 might be a bit confusing .. we'll leave it for now Next one down
(enters numbers C8 to C 11)
suppose we need a heading or something
(enters text label "dealer price" in B5, "selling price" in C5, prices in C7 to C11)
Next column, E let's have CD, and 10 - 99 for each
(enters text label "CD" in E5 and "1099" in E7)
Do I have to type it in each time?
That's a very good question, I've forgotten. Yes type it in. [copy?]
(enters price E6 to E11)
Formula
What you do is some formulas
I don't know, work out some profits or something
Well let's do a MEAN. Mean is the price ... of the dealer price if I can remember how to do them. Right. Ok if you bring the cursor over to this column (moves it to C11) and type M E A N, bracket, C7 to C11, so C7, colon, C11, bracket. Press F7 and maybe we should have put it there (moves cursor to C12) CARRIAGE RETURN.

[result appears in C11, deleting previous entry]
It has written over it - shall we do it again?
Yes, put it in a different place (replaces old entry, moves cursor to C12) Do it again
(enters formula)
[result appears in C12]
We could have a particular group's MEAN. (moves cursor to C14). Type in MEAN, bracket, C9 to E9, bracket, F7, CR ... [calculation doesn't make sense]
Can you do a MEAN for the whole thing, yes ok let's try that. Ok let's count. Ok type in COUNT, bracket, C7 to E11. F7. CR. Mmm. [another calculation which doesn't make sense] - (types title for this row)
Insert row
Let's move them around. Insert a few lines up here to make it look neater. Press menu button F8, and INSERT you press by, ROW, yes, so CR.
[Insert rows starting at: 12]
Yes, CR
[Insert how many rows?]
Say 2, CR.
[rows are inserted]
Delete row
OK let's change these [the numbers] they are confusing let's change them to make it easier to read.
Press UNDO first, F2, go up there [C5] with the arrows. Get the MENU up again, press F8. Then press D for DELETE. DELETE ROW, yes, press CR, starting at 5, yes, how many rows, 1, yes. OK press undo, F2. Let's go 2 up, ok you can write Dealer Price again ...
[row 5 with text labels deleted]
lets go 2 up (instructs to enter new text labels, spread over 2 rows)
[could have made columns wider instead]
Why don't we work out the profit, between the selling price and the dealer price. Is it possible
Yes I don't how to do it ...
Can we CENTRE the columns or something?
Change attributes
Yes. Ok. Press menu F8 and FORMAT, F, and if you arrow to ATTRIBUTES and press CR Right if you press the SPACE BAR twice, CENTRE,
Carriage return?
[Format applies to area:]
Yes. And now let's get down, no we don't need to. type C what's that, 6, C6 to E11, E10.
Is that right?
Yes. CR.
[numbers centred in columns]
Great, can we CENTRE the titles as well?
Yes. Do it again. Press CR, ATTRIBUTES, press SPACE BAR twice, sorry CR. Right. C3 to [E3] yes, CARRIAGE RETURN. Yes, FORMAT again, ATTRIBUTES, C4 to D4.
[text labels centred
Save
(instructing how to QUIT and SAVE) Move the arrow to the right ... CR, right OPTIONS. Oh, I'm not sure that's saved it
[seemed to expect to be asked whether to save]

Subject 17

[empty spreadsheet]
Right, so that's the format of it, where the pink is at the top that's where the cursor is. Anything new you enter will show here [input line] and then when you press the CARRIAGE RETURN it will appear where your cursor is showing.
Yeah you can move it around and it says the point [in status line at bottom of spreadsheet] so if you move it to A1 or it goes to B1 it says the name of the cell so that identifies where your cursor is
We've got to make one up [spreadsheet] If you type 73 it shows like number or if you typed, start off with a letter it tells you you are typing text in which is handy if you want to do formulas, get out of that, so what do you want to do?
shall we do a sweet shop?
Enter text, enter numbers
Yes. So if we have a heading first, like cost price, type in cost price and then CARRIAGE RETURN and then if you move it [the cursor] along to the next one [cell] selling price, CARRIAGE RETURN, and then a profit column
(enters text labels in A1 - C1, enters number in A2, types
You have to move the cursor first or it will just stick it on top
(moves cursor to A3, CR)

[current input entered in A2, previous entry overwritten]
oh ... try moving it first ... [entry appears where cursor was when first char was typed - since it allows cursor to be moved, subject assumes that entry will appear where cursor is before CR]
(enters numbers in A2 - A7 and B2 - B7)
Formula
Now we want _it_ to do the calculating. So, we want the sale price minus the cost price. So type B1 - (thinks) if you press F8 to get the MENU, (reads MENU) HELP? just type H
[Coordinate_Entry Maths_Expressions Window_Usage]
Math expressions, CARRIAGE RETURN. [Help window: Enters input data into the model. If no input has been made made or Advance is ON <enter> will move the pointer right or down according to current Order (see Sorting)]
Does that make any sense to you?
It just means if you press enter, CARRIAGE RETURN, it puts data in the model, which is what we already know. Don't want to know that. Just keep going.
how do I get rid of this?
That undoes what you've just done ... (tries to get out of HELP) That isn't much good is it. It _says_ MATH EXPRESSIONS and FUNCTIONS ...
[obviously expecting information on how to compose or select a formula]
We definitely want to know what is in there ...
can we work out something else you know how to do? put another column in or something
(Experimenter tells subject she needs to enter a formula)
Just tell if what you want it to do? So if you type B2 minus A2 then you have to press F7 because you've got TEXT if you press CARRIAGE RETURN it will just put that in, so that changes it to NUMERICAL to tell it that you want it to do something with the figures now if you press CARRIAGE RETURN, I don't know if -
[result appears in C2]
oh it does, well! So if you didn't press F7 it would think that you were entering TEXT because the first thing you entered was a "B" so it would just put in what you had written so you have to change it
Copy formula
So now instead of going through the whole process you can just COPY the formula so if you go F8 for MENU and then select COPY
press C?
Yes.
[Copy from area: C2]
Right you want to COPY - yes, that's right, just press RETURN
[Copy to base coordinate: C2]
now to you want to move the cursor down
we want to do it for all of them?
No if you just move it down 1, C3 and then type a colon in because that tells it that you want it from C3 to and then you move the cursor to where you want it [C7]
RETURN?
yes.
[Copy Values All]
You want to COPY ALL
(selects ALL, CR)
[Copy Relative Absolute Prompted]
RELATIVE - otherwise it would just copy thirty [result in C2] and be useless.
[It would copy the formula, but not adjust for rows]
[result displayed in C3 - C7]
It's done, is that right, yes, so that is your profit calculated.
Change attributes
Now you see how that is sort of to the right hand side of the column, [right justified] so square them up that is FORMAT so type F, if you select ATTRIBUTES
[NUM [R 2 -] LCR1[????????]]
now this LCR is LEFT RIGHT and it's on RIGHT at the moment so so it's inserting [positioning] them to the right of the column
Which one says it's to the right?
(points) this R here - that's is what it's set to RIGHT with 2 decimal places. So if you press the SPACE BAR you'll see the question mark change, that is LEFT, so if you press again, CENTRE, when you do that ... so if you press CR.
[Format applies to area:]
You want it to apply to, you want it from A2 to, press colon, to C7
So we can do it right across the square?

yes - I hope so (laughs) RETURN
[numbers A2 - C7 centred]
oh we should have done profit [text label C1] as well, so if you select FORMAT again and just press CR and ATTRIBUTES, just press RETURN because it is already on CENTRE, just press CARRIAGE RETURN because it is asking which ATTRIBUTES you want it to use and it is the ones you've already done, so -
(CR)
[Format applies to area:]
and then asks you what area so C1.
[text label in C1 centred]
We could put pound signs in, so if you select FORMAT again and ATTRIBUTES again,
[NUM [R 2 -] LCR1[????????]]
if you move the little cursor along [the question marks] you see how it [display to left of question marks] changes, if you keep going until
so that just tells you the different things you can do
yes you can put pound signs, dollar signs, deutschmarks or percent sign so just press the SPACE BAR and it changes and we want the pound sign, so if you press CR.
[Format applies to area: C1]
Right you want it to apply to, no we don't want it on the titles so
we want it on all these like we did before
(enters A2 - C7)
[pounds signs put in front of numbers in A2 - C7]
Insert row
We could have a blank line in between because it is quite squashed up isn't it. So if you go to INSERT, just type I, right
[Insert Row Column]
a ROW is that way [horizontal] a COLUMN is that way [vertical] so if we just press ROW,
[Insert Row(s) starting at: 7]
if you go up it will INSERT on top of 2 there so press CR,
[Insert how many rows?]
just one
[new row inserted between rows 1 and 2]
that's neater, what else can we do
Formula
can we work out a percentage profit? .. I know how to do it but you'll have to tell me how to do it on here. What you do is, um does he know how to do it? Yes it is 30, profit over the cost price times 100 so we've got 15% .. is that right?
yes .. yes you can
no if you don't want to .. because then we can compare them - how much profit you're making on each one. This doesn't tell you much, you're making the same amount but ..
ok, so get out of the MENU, press UNDO, so you want to divide C3 by A3?
yes and multiply by 100 (moves cursor to D3)
Just type C3 divided by B3,
(does)
well try it can only go wrong .. do you want to see if that works first
can we undo it afterwards?
yes we can blank it out. So you have to change it so it doesn't just enter it as TEXT, then press CR.
[result displayed in C3]
Yes it does ..
but that's, yes, 15% so we want to multiply it by .. you know like we did in the first thing where we made a mistake, we could just do it again (enters instruction, CR)
instruction displayed]
oh, you left it as TEXT, just type it again and then do it
F7? (retypes, F7, CR)
[result displayed]
Copy formula
yes ... right so you don't have to type that in for all of them, you can just COPY the formula
like we did last time?
yes, so if you go into the MENU, select COPY
I can't remember how to do this now, go down here, right
yes, you want to COPY ALL of it, RELATIVE
[copied to D4-D8]
Wow!

Change attributes
Now we could put a percentage sign in
so that's FORMAT again?
it is quite complex because you end up with loads of zeros on the end ATTRIBUTES again
there's something here for decimal point can we change that?
yes, decimal places, because if you type a percentage sign in it knows that you're multiplying by 100 so it adds zeros on the end
oh right
[NUM [R 2 -] LCR1[????????]]
if you just move over and find the percentage, if you try and enter percent and then press the SPACE BAR, try and do it just for 1 and we'll see what happens
(selects "%")
Just press RETURN.
[Format applies to area: D8]
Just do it for the last one, in case it goes wrong
[number in D8 displayed with "%" and two added zeros]
right it has multiplied it by 100 ...
so what you have to do is divide it all by 100, all those figures by 100
like the original thing we had
yes, we didn't need to multiply by 100. So if we divide
shall we go back and do it all now? (moves cursor to D3) C3 divided by B3, and leave it at that
just type D3 divided by 100 and you'll end up with the same thing instead of doing all the calculations again ...
[no - the new format only applied to D8 so far. Even if result may seem the same at the moment, changing the formula as suggested by co-experimenter is the only "sound", and fast, way to do it]
(follows subject's instructions and changes formula)
Right so if you COPY that for all these
(copies to D3 - D7, changes D8 separately after that D8 needs to be centred again, does)
FORMAT again to add the percent sign ...
[could have done that at the same time as centring entry in D8]
get the percent sign
(toggles "?" to "%", CR)
[Format applies to area: D8
can I go back up?
yes
(enters "D8:D3", CR)
[Improper coordinate. Bad syntax or out of range]
oh you can't, you can't go back up (somewhat surprised that it doesn't work) press UNDO, so start at the top
[D3 - D8 displayed correctly with percent signs]
Save
If you select Q for QUIT and SAVE, just type Q, if you go to OPTIONS - oh - it didn't ask us whether we wanted to SAVE ...
[not aware that model is always saved when exited and not been saved before]

Subject 18

[empty spreadsheet]
(pointing at screen) We've got the columns going down this way and the rows going across so each one like A1 or B2 or B13 or whatever is a cell and the cursor goes where you want it to go and you move the cell by pressing the cursor keys.
Enter text
So if we have a row of, first of all if we make up about 5 names in column A of the people who are doing the running, so you move it into the A column
(enters text label in A4)
and then move the cursor down to the next cell
(enters text labels in A5 - A8)
Enter numbers as text
If we do a row along here, in the 3rd row say 100 metres, another 200 metres, another 400 metres up to B3, sorry yes B3
So, 100 metres?
100 m, or whatever
(types "100 metres", CR)
[illegal character]
oh. Is that because of the 1? I think ... it's numerical ... Press UNDO F2,
(does)
[warning beep, edit mode]

now what do we do? If we just put in hundred - H - U - N - D - E - R -D ... oh no delete all I don't know what ...
[diagnoses problem correctly as a text/numerical one, but it doesn't occur to her that she could toggle it to text] - (types "hundred m")
yes and then CARRIAGE RETURN
(does)
[text label appears in B3]
Right if you go to C3, yes two hundred
(types "two hundred m", CR)
[text label appears in C3, one character too long for column]
ah - never mind If we go to D3 and do four hundred
(enters four hundred in D4) That will be even more out ...
Change width
oh yes, you can make the columns wider, if you press the MENU key F8 - It's FORMAT, I think it is, WIDTH, CARRIAGE RETURN.
(does)
[Set width of this column to:]
I dunno, 15, will that fit it all
(enters 15)
[How many columns to this width?]
just press 1 because you just want 1 column
[cursor in column D, points to column C] We should do that one as well, tough that's cut off ... Can we do them both at the same time?
no, I don't know ... [could do more than one, but it would affect only columns to the right of the cursor; since cursor is positioned in column D, it would not widen C] - (proceeds)
[D set to width 15]
if you select FORMAT again to do it to the next column, WIDTH again,
[Set width of this column to:]
yes, do 15 again
we're still on the same column [D] Can I move the cursor? (tries)
[warning beep]
[cursor needs to be positioned before MENU, FORMAT, WIDTH is selected - user needs to know 4 steps ahead of this one. Other FORMAT options allow to define the "area to which selection applies" - inconsistency]
we're on that one, oh no, if you just press CARRIAGE RETURN (doing column D again)
if you move the cursor now [cannot move cursor while MENU is displayed] oh no get out of the MENU, press UNDO, move the cursor to C3 then press the MENU, select F and then CARRIAGE RETURN and WIDTH, 15, 1.
[width of column C changed to 15]
Enter numbers
Right, if you just put some random figures in
(enters numbers in B4 - D8)
If we do a column here [E] to find out, how many races each of the people have run, if we put the cursor up in E4, no E3, and then do say number of races
(moves cursor and enters text label)
right and then, I've forgotten how to do this, oh you have to count ... you have to ..so ..
(moves cursor about)
Formula
there is a formula you can do, I think you have to toggle it to numerical but I've forgotten how to do it, I think it's F7 and then you have to ..
(tries F7)
[warning beep]
[since nothing to toggle at cursor position E4]
oh how do you do it? Formula, so if you put in COUNT, that's obviously.. no what is it .. COUNT then open bracket, so you want to count from B4 to D4
it doesn't matter that there's nothing in D4?
no, I don't think [correct] colon, E4 close bracket
(enters formula)
and then F7 because at the moment it's in text, just letter, then to make it numbers, then RETURN
[result displayed in E4]
Copy formula
I think, I've forgotten .. right, there's a way of doing it for all of those and I've forgotten how you do it .. oh COPY that's right so press MENU, F8 and then COPY

(selects COPY from menu)
[Copy from area:]
right so you want to copy from area no you want to COPY from E5 to E8 if you put in E5 ...
(starts typing)
no, no - sorry, so if you put in E4, because you're copying the formula from that
[Copy to base coordinate:]
then you want to copy it from there to there so it will be E5 to E8
(enters)
and CARRIAGE RETURN
[Copy values all]
dunno ... ALL I think it is, I think it's ALL
what's the difference
(laughs) I don't know
let's try ALL (selects ALL)
[Copy Relative Absolute Prompted]
and then RELATIVE I think
[copied to E5 - E8] is that right, yes it's right
it would be difficult to tell [since the result is - correctly - 2.00 in all cases] so what does that RELATIVE mean
I suppose it means - what was it RELATIVE or ABSOLUTE, we did RELATIVE, um, I've forgotten what that means, sorry
doesn't matter, seems to have worked
Formula
And then if you want to say find the average of all the different times...
If you move the cursor back to say A10 then put in there say, AVERAGE,
(enters text label in A10)
right if you move it into B10 and then select the MENU F8 (reads MENU) oh no, hang on, what am I doing - oh no don't bother with that press F2, if you put in MEAN, open bracket, what do we want to do, mean B4 to B8, CARRIAGE RETURN
(does)
[formula displayed in B10]
oh no sorry I meant to do F7, because we want it on NUMERICAL so can you type that in again
IS there any way to get it to do that itself?
Don't know ... probably [there is - select EDIT and toggle it] (retypes)
And then press F7 so that it's NUMERICAL
(does, CR)
[result displayed in B10]
Copy formula
then if you want to say COPY it for all of those, do the same again, F8 to get the MENU to COPY the formula into these two [C10 and D10] you select COPY, COPY from B10, you can either do it just by typing in C10 or move the cursor, that's it C10 and then press the colon and then move it along to D10 and then CARRIAGE RETURN
ALL?
yes, all again, RELATIVE
[copied to C10 and D10]
Change attributes
Can we get rid of these decimals [in column E]
yes you can do it, I don't know, just type it in 2, 2, 2 [that's what co-experimenter did - default is with 2 decimals]
but there's a way of doing it I can't remember how to do it now, oh what was it, was it FORMAT, try FORMAT,
(selects FORMAT)
I don't think this is right, but ATTRIBUTES, try ATTRIBUTES, don't know what I'm doing ...
(selects ATTRIBUTES)
[NUM [R 2 -] LCR1[????????]]
Oh yes ...
What are those question marks?
they're to do with ... if we move the SPACE BAR
(presses SPACE BAR once)
["R" over first "?" changes to "C" - from right justified to centre]
I just can't remember that, sorry
What's under the 2?
under the 2, I've forgotten how to do that bit

(moves cursor under "2", toggles)
I don't know what that means ...
Shall we just forget that than and do something else?
Filler character
Press UNDO, if you wanted to divide it up, like a graph, you could do INSERT a line or, if you wanted to INSERT a line if you press F for FORMAT, yes select FORMAT, I think it's FILLER,
(selects FORMAT, FILLER_CHAR)
[Set filler to:]
hang on, what am I doing? oh I know what I should have done
undo?
Yes UNDO
(presses F2)
Insert row
If you move it up to A4, if you wanted to INSERT a line there, I've forgotten, oh yes, it if you want to INSERT a line it does it above the cell or the cursor, so get the MENU, select INSERT, then you want to INSERT a ROW, so it's on that one yes, how many rows, 1 row, yes, right,
[row inserted between 3 and 4]
say you wanted to do a line along there to underline it, you select FORMAT now and FILLER_CHARACTER and then SET THE FILLER TO, you can use any character, you can use an asterisk or whatever, to do a line,
(selects "-")
if you just wanted to do a line, format which area, A4 and you want to go to E4 so press colon then E4
[line of filler characters inserted]
Save
shall we save it
Yes, select QUIT/SAVE I think
(does)
[Quit and Save: Options Context Save_Backup Save_New_Model]
Is it SAVE BACKUP or SAVE NEW MODEL? SAVE NEW MODEL I think,
(selects) that makes sense ...
[Save to what model:]
save to what model?
oh, sport ...
(enters "sport", CR)
[File B:Sport.FMD already exists]
[selected option to save a copy to other than current filename]
oh well ...
undo?
UNDO, shall we put a different name in race, sport1
(saves copy as "sport1")
[returns to spreadsheet]
[bemused that model is still there, but doesn't seem to realise that they have saved the same model to a different name, but not saved it under it's original name] - how do you get out?
(thinks)
QUIT and SAVE again?
[Quit and Save: Options Context Save_Backup Save_New_Model]
OPTIONS - and then go out into the operating system

Subject 19

[empty spreadsheet]
You could select a list of 5 items which you buy daily, like milk, bread and the price of each of them, how much you spent on each of them each day.
Enter text, enter numbers
So if you just printed in bread, there, if that's what you buy,
(starts typing)
if you print it down there [input line] and then press RETURN, and in order to do something else, in order to do your second item you press that [CURSOR KEY] and the, I can't remember what it's called, this thing the pink thing [cursor] down and ok so margarine or whatever
(proceeds to enter text labels in A1-A5, numbers in B1-D5)
How can I change that? [entry]
Well the way I would change it would be like this (presses SPACE BAR, CR), so it would be clear again, then print in what you want, but I think there is another way of doing it.
[doesn't have to clear cell first, could just overwrite]
Now we go to the MENU which is that one [F8] OK now because we want to change the FORMAT so I think we make this little blue thing go to there and you do that by pressing this button. OK, now press RETURN.

[Format Width Attributes Filler_char Data_type]
(reads MENU options) OK - perhaps, could we go back to MENU again, press F8, I think
[warning beep]
oh press RETURN
[Set width of this column to:]
[selected first option by pressing CR]
oh how do we get out of this, press UNDO then we'll get out of it sorry.

Insert row

I don't think that is a very good idea, I think we should choose INSERT instead.
[Insert Row Column]
Better go, yes we want an extra ROW, or two
[Insert row(s) starting at: 5]
where do we want our row? At 1, press 1 and so press RETURN
[How many rows/columns: 1]
we just want one row so press RETURN
[new row inserted above row 1]
so you've got an extra little row there, I mean we could put an extra one in there if you want and so we have extra space. So we've got items and then a space, do you see what I'm saying? So you do that again on your own

(inserts another row and adds text labels)

Change attributes

Do you want to move the noughts, I think the noughts are looking a little distracting, so if you get back to the MENU again, and (mumbles) bit of a tricky one, can't really remember this - I think go to FORMAT
[Format Width Attributes Filler_char Data_type]
and we go to FILLER_CHAR
[Set filler to:]
no we don't, we don't do that

shall I press UNDO?

We go to FORMAT again, ATTRIBUTES, try that,

(selects FORMAT, ATTRIBUTES)

[NUM [R 2 -] LCR1[????????]]
yes that's it, we want to get the noughts out, can you press that

(moves cursor onto second "?")

no don't want that

(moves along)

yes it's that one, yes that one. press, we want that because you see it's got a little nought there, press F7 because we don't want -

(F7) [confuses toggling of TEXT/NUM (F7) with toggling "?" (SPACE BAR)]

[nothing happens]
yes we want that one, did you see the little zeros come up then, press that one and RETURN.
[Format applies to area: D1]
FORMAT APPLIES TO B3, I think, B3, just put B3. We'll try B3 to D - you have to do that SHIFT colon sorry, D6, hopefully that will work
Shall we do it column by column? There is a way actually ...

No, let's try to do it all at once. (enters B3:B6)

RETURN.
[entries B3:B6 without decimal places, but not B7 and C7]
Yes, we've got that.

It's missed out the carrot ...

I don't know why it's done that - oh because it's - we'll have to do those two separately.

Perhaps you should have done D7?

yes, that's it

(does B7:C7)

Can we work out how much we've spent on bread?

Formula

OK. So if you print in COUNT, just a minute, move the cursor so, well I think perhaps there would be better ...

(moves cursor to E3)

then print in COUNT, then you need brackets so gosh B3 colon to D3, bracket

(types "count(b3:d3)")

then we have to, at the moment we're in TEXT you see, so we've got to move into its kind of NUMERICAL thing and that is F4 and you see the NUMERICAL thing has changed.
[hasn't changed]

I think if you do that, press RETURN, it might come up, no it doesn't, I don't know what I've done wrong.
(experimenter tells her its F7 to toggle, and the formula is SUM)
SUM, it's SUM - so if you print in SUM and then brackets
OK so it's the same, ... (types "SUM(B3:D3)")
Then you have to press the calculation key again
(F7, CR)
[result displayed in E3]
(instructs co-experimenter to enter formula for other rows)
Copy formula
Can't we copy that?
Yes, OK so do you want to do the same for all four? OK we'll try copying the formula. Press MENU. Then go to COPY.
[Copy from area: E5]
From area - B6
[Copy to base coordinate: E5]
copy to?
D7
D7?
[does not realise she only has to copy the formula]
I don't know, I think, I can't remember. We'll try this and then if it goes wrong we do it the other way
["45" appears in E5]
All. Hasn't done anything has it?
No it's put 45 there [E5] That was blank wasn't it, it didn't have any characters did it
No, right-o. Press COPY again, oh we'll have to try and delete that first.
(experimenter intervenes and tells her how to copy)
OK go to COPY
[Copy from area:]
from area, well we're copying the _formula_ aren't we so I think I'll have to try actually copying the formula which we used for that
(still cannot get the defined what needs copied where to - experimenter gives stop-by-step instruction)
[formula copied]
Do the MEAN for Monday [B column] We'll have the mean down here, so print in MEAN, OK
(enter "mean" as text label in A9)
then print in MEAN again then bracket, B3 to B7,
colon? (types "meanB3:B7")
Yes, bracket, then press F7, RETURN,
[result appears in A9, overwriting previous text entry]
right well we've printed it in the wrong place ...
Save
We want to get down to QUIT and SAVE, OK, press RETURN,
[Quit and Save: Options Context Save_Backup Save_New_Model]
I'd go to SAVE_BACKUP, RETURN, OK press RETURN.
[returns to spreadsheet]
Press RETURN.
[Quit and Save: Options Context Save_Backup Save_New_Model]
It's gone back again hasn't it. Well we'll go to OPTIONS, we've already saved it. We want to get out to the system so try OPERATING SYSTEM. OK That's it.

Subject 20

I have to tell you what a spreadsheet is, well you can do graphs and that sort of thing. Just, and then you can change the information easily because it's a computer -
[empty spreadsheet]
If we're doing a shop - if we put the items down the side, and then we can put the number items along -
Enter text, enter numbers
So, to enter the items across the top you got the highlighter [cursor] on A1 so that's where it will enter to start with. So you just write 'tea' and it will come up there
(types "tea")
if you leave a few lines at the top then you can put headings, so get the highlighter [cursor] down by pressing the arrows,
(moves cursor to A4)
right, now RETURN -
(does)
[entry in A1]
oh - (laughs) Never mind leave it now we can get these lines later.

[entry are entered at cursor position at the time of first keystroke]
(instructs co-experimenter to enter text labels)
(overwrites entry in A3)
Where did the last one go to? oh yes we forgot to move the cursor down so it went on top. Right so move the cursor down again from now on (instructs co-experimenter to enter text labels in A2-A5, and number in B1-C5)
Insert row
If we just leave it at that and then try and get rid of the noughts and put some things on top, right? So you need the MENU, which is F8, right to get rid of the noughts - oh I can't remember that one, we'll get another line in here first so it is FORMAT - no, INSERT, so you can either press along with that or you can press I so just press I - whichever is quicker.
(selects INSERT)
[Insert Row Column]
We just want a couple of ROWS
[Insert row(s) starting at: 5]
starting at - no, so we've got to move the cursor to where we want to start it so, yes fine and
[How many rows/columns: 1]
oh how many rows, 3, in that case, yes now change it to 3 and then RETURN.
[3 lines inserted on top]
Right now - (instructs co-experimenter to enter text labels B2-D2)
You've got to change it because you've got to take the MENU away by doing UNDO and then move the cursor along.
Change attributes
I see if I can remember how to get rid of the noughts, so if we went back to the MENU and then it was FORMAT so either F or just move along
(selects FORMAT)
[Format Width Attributes Filler_char Data_type]
ATTRIBUTES, yes,
[NUM [R 2 -] LCR1[????????]]
now you can move this along with the SPACE BAR - (presses SPACE BAR a few times, toggles first "?") oh no SPACE BAR changes each one in the - well you can move that into the CENTRE of the column, so this is for where it is in the column, LEFT, and CENTRE, yes. (toggles first "?" to "C") You move it along here with the [ARRROW KEYS] yes I think it's that one, if you try the SPACE BAR again to get to the nought, carry on, get back to nought
(toggles decimals "?" to ")")
I think that will work. So we're going to have it in the CENTRE and nought, so if you press RETURN
[Format applies to area: C2]
and it applies from there so you want to move the cursor back to [B4] and in order to say FROM an area TO another area you need a colon and you want it to apply to there, well to the end of this section [C8] and RETURN.
[numbers in B4-C8 centred and without decimal places]
That's a relief! (instructs co-experimenter to enter another set of numbers and text label in D2)
Formula
To calculate it - if you write MEAN here, then you do a bracket, from the area, hang on - yes from the area you want to do it to so B2, no B4, yeah to wherever it is, D4 and close bracket.
(types "meanB4:D4" at cursor position D2)
Um then you've got to change this because at the moment it's on TEXT because it takes it from the first letter, you have to change it so it's doing calculating and you do that with this, F7 which will change this,
(presses F7)
[entry at input line toggled to NUM, cursor remains on D2]
(looking at D column, expecting something to appear) Oh I thought it would - (looking at input line) yes it has done, changed it to NUMERICAL (points to input line) and if you move the cursor down to the right place
(moves cursor to D4)
and press RETURN it will calculate the average - hopefully.
(CR)
[result appears in D2, overwriting previous entry]
Oh -
it's gone back to where it was before ...
Yes, I don't know why, that was there [on D4]
before I pressed RETURN, yes.
Let's try putting it there first or something
(moves cursor to D4)
now do the same again, MEAN and open bracket and then change it to NUMERICAL and then try pressing RETURN

[result displayed in D4]

Copy formula

Good! (instruct co-experimenter to replace text entry in D2) Then we want to do the same for all of them. So you want to COPY it into all of these [D5-D8] relatively according to what is there so that we've got the average for all of them. So we need the MENU again, MENU key. So there is one to COPY, yes.

[Copy from area: D2]

FROM AREA - we want to COPY from this area so move down the cursor

(moves to D4)

and then RETURN key

[Copy to base coordinate: D2]

TO - and we want to COPY it from there to there E5 and to, with a colon, E8. Just cursor to it, then RETURN.

[Copy Values All]

Yes we want to COPY ALL, so move to ALL

[Copy Relative Absolute Prompted]

then RELATIVE you want to do it RELATIVE because obviously it's different numbers in each. Right and it's done it, good.

Save

Right if we switch it off and SAVE it so to QUIT/SAVE is what we want. Just do Q.

[Quit and Save: Options Context Save_Backup Save_New_Model]

And OPTIONS

(does)

[applications menu]

Oh dear - has that saved it? [was expecting choice WITH SAVING/ WITHOUT SAVING] so if you go down to OPERATING SYSTEM.

Spreadsheet Comparison Group

Comparison-Subject 1

[empty spreadsheet]

Right this is the spreadsheet, it's like an array of rows and columns, so you fill each row or column with either TEXT or a NUMBER or a FORMULA

just like a table

yes it's just a table, but computerised, so if you'd got a sheet of paper which had got rows and columns marked on it then just fill in the headings or the numbers so instead of having to work out manually what the totals at the bottom of the columns are you can get the computer to do it for you, you just fill it in the way you would a piece of paper, so say you wanted to work out hours in a day, say you were doing three projects and you've got five days in a week, so if you type column A a day heading, so if you type in day

Enter text

so just type in day?

that's TEXT, you see it's got text down there so if you hit RETURN and just insert that, that will be the column that starts the days of the week, you can then change to a different cell by using the cursor keys again, so to get to the next cell along you select the right key

this one?

yes, you get to column B, you can get round the whole table like that, you can have quit a lot of tables like a few hundred rows by a few hundred columns

so it goes further than this

yes it goes right along, you can scroll A to Z then it goes AA AB AC AD and carries on, haven't got to the end yet, so if this is a worked on project A, say type in the project A ...

(types)

when you type something down there [input line] it displays it there, space, hit RETURN. If you cocked it up you can either type it back in again or you can use the menu and edit it, you now want to fill in the column for Project B so you can go along instructs to enter text labels in A1:D1, and A2:A6)

Enter numbers

You can put the numbers in later on, at the bottom say you want to total up what you've done for each project for the whole of the week, leave blank line, go down twice, then put total

(enters "total" in A8)

Formula

now if you go across one, you can make it automatically, once you've typed some numbers in, add up all the figures that will be in this column here [B] and that one and that one there so you want to do that there's a command called SUM.

You type in SUM, type in open bracket to say you're giving it a list of coordinates now you want a list from B2 to B6, you reference by column first then row, for a specific cell so you want it from B2 so to say its a list rather than just one cell you put a colon, then B6, the bottom of the row, now close the bracket, now so far it thinks that's TEXT (points to indicator left of input line) so to make it realise you have to change it to a NUMBER, so if you hit F7, it is in fact change key so if you press that it will switch that to a NUMBER formula.

(F7)

See it's changed from TEXT to NUMBER there

what would happen if it was in TEXT?

if it was in TEXT it would just sort of print that on the screen there, like it printed Friday, Thursday, that lot. If you hit RETURN now it will come up with question mark-n-question mark because it's saying there is nothing there so it can't print anything out at the moment.

["?n?"]

Now if you go along you can do SUM for C2 to C6 -

Copy formula

oh you can COPY the formula across, if you press the MENU key F8, it will give you a list of different options you can use down here, what you want to do is COPY what's in this [B8] the formula in this, so if you hit C you can COPY

(selects COPY)

[Copy from area: B8] so input from, you're in area B8 so you want to COPY what's in that area, so you hit RETURN there,

[Copy to base coordinate: B8]

to C8, D8, so if you do that C8, colon, if you want to COPY it to more than one, D8 hit RETURN again it will give you a now a set of lists

[unclear whether this refers to list of base coordinates the forthcoming options]

[Copy Values All]

you want to do ALL of them, do everything in that, so you want ALL, just move the arrow and hit RETURN,

[Copy Relative Absolute Prompted]
you want to do it RELATIVE because what that means is it will change those values from B2 to B6 when it copies it to C it will do C2 to C6, in D it will do D2 to D6, so you want it RELATIVE so you hit RETURN now, if you had it ABSOLUTE it would put the same value you'd got there, B2 to B6 again

can I check that I've got it right?

yes, if you move along and get the MENU which is F2, if you move along with cursor til you get to the square, if you want to start filling in the numbers (instructs co-experimenter to enter numbers in B2-B6)

Recalculate

so far the total is still blank, if you go down to the total at the bottom, go to the MENU, press F8, there is an option called RECALC which will recalculate so if you hit R -
[Recalculate equations over area: B8]
CALCULATE EQUATION OVER AREA B8 which is that one which is what you want to do, so hit RETURN,
[result displayed]
you've worked 14 and a half hours

(starts to enter numbers C2-C6) Besides SUM, what other things can we do?

you can use anything - multiplication, addition, there are a few specialised ones like sine, cosine and arctan but anything you can do with a maths equation you can do with that, you can fill up the whole line [input line] using brackets and plus and minus [means formulae can be as long and complicated as you like?]
you can make your own equations up

so if I go down again and recalculate, so that's right isn't it (performs RECALC on C8) (enters numbers in D2-D6) (performs RECALC on D8)

Formula

say you're in business and you're charging money for working on certain projects, 2.50 for A, three quid and four quid on that one, if you put another row down the bottom say on row 10, call it cost

(enters text label in A10)

it's TEXT so it has come up as cost, if you now move along to B, you want to enter a formula here so you could do, that is area B8 so you want it to apply to B8 then you want multiply, and the symbol for multiplication is the asterisk so if you put asterisk, shift ?, and it's 2.50 an hour so you multiply by 2.5

*(types "B8*2.50")*

hit RETURN
[formula printed in B10]
oops - we didn't change it from TEXT, so we made a mistake, you have to change it to NUMBER format, so if you hit the MENU, there's a thing called edit, if you hit E, now if you want to EDIT change it from TXT, must be F7

(F7)

[entry toggled to NUM]
so if you hit RETURN now, as the figures already there that has entered the result automatically, now you want to COPY that formula across (instructs co-experimenter to enter same formula with different multipliers in C10 and D10)

Change Attributes

Now that looks a bit messy, it's all down the right hand side, you can actually FORMAT it so it's justified into the middle, under the middle of each heading, so if you go up to this one here, then hit MENU, there's a command called FORMAT which will adjust the format of each sort of block, F for FORMAT, and hit RETURN
[Format Width Attributes Filler_char Data_type]
you want to change the ATTRIBUTES of the cell so move along to ATTRIBUTES, hit RETURN
[NUM [R 2 -] LCR1[????????]]
you want to change that from being RIGHT justified, which is what the R stands for to CENTER, which is the C so if you F7 is the change key, [toggles with F7 instead of SPACE BAR]
so if you F7 it goes L, C, leave it, now so hit RETURN
[Format applies to area: B2]

these are all the way across?

not yet, just that one at the moment

(CR)

[entry in B2 centred]
it's only done it for this one [B2] so what you want to do is COPY that format to the whole area here,
so if you go back into FORMAT again, hit RETURN again, back to ATTRIBUTES, that's how you want it set up [since cursor is on B2] so hit RETURN it will say using ATTRIBUTES from what entry
[Format Attributes using attributes from what entry: B2]
[default when CR without changing any attributes]
so you hit RETURN again and COPY it from area B2 down to area D10 so if you put colon, D10 hit RETURN now it will COPY that format to the whole of the table, so it's nicely CENTRED up

[ditto]
(instructs co-experimenter to enter text label in E1) You want to SUM from B2 to D2
(enters formula in E2)
it's got to be a NUMBER so if you change it
(F7)
now hit RETURN and let's find out see as we didn't COPY the FORMAT down to that column, it didn't, so we can change it later on.
Copy formula
Now we want to COPY that FORMULA relative for each row down to the bottom there, so it's back to the MENU, COPY, just C
[Copy from area: E2]
that's it, that area there
[Copy to base coordinate: E2]
The quick way of doing it is if you move down to the next cell it changes it there you want to COPY to that cell down to that so put a colon now move down to the cell you want to COPY the formula to
(moves cursor to E10)
so you want to COPY it to that cell first [E3] if you COPY it down to that one [E6] it will give you loads of silly equations because there's nothing in that row [7 and 9] we'll do it bit by bit, if you hit RETURN now
[Copy Values All]
go to ALL,
[Copy Relative Absolute Prompted]
we'll do it all RELATIVE, we want to change all those figures for each row
now you want to COPY that equation again (instructs co-experimenter to copy to E7 and E9, and centre the number in E)
Save
to SAVE it you've got an option called QUIT/SAVE so if you go down to that
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
you want to go for MODEL_SELECTION on that menu, so hit RETURN again, and it will SAVE it, as it's your first one [means first time exited?]

Comparison-Subject 2

(selects existing spreadsheet first)
Now the spreadsheet has come up. The spreadsheet is a way to show up formulas and such you can put your numbers in, it's like having a formula built in for you, you can put your NUMBERS in along with TEXT it will come up in this sort of format, a page of TEXT it will come up like that and you can put your NUMBERS in, formulas within these spaces,
Enter text, enter numbers
it's all arranged in blocks if you go around like this, (demonstrates use of cursor keys) so in each block you can either put a NUMBER or formula or TEXT, so when you do a spreadsheet you put your basic numbers in, your base ones, it will work out all the formulas and come out with results, yeah?
so now if you look as you go around here, if you look at the bottom it prints in that box [next to input line] TXT stands for TEXT so it's just printing TEXT which is Thursday, as it says down there if we go across to there, which is 3, it says there NUM which is NUMBER and it's got 3 which is a number and that's 3 and all those numbers ...
so can I have a go at trying to set one up?
[empty spreadsheet]
you could do something like pupils in a class, they'd have different exams, say 5 exams, they all get marked out of 100, so 5 pupils get 5 results
with the cursor keys you can move around the screen, you can move the block around
so I've got to think of putting in a table-type form
yes, it's best to have the courses across the top and the pupils down the left hand side
(types "course a") so if I hit RETURN -
that will go there [B1]
right I want to put "course b"
you want to move the cursor first, move the block to the next one
right (types "course b" in C1, student names in A2-A5)
now you've got the names in, so within the spaces here you can put the results in
so if I just put a number in (types number) that's different there isn't it?
yes, now if you start off the input with a number it automatically assumes you've got a number, another thing about it, there's a button, that button there [F7] change, it will vary it from NUMBER to TEXT
right, I want it as a number (enters number in B2-C5). Now I've got things in, now -
now it depends what you want to do to them, if you want to add them up for each person, their totals for the two courses, find the averages or something
well, like the average mark for the course that would be quite useful wouldn't it?

Formula

for average marks you want to sum the whole marks for the course, so you want to go below if you put total there

so total, can I work out the average

yes you can, so it depends if you want

so call it average (enters text label in A7) Right so how do I do this then?

Right if you come along to be underneath [B7] now you want to do the formula for it, now what you want to do first is add all the numbers up and divide by four, the number of students, to give the average. Now the way to add all the numbers up is SUM, open brackets, now you have to look where the column are that's B (points to screen) and it's B2, B3, B4 and B5, so you put B2, the colon, B5 and what that represents [SUM(B2:B5)] close the bracket, the sum of columns B2 to B5 so it adds all those up, now you want to divide by 4,

[does not seem to know there is a formula for average] press RETURN -

[formula SUM(B2:B5)/4 printed in B7]

now you see that's gone in there now so that's showing you that

so how do I get the number

Toggle display

to get the number you want to go to MENU again, that [F8] comes up with the MENU, you want the WINDOW option so if you press W, V, the way you do it is go into the MENU W, V for VIEW, now RETURN [Equations] [thinks it's printing the formula because it's in other mode]

[still formula in B7]

It's done the wrong one, (presses some key), now try it again, press MENU again, W, V, RETURN maybe it's on the, printed that again - I don't know

(Experimenter points out there is something wrong with formula)

Oh yes I see what it is, right mistake there, get out of that MENU, the formula you've put in, it thinks it's TEXT, so if you type it in again, because you put an S in first it automatically assumes it's TEXT, so what you need to do is put the SUM in and change, put it in again [instead of editing it] - (does)

Now the change key which is that one [F7] that will turn it into a NUMBER

now hit RETURN?

[formula displayed, since it's currently in that VIEW mode]

yes, that's done it - it doesn't show everything in the formula but now you can toggle it

you can toggle it again, so MENU, W, V, RETURN,

[result printed in B7]

now it's come up with a number

right, I'm assuming that's right, now if I want to do that for this one here, do I have to do it all again or can I copy it?

Copy formula

You can COPY it - as there's only one you could do it again, but use the COPY anyway, press c for COPY

[Copy from area: B7]

now it asks you what AREA you want to COPY FROM - it states B7 because the cursor's on B7 and that's what you want to COPY from anyway just press RETURN there

[Copy to base coordinate: B7]

now it says the base co-ordinate, where does it want to COPY to, which is COPY all to C7, so if you delete B7 and put C7 in, press RETURN

[Copy Values All]

now it's asking whether you want just VALUES copied or ALL copied and you want ALL so press A

[Copy Relative Absolute Prompted]

that's, I always use RELATIVE for the time being when you're messing around with formula, the ABSOLUTE it would copy the exact formula across the relative what it would do now is "Bs" to "Cs" so just press RETURN

right so, now it doesn't look very tidy, what can I do about that? I mean it's all, it's not underneath it is it

Change Atributes

that's the TEXT - you could take the TEXT and try and put spaces in front of the TEXT for course

[pretty messy solution]

you can't put it in the middle, so these come down the middle? because that would look better wouldn't it

if you can I don't know -

(Experimenter tells him how to do it)

is it FORMAT? Right. There's an f for FORMAT, now something which ought to be, could be ATTRIBUTES, so type A.

[NUM [R 2 -] LCR1[????????]]

I haven't seen this before, I don't know what it is Is it in here, in the attributes?

So there's an R there which means it's all RIGHT justified, so if you want to change that to C you've got choices there of L, C or R so change that to a C and it will make it in the CENTRE

it gives you an option of what you can press there so try change, now it 's come up with the L which will make it left justified

so I want C

C for CENTRED, yes

that's it is it I don't hit RETURN or anything?

try it I think it's alright

[Format applies to area: B7]

now it's CENTERING, do you want it to centre everything or just the numbers?

well I think the names are Ok but not the numbers

both those columns completely. Right so you want the centre from B1 to C1, don't you so if you delete B7 and put B1, delete B7 again and put C1. What that's doing it's specifying those two from there, yes? so it's going to change all those if you press RETURN.

[text entries in B1 and C1 centred]

It didn't do it.

it moved those [B1 and C1]

oh of course we specified those two [B1 and C1] I was assuming it would give you another co-ordinate as well, so if you do it again,

back to FORMAT? it was ATTRIBUTES wasn't it,

now if you change that, yes press RETURN

[Format applies to area: B7]

so I want to -

you want to put the area of text in and you don't want to change the first two [B1 and C1] so you might as well just do the numbers so that's B2

B2, now I want to go down to here, can I put area C7

yes if you put colon C7, press RETURN,

now it's changed everything

Save

To come out of this you want QUIT which also SAVES, so if you use Q to come out for QUIT,

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

and it gives you options you want that option because the rest are something else, that will take you back to the OPTIONS, so press RETURN, it should automatically have saved it.

Comparison-Subject 3

[empty spreadsheet]

Now this is the spreadsheet you've got numbered rows and each letter represents a column. You can use the cursor keys to move around like that, and you can move all the way across and it goes onto new ones. (demonstrates) There's quite a few of those. That position, it's B2 it is classed as because it's B there and 2 there and that pink strip is called a cell.

This is the input line (points) so whatever you want to go in that cell you type it on that line first and then you press RETURN and it will go into that cell so you can type in TEXT or you can type in NUMBERS or you can type in FORMULAS to manipulate numbers.

Enter text, enter numbers

Government expenditure on something so we want to do some headings first so move into that column there [A1] we need a heading for the countries, so type in "country" first.

(does)

It's come up on the input line which is right and the TXT means it's TEXT and the L shows it's left justified which is alright so you press RETURN and it will come up on there

[entry printed in A1] if you move it across to there [B1] you can type something else now.

(types "defense") How do you spell it?

Now press RETURN again.

(enters heading in C1, starts typing)

you have to move it across first

(moves cursor to D1, finishes typing, CR)

[entry printed in C1, overwriting previous entry)

Don't know what happened there - never mind ... [entry goes where cursor was when first char was typed] you'll have to type it again

so if I type it again (does, enters heading in D1, enters names of countries in A3-A5, and numbers in B3-D5)

perhaps you'd like to add a few together to get the totals there for each country?

yes so you want to put a title there saying total

(enters label in E1)

move down to the next few lines there [E3] that's it, then do a total

do I have to add them up myself?

Formula

No you can type in formulas to add up all these rows and columns, so if you wanted to add all this again you'd type B3 plus C3 plus D3, and then that would add all those up and put it in there type B3 plus C3 plus D3 but don't press RETURN yet because you typed B first it considers it TEXT, formulas have to be entered as NUMBERS, you have to change it to NUMBER so if you press F7 that's the change key and that will change it to a NUMBER, so you can then press RETURN, it comes up

[result printed in E3]

now it's come up, it's added them up

so if I want to do it for France now do I do exactly the same again?

Copy formula

well you can do that, but you can COPY the whole formula so it will change the numbers in the columns for you, so if you press the MENU button which is F8, press C for COPY,

[Copy from area: E3]

you want to go FROM AREA E3 'cos it contains that formula, so you just press RETURN

[Copy to base coordinate: E3]

and you want to COPY it into E4, then E5, if you type E4,

(does)

that's the start of the area you want to copy to and if you press colon and now type E5 that means copy the formula from E3 into E4 and E5, it does E3 through to E5

but I don't want the same formula, do I?

what COPY will do, it will change it, whereas that was B3 plus C3 pus D3, it now changes the 3 to a 4 for that line and the 3 to a 5 for that line, so it will work properly.

[Copy Values All]

You want to copy everything, you don't just want to COPY VALUES, just use ALL

[Copy Relative Absolute Prompted]

and we want it RELATIVE

what does it do if it's relative?

I'm not sure, it must COPY RELATIVE to a base address, actually so that's the way it converts the numbers

it won't do B3 plus C3 plus D3

no it will do B4 plus C4 plus D4 and then the fifth line it will do B5 plus C5 plus D5. [does not know or use SUM] - (CR)

[results printed in A4 and A5]

Save

There it's added them all up now. It's probably best to back it up onto disk now, so you want QUIT/SAVE, just type Q.

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

You get the SAVE MENU up, you want to move onto SAVE_BACKUP, then if you press RETURN that will save it to the disk and that will make sure that if you do something wrong it will be saved on disk and you'll get it back.

so I've definitely got what I've done so far

yes.

so, I've done the total up there, can I do something on the bottom as well?

yes, first you have to press UNDO, that will get you out of this MENU and then you press the arrow

Formula

so what if I want to find out the average, I want the average they each spend

what do you mean by that, add them all together and divide by

yes could I do that, is there a function to do that?

don't know whether there is a function - you could add them all together and then divide by however many countries there are, you could do that if you want

(enters text label in A7) so we want to add together B these [B3-B5], then divide?

yes so you add together B3 plus B4 plus B5

(types in "b3+b4+b5")

then you have to use the divide, the divide is higher priority than ampersand (sic) so first of all it would do B5 divide by the number of countries and then it would add onto the figure you've got B3 plus B4

so I don't want to do that

so if you delete that and put brackets round that, so type bracket, then type B3, plus B4, then close bracket then divide by three which is the number of countries.

you don't have to change that thing?

because it's a bracket [as the first char] it now thinks it's a number so you don't have to change it so you can just type RETURN

[does not know or use MEAN] [result printed in B7]

so now if I want to do the same again I can just copy it over?

(instructs co-experimenter to copy to B7-E7)

Change attributes

now it doesn't look very good it's not too clear the way it's set up so

that's right. It's probably best to move these [text labels B1-E1] so they start at the end so if you the country's probably alright so if you move onto defense, (still have menu up), you're still on there so if you press undo first and now move onto [B1] if you select the MENU again there's an option on there called FORMAT, choose that,

[Format Width Attributes Filler_char Data_type]

you want to FORMAT the ATTRIBUTES which are various things about each cell, so press RETURN

[NUM [R 2 -] LCR1[????????]]

now this first one is the one you want, to justify it and we've currently got it LEFT justified which is shown there and you really want it to be RIGHT justified so if you press the change key [F7] F7, until you get the big R there, that's it, now press RETURN

[Format applies to area: B1]

this js the area it applies to, you want it to apply to B1 through to E1

colon?

yes type E1

why is that coming up why does B1 come up

it just puts that there because it's the square you're on at the moment, just change it yes

[entries in B1-E1 right justified]

and now it has justified them all to that level

is there anything else I ought to know

Recalc

I suppose you might want to change some of these numbers some time

if you get rid of that by pressing UNDO again and if you move onto any of the numbers we can change it

(changes a some numbers)

see all these values [results of formulae] are wrong? so to change it you type the MENU key, now you want to use the RECALCULATE option so type R and that will do it. Now you really want to RECALCULATE the whole table so if you press the button F4 [All] it will do it automatically, it will change the numbers and you can do that for any of them

[recalculated]

now what about if I need to add say if I wanted to add Germany

well you can either put them in there or you would have to move this up, so you put "Germany" row 6 for a start

(types it in and adds data for Germany)

shall I just RECALCULATE?

no, because the formulas are now different, you see because we've got an extra thing so these would be different, so if you want to add it say, move on to F6 and we'll copy that down

(copies formula to E6)

unfortunately, with these [B7-E7] we have to change the formula now. (instructs co-experimenter to move to B1)

you have to get the MENU first, press the MENU, you can use the EDIT command now

so how do I change it now?

you can use the arrow keys

so go back

yes, now type plus B6, then close the bracket

(does, CR)

can't see it now

it's overwritten it [with the new result] that's why (instructs co-experimenter to copy formula to C7-E7)

Insert line

Is there any way of moving them, to get a blank line?

I think we can use the COPY command again, but I'm not sure about that

(experimenter tells him he could insert a new line)

we can always get help on it

help?

yes if you use the arrow keys to move onto this cell, that's it now type the HELP button there and that will give you help on INSERT which is the right thing to do

(both read help entry on INSERT)

that's right, that's what we want

so do I want insert? (selects)

[Insert Row Column]

I want to insert a ROW?

[Insert row(s) starting at: 7]

yes 7, starting at 7

[How many rows/columns: 1]

just the one
just the one, yes
[new row inserted between 6 and 7]
Save
it's moved it down, well we just have to SAVE it again, QUIT/SAVE, just type Q, move onto the SAVE_BACKUP again
we do that even if we want to exit?
yes, it's always best to SAVE it first
[it would ask whether to save before exiting, so it is not necessary to save a backup]
if you want to exit you can do it from this menu too, if you want to exit you just use the OPTIONS command and that will exit for you
save backup?
and then it's SAVED it you want to quit you can do Q and then just type O for OPTIONS and that will get us out that's it you're out of the spreadsheet

Comparison-Subject 4

(decides to show co-experimenter existing spreadsheet first)
OK so we've got a spreadsheet loaded in, gibberish but never mind, each, it consists of rows and columns, 6 columns and each like block is referenced by the name of the column and row, so here would be B4, there would be C1, so if you want to do, this here is telling you where you are, the current, so it's telling us we're in A1, you can move this, highlight the block around the cursor keys, to move round It's telling you down here what's in the squares is a number
Enter text, enter numbers, enter numbers as text
as I said we want to, press, square just change that 601 to 521 or something like just type the number we want, just press return to enter that in the square, it's changed that, you can put TEXT in alternatively
how does it know it's a number
it just checks the first character, so if you put a few minuses there it knows it's a NUMBER, but you don't actually want it to be input as a NUMBER (demonstrates) it gets confused if you do, put minus signs in then press RETURN
return
yes, it should give a nasty error, yes, so now just press UNDO to get a menu, the menu comes up
how would I get those to be alternative then?
yes, now you've got change what it thinks the input is, change is F7, so it now thinks it's TEXT, so if you press RETURN now, it puts it in there as TEXT, but if you just type a name it thinks it's TEXT, it looks and thinks it's TEXT
so if I want to do my own spreadsheet ...
[empty spreadsheet]
I suppose exam marks are quite easy, just a couple of courses and averages or something like that. And so set up the columns
shall I do some columns for courses?
we want to label them don't we, so maybe come down maybe students down here [A] and subjects across
so those are the columns, and rows (enters names of courses in B1-D1, names of students in A2-A5, marks in B2-D5) right so those are the marks now what can I do with those?
Formula
say you want to find out what the average mark was for french, just label the column average
(enters text label in E1)
now we want to, if we go into the square where we're going to calculate the results [E2] now we tell it the formula that calculates the average, we tell it the columns rather than put the numbers themselves in, the columns it's got to take the numbers from so you want to add them and divide by 3. I'm not sure, you must be able to, if you just put the formula in using
so I want to add those and divide by three
yes, and you have to put bracket in there
(types "(b2+c2+d2)/3") just press RETURN?
[result printed in E2]
right now I want to do it for the others as well
Copy formula
you can use the COPY for that just copy the formula in that square
so it's copy? (selects)
[Copy from area: E2]
E2?
[Copy to base coordinate: E2]
that's right now I want to copy to
you want to copy to a range, it's more than one cell so if you put the first one, and to show it's a range you use colon and then the end of the range

E5?
RETURN
[Copy Values All]
VALUES or ALL
you don't want to copy the values so ALL, you want,
[Copy Relative Absolute Prompted]
(thinks) RELATIVE - I hope that works
[results printed in E3-E5]
that seems to have worked doesn't it what else?
Recalc
you could change some numbers now and recalculate ...
what if I've made a mistake, say, entered Mary's mark wrong
just overtype it
so if I go to Mary's, if I just type it in now will it do it
yes
(types new figure) so if I hit RETURN. Oh it doesn't do it [recalculate] automatically
no, which is really peculiar, 'cos a lot of them [spreadsheets] do but you've got to tell this one to RECALCULATE which is another MENU option
so it's down there so if I move down (selects RECALC)
[Recalculate equations of area: D3]
we've got the equations but we need to put the range, we've got to tell it where we're recalculating, if we're recalculating all you tell it the top left hand corner and bottom right hand corner, and it will do everything in that square
so what do I want to recalculate now?
E2 to E5.
[recalculated]
Right. Now so is there anything else, I can just do other things if I want to ??
Save
right SAVE the thing using the QUIT/SAVE option
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
if you want to carry on working on it just save it as a BACKUP or if you want to change it SAVE it under a new name, SAVE NEW MODEL, I don't what context is ...
which do we want to do
I suppose SAVE it and then you can get out, just press RETURN, so it's QUITTING now, and it's also SAVING it.
Has that saved it?
I hope so - normally it asks whether you want to QUIT before or after SAVING ... [only if model has been saved before]

Comparison-Subject 5

[empty spreadsheet]
Enter text
Right, this is, each one of these is a cell on the spreadsheet which you can move around to select which one you want, it goes from A to Z along the top then AA, AB, AC, as long as it's got memory, this side it's just 1 to n, so all you do is select which cell you want using these and then you can type either TEXT in - to do TEXT you just type some letters or characters, say if you wanted to do for example, ok say if you want to make a sheet where the thing that calculates the expenses for a company or something like that so what you do is give it a title to start with so just type some TEXT, say "Expenses for Company" (types) and that will come up there [cursor position] now each one of these columns and rows can have formulas attached to them so they can calculate what values are to go in there either from different cells or you can enter numbers directly for other cells to calculate from so say if you wanted in this row, this column, money for travel, then enter the title (instructs co-experimenter to enter text labels in A4-A5, and B2-E2)
Enter numbers
Right, let's say that the first one we want is travel in January, say the travel costs are five hundred pounds
(types "500")
and RETURN.
[entered in B4]
Enter formula
Now say the travel cost goes up by 10 per cent each month, you want this one, the next cell to add 10 per cent to the previous cell and put the new total in February, so to do that you have to set up a formula for February, which uses January total to calculate the new total for February by adding 10 per cent so to do that to do a formula you type in a bracket first, then the formula so this would be, this is cell B4, so if you type in B4 no, you're adding 10 per cent to that - I think we have to move this first - (deletes what has been typed so far, moves cursor to C4)

so you've got to get to the cell you want before you start

yes, ok so if you type in bracket to signify that's a formula, [formula does not need to have bracket] now you want to use this cell, which is B4, so type in B4 and multiply by 1.1 which is 10 per cent, then close bracket and press RETURN

(does)

[result printed in C4]

so that's added 10 per cent to that and it's stored it in the new cell and move if you move along to D and you're using C4 to add ten per cent to

the same thing again? do I have to type it in explicitly or -

well I don't know I haven't tried that out

(enters formula)

right and the same for April, so bracket first

why do I need the bracket first?

because otherwise if you just type it in that will be TEXT

oh it's TEXT, right, so I type a bracket to do it as a number [does not seem to know F7 to toggle TXT/NUM]

Recalc

yes if you change this one to say - 50 (number in B4) then you have to change all these don't you (C4-E4) What we have to do now is RECALCULATE so you press the MENU and then use the cursor keys to move on the RECALC and press RETURN.

[Recalculate equations of area: B4]

Now what you want to do is RECALCULATE the whole sheet up to there so you want to recalculate from A1 - I mean, B4 then E4, you don't have to type them all what you can do is say colon, E4. See and that's recalculated all of them. Also you could do the same for food

how do I get out of this [the menu]

just press UNDO, so do some formulas for food

(enters number in B5-E5)

well, say if you wanted to add up the total spent for each month then what you would have to do is consider the columns instead of the rows and then do another formula for adding up the amount spent each month

so totals yes? (enters text label in A6)

now move along to and put in the formula using the brackets

I want to add that one to that one don't I

Formula

you can either use SUM, if there was a lot of rows down here rather than type in B4 plus B5 you could use the sum command so if you type in SUM wit the bracket, now you could type in B4, B5 or B4 colon B5

(enters "(sum(B4:B5)) so if I had a lot more ?

it would save us a lot of time

did you say could I copy them over because to actually do the same thing ??? is there a way of doing that

Copy formula

I don't know (calls up menu and studies it) COPY. [Copy from area: B6]

COPY FROM AREA B6 -

(CR)

[Copy to base coordinate: B6]

try copy to C6, type in C6

[Copy Values All]

do I want to copy the VALUE or ALL

the whole thing [ALL].

[Copy Relative Absolute Prompted]

Now you don't want to COPY it ABSOLUTELY because you don't want the same values so that changes the column that you, so it must be RELATIVE

[result printed in C6]

I haven't tried it, but that must be how you do it

now are there any other functions can we insert a space here?

Insert row

INSERT if you select that, now say you see where these are right next to the numbers it might look better if you space it, so select a row

[Insert Row Column]

press RETURN

[Insert row(s) starting at: 6]

now you want to insert a row starting at

B4 won't it

well A4

just 4?

yes
[How many rows/columns: 1]
well if you say you wanted 2
[2 rows inserted]
oh I see, so now it's moved it down it's put in some blank rows ...
you could do the same under the title as well, and it's changed these relatively as well, [formulae have picked up new numbering] you don't have to change the rows
I don't know how to use that properly, the only ones I've done properly are the edit, help, insert, name, quit and save, recalc, they're the only ones I've done. I don't know how to use these properly
there's no way of like, well we had the sum function are there any other things you can do

Formula

well yes different math functions, there's say you select the, undo, select a cell, D8, now say you wanted to find the larges value between these two cells here, type in the formula, it starts with a bracket, then type in MAX then brackets, you can type in any amount using the colon of cells or just two cells using a comma and you'll find the maximum number stored
so if I put in B8,C8 (enters "(MAX(B8,CB))")
[result printed in D8]
it will put the maximum of those
are there any others
there's, if you go to ?? and start bracket if you type in INT then open bracket F6, close brackets, oh so that's not a formula is it, type in the bracket again
(enters "(INT(F6)))
[?n?] 'cos that's not a formula say if you wanted to add to numbers together you wanted an integer result type brackets I-N-T and a number, type in D6 and type in plus and then int F6 I think this is how you do it and close the bracket
(enters "(int(D6)+int(F6)))
[result displayed in E8]
that's just given the integer value for this

Save

SAVE - right press for MENU, RETURN, go to where it says QUIT/SAVE and RETURN, now SAVE_BACKUP of this
[backup saved]
it's just SAVING now to the filename you've given it it's going to SAVE press it again RETURN, just MODEL_SELECTION it will save it

Comparison-Subject 6

OK starting from basics if you think of a spreadsheet as a matrix (grabs papers and sketches a grid) just like battleships, you've got a grid, a matrix of cells and each cell, you can address it, it is something you can put a piece of information into. So you've got to have some way of addressing the information in the grid, so the way the computer does it, the way it sets it out, in this case is to have numbers for the rows, and across the top it labels this A, so for example if you want to address this, this unit here, this is B3, just like with battleships, so if I just get this going.
[empty spreadsheet]
I'll explain this in a minute but it's easier to start with if I show you what a spreadsheet is, it will be easier if we get a spreadsheet, basically you type in to the machine. Ok so you can move round, this window, this area here is just a window on a full size piece of paper but because you've got a finite screen you can't see the whole thing at the same time so this obviously is showing the first 6 or 7 columns and the first 18 rows so to go to the next, to move round the whole piece of paper we can use the cursor keys (demonstrates) and if you hold the SHIFT key down and then use them you go down a whole page (demonstrates) or the whole six columns or whatever it is across. Now the size of these columns isn't tied, you can vary the width of these so for instance if you put some data in. It might be easier if, do you know what a spreadsheet is used for?
No

Enter text

OK you've got different forms of data into these cells, you can put TEXT data (types some data). Now as I'm typing, it's coming up on the command line here. So you can edit by typing, so you can change what you're actually putting in before it actually goes into that particular cell, this big marker by the cursor, purple bar I guess, the TXT is telling you it's a TEXT field because I started with an "a" it recognised it as a character as opposed to a NUMBER so it knows that that is a TEXT field, so if I press, well RETURN in this case it will stick whatever I put into this field and recognise it as TEXT.

Enter numbers

If I do the same thing with the next one down but say "10" then it's recognised it as a NUMBER, this here is just indicating how the format is for instance this here is two decimal places, so when I press RETURN or recalculate something I'll get 10.00 accuracy, so that's all that is.

A spreadsheet just enables you to format a lot of data in a very well pre-defined way so that you can see all the information at the same time and you can organise it in a logical way so that the some data relates to other data, so for instance, the example we're doing if you have to make something, if you have to make a keyboard say it has a lot of constituent parts and the total cost of the whole keyboard for manufacture would be the sum of the constituent parts but if you have to calculate that on a weekly basis, say, to make sure that you're not going to make a loss then if the price of the sub-contractor's keys or something goes up by changing one entry you don't have to recalculate the whole thing by adding that much more in, it may be more complex than that but in a simple case, so what a spreadsheet does is make the layout how those keyboards may act, what it's made of, what the constituent prices are, how the data relates to each other and if you change elements then, if say one key goes up, it will recalculate the whole cost of the keyboard as opposed to you having to sit there and add all the numbers up again.

Formula

So another thing can go in is formulas so say I wanted to add two numbers, if I put a number there, say in B4, say I put in 2 there and if I want a result, say next to answer, now if I type instead of text or a number, if I type a formula. The easiest way to identify a formula is to put an open bracket first, it says it's a number but it will treat it as a formula relative to those two [A4 and B4] so if I then put A4 plus B4 then it will now calculate the sum (types "(A4+B4)", CR, result displayed)

So it's a bit more clever than that because if I have a whole line, you know if you have a ledger, a whole line of information that's the same as the next line, it's just adding up rows and columns, if you want to do the same for the next two, I'm going into a bit of syntax here, how do you use the spreadsheet so, it's based on a window environment so if I using these function keys, it's not very nice because the exact mapping of these keys to what they do is not 1 to 1 so, for instance help is Ok that does that, but print doesn't print it does something else because the software and keyboard don't match up exactly. It's a bit confusing at first but once you remember what's what - the important ones are easy. So if I press MENU I'll get a window of OPTIONS and the way that it's set out is, these are all options and I can go to an option by going through (with the cursor keys) or I can press the letter of the initial of the option, o say I want HELP, if I press H (does) I get a help bar and it will tell me what keys I can use to use the help function the UNDO which is UNDO surprisingly and do which is finish F9 that doesn't run it ?? but if you can remember that that's about all you have to use, the arrow keys so I can go through more help information, if you press CARRIAGE RETURN or this key, DO, F9 at any stage it will invoke whatever you've highlighted

if you ever get stuck, you think oh how do I get rid of this UNDO it and you'll go back a step it will always come out of that current section, so if you panic just press UNDO and go back to the previous position. If you get stuck and you want information on a particular aspect of something if you press F1 for help at any time it will give you a window

so say if I was

yes if you were entering something, entering text or something I can press HELP and it will give me a list of options on what, press HELP again you get another window, that, with this it is easier, you can only explain so much without someone seeing how you actually play with it. What next, well, I could go through some of the things you can do with it.

if I start just trying an example and you just show me

Blank

if you can try adding a few number together so if you stick in say some TEXT, say A, B and C, you've got three numbers, do you want me to clear that page first? Right it's got a funny way of doing it, if you want to clear something BLANK it, B (selects BLANK)

[Blank what area: B3]

and whenever you have to define the area, it's got to know what area to operate on so

you don't have to blank it all you can just blank

yes, if it's asking you what area you can either do a square, say you define the top left hand corner and top right corner so for instance you have A3 is top left and you have B4 so the area that defines that syntax is a colon between A3:B4 and that defines this area here

so you do a square or a rectangle?

correct, so if you type colon B4 it may stick up something else, because the cursor's on A3 it's trying to help you by looking for what information you want, so you don't really want A3, press, that's the BACK SPACE, sorry, and then 4 it will blank out those four things

(enters "A3:B4", CR)

[Verify blank area: A3:B4]

verify because you're deleting and it's done it.

If at any stage you come to that and it says area you press the ALL button F4 you will do everything on the current worksheet. The s/s works by not storing everything that will come out on a massive piece of paper, it doesn't store everything but only the bit you use, it knows at any one time how much of the area you're working on so you can press the CALC button and it will only do the bits that you're actually calculating you haven't got to how far the s/s you go across. Do you want me to do an example first?

well, I'll type it in and then I can get used to using the keys

so I just put anything in as the sort of headings

yes, put in some text - say nuts bolts and washers

right (enters text labels in B3-D3) so these are my column headings (enters text labels in A5-A6)

if you just stick some number in now

(enters number in B5-D6)

Formula

The things you need, I can put the SUMS in, if you imagine trying to add things up you could say that the SUM of this row is B6 plus C6 plus D6, if you imagine having more rows it becomes tedious to type that out, so there's a quick way to do it so in the formula instead of typing A6 plus B6 plus plus you can type SUM A6 and then colon, B6 and it will add up those two columns

that would be just if I was adding two so that corresponds to the last one

sure, yes, it takes between the limits of that row, if you want to add all these numbers together you start from the top left which B5 to D6

so say I wanted to do the total quantity and put it in here so

do you want to put a label first, do you want to put that above

(enters text label in E3) so now I come down, and I want the sum to go in here (moves cursor to E5)

if you type bracket first and then SUM then bracket then you want B5 to E5

(enters (SUM(B3-B5))") so how will it do that, will it do it straight away?

[result printed in E5]

Change attributes

When it in sticks data in it sticks TEXT in left justified, so this column is on the LEFT hand side and the NUMBERS, integers whatever, RIGHT justified it would probably be easier to look at if you do it CENTRE justified, I find it easier to see what is in what column, a relatively easy way of doing that, if you go to MENU again and go to FORMAT

[Format Width Attributes Filler_char Data_type]

you want ATTRIBUTES, now here as I say, you can change the column WIDTH so if you have a big amount of data and all I'm doing is pressing the initial letter of the option I want so it's FORMAT followed by ATTRIBUTES,

[NUM [R 2 -] LCR1[????????]]

so, now this looks confusing at first but it's quite easy, LCR, you remember this thing I showed you, NUM means it's a number format and it tells it how to format the actual numbers to how many decimal places and then the number itself which in this case is 5. Now the question mark means it's wanting to know information it doesn't know, so because the cursor's on LCR I can press F7 which is change in this case, I know it's confusing as well, it confused me, now I've gone to L which is LEFT and C which is CENTRE and it's telling me I can use keys left, right, change do and undo, change is F7, do is F9 and undo is F2, (CR)

[Format applies to area: C5]

so if I do that it wants to know what area this applies to, well we want the whole thing really so calculate and it will do the whole thing

[numbers centred in columns B-E]

the only thing about this program that I don't like is once you've done that if you enter another number even though that's applied to the whole area in that square, if I stick in say 4, it will stick it right justified again unless there's some other way of doing it.

Save

So now to the implementation of how to use the machine side of it, if at any stage you get stuck, and you want to come out of the s/s, QUIT/SAVE, so q for QUIT

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

and it will tell you MODEL_SELECTION, if you come out of that - press do or RETURN

[saves]

it should have saved it, hopefully

how do you check that?

if I select I want to find a file, I type in first which was our original name, do you know about, oh I won't go into that and it's found the file so no problem and that's about it, unless you want to sit down and play with it.

say I wanted, I'm just thinking now, it would be nice if I had like a total cost for each of these, like how much the nuts were, can I do that, because I want to multiply them together don't I?

yes, if you can work out, if you work out the B5 times B6 enter it as a formula, so you start with the bracket -

*B5 times B6 (types "(B5*B6)", CR)*

[result displayed in B8]

Copy formula

right, say you want to do it for the other ones, rather than typing it and doing it, if you can imagine COPYING this to here then you have to know whether you want to copy this RELATIVELY, i.e. whether you want the formulas to stay ABSOLUTE, which would mean exactly the same so this would mean B5 times B6 or RELATIVE, it would add one to it so this becomes C5 times C6, so, it will ask you that if you go to MENU again, C for COPY

[Copy from area: B8]
you want to COPY FROM what AREA, so in this case, copy B7 to D7, sorry C7, D7, E7, OK? so I copy from B7 to, because that's where it's highlighted.
[Copy to base coordinate: B8]
and I want to copy it to C7, E7, and whenever you define an area you put the colon in again, it wants B7 coming up, so D7 and that will COPY if from there to there and it will also ask you now -
[Copy Values All]
I don't want to copy just the VALUES because it will just copy 1.5 which is a waste of time,
[Copy Relative Absolute Prompted]
I've got to know whether it's ABSOLUTE, RELATIVE or PROMPTED Just to make sure. So you want it relative so that's OK
[formula copied to C7-E7]

now if I go back, say now I decide that I've got, undo, so now if I go back and I change the bolts, say I change that to 6, now they're all going to be wrong

Recalc

so the way you RECALCULATE the whole thing is F8 which is MENU, recalculate, well RECALC there which is R,
[Recalculate equations of area: C5]
you want to recalculate, well you might as well just press the CALC button and it will do everything.
[recalculated]
See it's worked out that it's A1 to E7 because that's our total area

Toggle display

If you want to see what formula you've got in there, the thing that's actually producing that, so if we go to WINDOW, W and then you want VIEW because you want to see a different VIEW and just press RETURN it will toggle between equations, so it will show you equations
[equations displayed]

Enter numbers as text

so if you want to go the other way it will toggle between, if I put it in the other way it will go back
If you want to sort of border this out a bit, for instance there's no circumfencing lines or anything I can put in - the columns are a standard 15 I think - (types line of 15 dashes) [standard width = 12] so that's a line to go in that segment, if it's oversize it doesn't matter because you don't see the rest of it anyway, so what I'm attempting to do is put a line across here, so we have to do it bit by bit because each one of these cells is a window in itself so if I put a big line in here it will just chop a bit off so to make it recognise it as a string or a piece of text because I put a minus sign it recognises it as a NUMBER so you've got NUM here I'll show you if I press RETURN, so it's come up with a problem and beep madly and F7 will change its type to NUM (CR, line of dashes printed in B4) (instructs co-experimenter to copy to C4-E4)

Save

ok if you QUIT out of it, it should say,
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
well you can do it this way if you SAVE BACKUP it will save it for you but I think it should prompt you anyway it will say SAVE without or SAVE WITH changes, so SAVE the BACKUP. Now we've got out of it it won't ask the same question again, it will come straight out back to the original menu, if you want to come out of that to switch the machine off I think you can do it directly but if you want to you press UNDO again and you'll come back to the main menu, high level MENU and if you go to the OPERATING SYSTEM

Comparison-Subject 7

[empty spreadsheet]
Now this is the s/s itself, you can move around the s/s using the ARROW KEYS. That tells you where the pointer is at, that is or helping with using the COPY function so you can copy blocks of the text from one part of the s/s to another, so if you had a set of figures there and you wanted to just COPY them over without typing them again

now what

Enter text

this is a new model so we want some headings for what you want each one to do so say if you wanted income, outgoings, like personal finance, or you could do a company one, all different staff costs and things like that. You just type any TEXT in or NUMBERS

if I type here it just goes in that box [cursor] does it

yes it goes in the box and when you type in it comes up there [input line] first then press RETURN, when you press RETURN it comes up in that box

so why is that?

it's so that you can edit it, get it how you want it first before you actually put it back into the s/s. So you can sort it all out first without going backwards and forwards. So just create a column for month, just type in month

(does)

you can edit it normally as you would using normal keys and press RETURN and it will come up there.

(CR)

[text printed in A1]

Ok now you can move around put some more headings in or put some numbers in using the cursor keys again, you've got the headings so you'd have the figures below them, each one

(enters text label in B1)

OK just carry on like that, do you want to put some figures in first or put a couple of months in so you've got something basic in first.

(types next text label)

Ok what you have to do once you've got from each one you have to move on because here you would overwrite onto there again because you haven't moved on you can see it's highlighted there [C1] and you're inputting again, so if you just delete that and just press RETURN now see how it overwrites it, just type feb again, press RETURN, then move on to the next one and type in mar. OK that should be enough headings for now.

If you come back down here put something in for what the rows will be so put something like "income", just a basic example, RETURN and now we can put some figures in to make the s/s look like it's doing something,

Enter numbers

Now if you want to move under "January" [B2] just type in a number

(does)

if you see this it say NUM which means a number when you've typed in a heading it says TXT which is for TEXT so you know what type of information you're putting in if it's TEXT or if it's a number

suppose you want both

Enter numbers as text

you can't really have both in the same box you can only have a number or word, the only difference to that is if you want say, if you want a date, just type in a date and you can change this to TEXT. Ok you see that's taken that as a number if you want to change that to TEXT just press F7 which is the change key and it swaps over to TEXT and if you press F7 again it will change to a NUMBER. Because if you just type that in straight away it will handle that as a number and you can perform things like addition and subtraction which you wouldn't want to do with a date, not really anyway so you just change it to TEXT. OK? So you want to type in some numbers (instructs co-experimenter to enter numbers in B2-D2)

Formula

OK now we'll do something with these numbers so if you want to go down into the next row go to the beginning again. Just move it under January [B3] you've got the income for the month so we'll just work out the income you get in each week, say there's four weeks in each month, so what you can do instead of typing in 45 again you just type in the box that is in which is B, column first, the letter always comes first, and the row is 2, so put B2 which specifies a row and divide, backslash and 4

("b2/4")

just to change it into weeks, you can see it says TEXT, but what we really want is a NUMBER because it's an equation so just change it into a NUMBER

(F7)

press RETURN

[result printed in B3]

you see it's worked out what 45 divided by 4 is.

Copy formula

What we could do now, instead of doing the same for each of these, we can either COPY, do the same thing C2 divided by 4, D2 divided by 4, what is easier is to use a special facility within the s/s so if you want to go into the MENU, which is F8, the label's on the key and use COPY which can copy, as you'll see you can COPY areas from one part of the screen to another part.

[Copy from area: B3]

first it asks you for AREA TO COPY FROM and this is the area that's got the equation, press colon, then just press RETURN because you just want that one box [colon not required] then, just press RETURN

[Copy to base coordinate: B3]

and now you want to copy it from that area to another area so move the arrow key to the area [C3] you want colon again and now move it to the last what you want it to [D3] which is the last box and just press RETURN again.

[Copy Values All]

You want to copy everything, if you just copy VALUES it will copy 11.25 to each of the boxes but you want to copy the equation so change it to ALL

[Copy Relative Absolute Prompted]

Ok ABSOLUTE would copy that equation into each box so you'd have B3 divided by 4 there which is not really much use, what we want is RELATIVE so it will change the box there instead of being B2 when it goes in C column it will be C2 and if it was in rows if it was B4 it would copy it to B5 so change it to RELATIVE, prompted it will ask you if you want to change it RELATIVE or leave it ABSOLUTE so you can mix both if you want to, so just leave it RELATIVE for now, so just press RETURN

[formula copied to C3 and D3]
It's copied both of those across, press UNDO to get rid of the MENU you can actually see that it's, UNDO is F2, if you move across to there you can actually see that the equation has changed to C2 and D2 so it's worked that out.

Formula

What we could do now is go down and do some more equations so we could subtract one from the other, add them both together or we could sum along the whole column if we wanted to. If you move along here we can do a sum along the whole row. If you go up here [E2] so we have it on the income row, if you wanted to sum a whole row or whole column of numbers instead of typing in B2 plus C2 plus D2, it's ok for small amounts but if you've got a long list of numbers it gets more awkward so you can use another built in function, so you can just tell it to sum from the first one to the last one

we've only got 5 anyway

yes but it makes it easier then because it's a simple one it doesn't look as though it's doing much but when you've got, if you had a whole year of figures along there it gets a bit awkward to type in 12 lots of numbers added together so if you just do SUM, type S U M, open brackets now then shift and, tell it the first one which is B2, colon which means to, and D2 which is the last one you're using and then close brackets and there you can see it has set it as TEXT and you want to change it into a NUMBER, so F7 and just press RETURN now

[result printed in E2]

Copy formula

and it will work out the whole sum along there which is a lot easier to use than typing B2, C2.

And again you could just COPY that down to there as we copied it before when you go across because the spreadsheet is very large you can't get it all on the screen at the same time so after it reaches a certain amount it starts moving the rest of the s/s to on side, the s/s is still there it's just moved it along a bit. If you think of it as a very large piece of paper and at the moment you're working in the top corner, so you can just move back again and you can see that it's still there, the figures are still there, and you can do the same thing, just go right down, because it goes past that and it goes into AAs and BBs and all that, see how it's jumped up to the next part, it's come back into the s/s.

Toggle display

Let's try and think of something else to do, oh if you want to, instead of seeing all the figures all the time, you want to see formulas go to the MENU again and press WINDOW, w for window or you can use the arrow keys, it will be easier to press W in this case because it takes ages to get to it, you see if you just press the first letter, and we want to VIEW it, and we want to see the EQUATIONS, you see it's changed from NUMBERS back into EQUATIONS, so if you wanted to you could just leave the equations up to begin with, while you fill out the whole s/s and then when you start putting the numbers in, enter the numbers and it will work out the numbers for you.

Ok to change back again, you just do the same thing again, w then view again, press RETURN, now see it swaps between the two if it's on equations it swaps to numbers, on NUMBERS it swaps to EQUATIONS, same as the change key where you're changing from TEXT to NUMBERS and back again.

Delete row

If you decide that you don't want that row you can DELETE the row so you have to select the MENU function, d for delete

[Delete ROW COLUMN]

DELETE ROWS or COLUMNS, ok we want to delete this ROW, so you just press RETURN because it's already highlighted.

[Delete Row(s) starting at: 3]

Now ROW 3 is the one we're on

[Delete row(s) starting at: 3]

and that's the row we want to delete so just press RETURN

[row 3 deleted]

It asks you which row, you could change that if you wanted to

and there's only one ROW we want to delete so we can just leave it as 1, ok, that gets rid of the row

could I get that back now?

I don't think so, not that I know, no you can't, so you'd have to retype it in again, it's really if you typed in something and you realise it is all totally wrong so you want to get rid of it or if you type something in and there's a whole bunch of text you want to get rid of or get rid of useless columns or useless rows

Save

OK, if we want to SAVE this we go back into the MENU, you'll get used to seeing the MENU a lot, this time we want to QUIT/SAVE so press q for quit it takes the first letter so even though it's QUIT/SAVE it does a QUIT and we want to SAVE this model

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

it's a new model so we want to SAVE_NEW_MODEL so you have to move across to it because we've got 2 beginning with S, ok, just press RETURN

[Save to what model:]
and we want to save it to "mark" because that's what we called it
won't it do it to the same one?
well yes, I think it will, yes it does, just my mistake
[this option is for creating a new file] - (types "mark") shall I do this or not
yes it will just overwrite it as whatever it was before, see it's called it the same as what it was
[File B:mark.fmd already exists] [won't overwrite] - changed its name
it is just changing it to a name that it knows, B is for the drive it's saving it to the second drive and that is just a bit of text for it so it realises it's a s/s data not a program, it's told you it's got this already so it gives you an error message, so because it's a mistake just press UNDO, ok go back into QUIT/SAVE
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
Go to the menu [Model_Selection_Menu] it automatically saves it [since it's not been saved yet]

Comparison-Subject 8

[empty spreadsheet]
virtually it's just a list of columns and list of rows and you can put entries of characters, formulas into each of these spaces, any of those you can stick in words or say a mathematical formula. You can move down with them as well. And each column and row is referenced using this pointer (points to bottom of spreadsheet) if you're deleting things the pointer's different to the current pointer.
let's do different sizes of panes of glass [classroom example]
Enter text, enter numbers
if you want to type in the top left hand corner, say "length" to start with,
(starts typing)
you see that's come up with TEXT, TXT down here, so that means the word itself, press RETURN, now you can go along to the next column using the cursor key again. You can type in "width", TEXT again, RETURN, it's put it in that block. (instructs co-experimenter to enter numbers in A2-B2, and text label in C1)
why do I have to press return, just to put it in?
Formula
yes. Right go down one [C2] and work out the area using a formula. Now to work out the area it's column A, row 2, so put A2, now put multiplied by, shift and star, it's for area select so it's B, row 2 again, B2, now that's in TEXT form, you don't want it in TEXT you want it as a NUMERICAL formula to multiply these two numbers together, so to convert it to numerical press F7, right now it's gone to NUMERICAL, if you press RETURN
what's it mean, NUMERICAL and TEXT
NUMERICAL it sticks in a number or a mathematical formula and if you just do it on TEXT there it will just put in A2 times B2, whereas with a NUMERICAL formula it's going to multiply these two numbers together, press RETURN key now,
[result printed in C2]
see it's come up with 12.
Toggle display
If you want to display the formula go to menu which is the F8 key, press that, right now you've come up with the s/s selection menu, where is it, now press w to show the formula
you can use those but it's quicker, if you use those keys it's going to take you all the way through the menu, you can just press w, WINDOW and v for VIEW and just press RETURN now and it should display the formula you just put in that box.
[does]
(instructs co-experimenter to enter text label in D1, and number in D2, text label in E1, move to E2)
right we'll do another the formula - the volume will be the area times the thickness, so it's C2 again and to multiply by the thickness which is D2 again, now it's in TEXT form again ... (F7 and enter) it displayed the formula again now to display the numbers go back into menu
what does all this mean
it's just different options you can use, do a copy in a minute just to underline things, go back to WINDOW again to put the numbers back on the screen, VIEW again so V and press the RETURN key, that's displayed the numbers again and back onto MENU.
Enter numbers as text
Now for a bit of TEXT, if you want to underline the whole line you underline the first section by pressing the minus key a few times,
(does)
OK, and that's in NUMERICAL form because it's a mathematical symbol, we want it in TEXT form because you're only underlining, so press the F7 key again to go back to TEXT, that swaps between TEXT and NUMERICAL.
Right now if you press RETURN key again
[line of dashes entered in E2, overwriting previous entry]
that's put a line right now to COPY that you've got to go to menu

can we - we lost something there
don't know, do you want to stick the number back in - well do you want to put the formula in again? C2 by D2,
(types formula, CR)
formula printed in E2]
that's it no that's TEXT, type it in again, you're in TEXT form and you want NUMERICAL, press F7 change to NUMERICAL.
[result printed in E2]
Now we'll underline something, go down a line and back to 1, now stick in the minus signs now you want to go into TEXT, so F7, now press RETURN and you've got a lines.
[printer in A3]
Copy formula
Now to COPY that you've got to go to MENU which is F8 right and you want to go to the COPY function
[Copy from area: A3]
Now it will ask you which block you want to copy, you just want to COPY that block, so if you press a colon key and RETURN, that means you're going to copy that block [colon unnecessary
[Copy to base coordinate: A3]
and it's asking you where you want to COPY TO so you press colon keys again and you want to copy these minus signs all the way across to e, you press the cursor key now if you notice this is going up as well. When you press the RETURN key now that should copy these minus signs all the way across that line.
[copied to B3-E3]
Insert row
If you want to stick in another row, so if you want to stick another line in above these minuses use the INSERT
[Insert Row Column]
you want to insert a ROW so just press the RETURN key
[Insert row(s) starting at: 3]
and you want to start at row 3 because you're going to start above that one so if you press RETURN key again,
[How many rows/columns: 1]
now it asks you how many rows you want to insert so 5 maybe, RETURN
[5 rows inserted between 2 and 3]
and that's set that down by 5 rows. If you want to stick in some more numbers in the length and width columns we can copy formulas (instructs co-experimenter to enter numbers in A3-B5, moves to C2)
Copy formula
OK now we want to COPY a formula in a minute so we'll go to the area column, we want to transfer the formulas again so go to menu, right now w again, WINDOW, VIEW, v and RETURN, now it's showing you the equations on the screen again.
[not required to copy them]
Now if we want to COPY this formula for all of these we're going to get A3 multiplied by B3 in this one A4 multiplied by B4 there, you want C to COPY that formula,
[Copy from area: C2]
now you want to just COPY that formula there so you press the colon again, RETURN, [colon not necessary]
[Copy to base coordinate: C2]
so it's just copying that one formula, now you want to copy it so colon again, (gets :c2) you've got to delete that, delete that you want to put C2, colon, then press cursor key because you're copying to that one, now press RETURN,
[Copy Values All]
now you want to copy ALL the values so go across to ALL, that's it, press RETURN,
[Copy Relative Absolute Prompted]
and you want it RELATIVE to each, so it's not giving you A2 by B2 in all these you're going to get A3 by B3, A4 by B4, right so you want RELATIVE so press RETURN again and that should give you those.
[formula copied to C3-C5)
It has, if you want to display that back up on the screen again (instruct co-experimenter to toggle, numbers displayed)
Blank
If you want to put blank boxes in you can use the BLANK function
[Blank what area: C2] say if you want to get rid of a whole row, say row 3, go down and across to the first block in that row
(moves cursor to A3)
and press colon key, move across and it should get rid of that whole row, press RETURN, hopefully, maybe not
[Verify blank area: A3:F3]
yes press RETURN, you've got to verify it.

Change Attributes
Ok to tidy the columns up you've got to use FORMAT so if you press F. It will ask you what you want to do,
[Format Width Attributes Filler_char Data_type]
you want to change the ATTRIBUTES,
[NUM [R 2 -] LCR1[????????]]
that's it, it's given you a string of question marks here so if you press the F7 right that L is LEFT you don't want that so press the F7 and you should get C, that's CENTRALISING. Now if you press RETURN key now
[Format applies to area: F3]
it will ask you which columns you want and you want to move these numbers across so if you move the cursor key to this first column, and if you press colon key now, go down three and across 5, so it will incorporate all these numbers now, press RETURN key now they should be centralised ok?
[numbers in columns A-E centred]
so how do you keep copies of it
Save
got to go to MENU again, if you want to SAVE something there's a QUIT SAVE function down here so press q.
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
If you press MODEL_SELECTION_MENU it will save it, because it's the first time we've used it, if you updated that it would ask you if you wanted to get rid of it WITHOUT SAVING or if you want to SAVE it fist.

Comparison-Subject 9

[empty spreadsheet]
this is the s/s itself which you'll be entering data into, so you have to have this table as it were to manipulate your data in, so you can enter column or row headings along there using TEXT, do you want to enter something a name or something I don't know what table you want to produce, and some NUMBERS wages perhaps or something, payday or something
Enter text, enter numbers
shall we enter some names first, so just put employees or something.
(enters text label in A1)
If you move along one and put wages.
(instructs co-experimenter to enter text label in A2, and numbers in B2-B4, text labels in A2-A4 does not move cursor to next cell)
that's going to go over the same one [cell] you'll have to move down.
(moves cursor, CR)
[entered in previous cell, overwriting previous entry]
what happened there?
Did you move it?
(moves cursor before typing next entry)
Formula
right you can manipulate your data by entering formulas if you want so I don't know what you're going to have in there, income tax or something [in C column] move up to there and put income tax or something.
Change width
If you get headings too wide you can widen things. Use MENU there, got a whole load of things here you'll find WIDTH under FORMAT so if you go into F,
[Format Width Attributes Filler_char Data_type]
Here's WIDTH and ATTRIBUTES so you can centre things so, it's on WIDTH now so just
[Set width of this column to: 12]
and press RETURN again we don't actually need that
what's that
it's already set at 12 you can change it if you want but there's no need to, just press that again.
Formula
To get out of that you've got to press UNDO again so now move down, for here (income tax) you could have some sort of formula say 25% of the wage. So if we enter a formula in there then we can copy that down. Entering as TEXT, so put a bracket in. Type a formula, 25% of, so 25 divided by 100 I suppose. We ought to use a bracket in case Yes type a bracket, it makes things a bit clearer
*(types "(25/100)*a2"), then enter.*
[result printed in C2]
Copy formula
To copy it go to menu again, COPY,
[Copy from area: C2]
from, you want to COPY that AREA so press the colon and then just RETURN [colon unnecessary]
[Copy to base coordinate:]

and then copy it down from there down to that one

Why are we doing this, what will happen?

you're going to COPY the formula you had in there into the number boxes without entering the data three times. Now if we go to the top again [C2] and then put a colon that gives you the start and go down to where it's going to finish [C4] then RETURN now. You always want top left then to bottom right and that'd give you the whole area.

[Copy Values All]

VALUES will copy 11.50 through ALL will give you the whole equation which is what you want so move the column.

[Copy Relative Absolute Prompted]

RELATIVE will move it so instead of doing it from B1 B2 as you go down it will go B3 and B4, ABSOLUTE will just do B2 each time and I've never used PROMPTED so you want RELATIVE. (instructs co-experimenter to enter text label in D1, formula "(B2-C2)" in D2

RETURN?

No you don't want TEXT you want to invert that so it's NUMERICAL and I think if you ENTER, if you hadn't changed TEXT you'd end up with B2 minus C2 in there so you need TEXT (instructs co-experimenter to copy formula)

To finally QUIT this whole lot, you need QUIT

Save

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

M for MODEL_SELECTION_MENU, go to select now, and you can play again or would you prefer to get out select your same one again so mark2

[re-enter spreadsheet]

Blank

If you press MENU, there's a few more things you might want to use BLANK will delete a whole area

[Blank what area:]

we could delete the last row so enter A4 to D4, and press RETURN

[Verify blank area: A4:D4]

how do you verify that?

just press RETURN

[row 4 blanked]

Change Attributes

You can CENTER those numbers it's in MENU under FORMAT, so if you go to FORMAT and ATTRIBUTES you can CENTER it from there.

[NUM [R 2 -] LCR1[????????]]

If you use the change key (F7) LEFT CENTER and RIGHT, so you want CENTRE

(toggles to C)

and then just RETURN,

[Format applies to area: A4]

then over the whole area so from there to there,

(enters A4:D4)

press RETURN

[no change]

sorry - where did you do it from? It needs to be from there I suppose B1 and ENTER, go from the top, and toggle and down to bottom right and that CENTERS it or you could have moved it all to the RIGHT or to the LEFT, using that key so do you want to leave this, I don' think there's anything else,

Insert row

oh you could have INSERTED if you missed something out you can use INSERT there

[Insert Row Column]

and that will put in another ROW or COLUMN, let's put a row underneath

[Insert row(s) starting at: 3]

that'll put the row underneath so if you move that key [to 2] and then press RETURN

[How many rows/columns: 1]

and then you want the 1 column, or change it if you want.

[row inserted between 2 and 3]

Right so you can INSERT something in there if you want. Another name perhaps.

Well we could DELETE that now so if you go to DELETE.

[Delete ROW COLUMN]

Row again.

[Delete row(s) starting at: 2]

yes

[Delete how many rows/columns: 1]

Save
and only 1 so, that does all that so if we QUIT now.
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
again, just press RETURN and again AFTER_SAVING. Press RETURN. You could have done it WITHOUT SAVING if you didn't want any of that. If you go to OPTIONS -

Comparison-Subject 10

[empty spreadsheet]
Enter text
You start off with your rows and your columns, the first row and column, the title as to what they are and you can keep them on the screen all the time if you want, so if we start up a s/s for booking seats in a cinema the first one, the first cell I suppose you'd call it A1, we put in there "row"
(types "row") Has that gone in yet?
no, not yet you have to press RETURN, then everything under there is a row so if you move the cursor down one which is down arrow and it puts that pink blob [cursor] over the next cell you want to fill in, so rows in a cinema are usually a,b,c aren't they
(types "a") and RETURN. Then move down again. As many rows as you want,
(enters "b" in A3, types "c", CR)
["c" overwrites previous entry "b" in A3]
ah - you didn't move down then
what happened to it?
it just wrote over it. Just do the first three. Right the next column b, you can move that around just using the arrows. Say how many seats are in each row so you can put number of seats.
(enters text label in B1)
Enter numbers
Then next to the columns how many seats there are, about 30 seats to a row. You can put a different number of seats in different rows.
(enters numbers in B2-B4)
Now what you've got now is two different types of cells on the screen, you've got the number of seat the rows and the letters, they're all TEXT, and here you've got a NUMBER, (points to indicator above input line) when you've got a NUMBER it gives certain options like right hand justified, it's got two decimal places and minus numbers you can change that later on.
Other things you might want are the price of the seats and the number of seats that you've sold.
(enters headings and numbers in C and D)
(text label in D1 exceeds 12 char) it's a bit wider, you see it's gone over but that doesn't matter because we can widen the column later.
Now you can put another column in which will say ... how much money we got from each row and then we can total it up at the bottom
(enters text label in E1)
Formula
come down to the next cell [E2] we now need an equation which will multiply the price by the number of the seats, so to do that the price for this row is in C2 so C2 times D2, we're multiplying the two rows together, so 3 pounds times 26
so what do I put here
you just type C3, C2 sorry, D2.
*(types "C2*D2")*
Now initially that put that in as TEXT so what we do now is press MENU, which is F8 on the right hand side
what does the menu do?
It gives us a whole lot of options of things we can do, what we need to do is FORMAT one of the cells, FORMAT is there, the easiest way to get to it is just press F, you could also use the arrows to move around.
[Format Width Attributes Filler_char Data_type]
Now we need to change the DATA_TYPE because we've got it as a TEXT cell and we need it as a NUMERIC cell, so if you just press d, set it to NUMERIC, it's already on NUMERIC so just press RETURN.
[Format applies to area: E2]
And say this format applies to how many cells, it only applies to E2 at the moment so just press RETURN and there it's given you how much money you've got in that cell.
[would have been quicker to just toggle the formula using F7 before entering]
Copy formula
now what we can do, is you can COPY it, all the way down, so if you press F8 again, press c or you could use the arrows to get across to it.
[Copy from area: E2]
From area, well you could COPY a whole block of text, like you could copy from A2, the area you want to copy could be A2 to B4 but what we want to copy is E2 so if you just press RETURN.
[Copy to base coordinate: E2]

What you want to COPY it to is E3 to E4, you can either type that in or you can use the cursor keys you type in E3, and a colon E4,
[Copy Values All]
and it's saying how do you want to copy, do you want to copy the VALUES which would put 60 in those two or do you want to copy ALL so you press the arrow
so what's the difference
VALUES it will just stick exactly what's there so it will put 60 in these two but you don't want to do that so press RETURN now
so all will copy what
[Copy Relative Absolute Prompted]
then it gives you another choice, RELATIVE ABSOLUTE PROMPTED, RELATIVE is saying if that was C2 times D2, down here it would be C3 times D3, in there, ABSOLUTE it still gives you C2 times D2, PROMPTED asks you if you want to put the actual number in. So you actually want RELATIVE, press RETURN,
[formula copied to E3 and E4]
then that gives you the, you've got the different values, if you go down to the bottom of that column, ah you're still in the MENU so press undo.

Formula

You can now put another equation in here [E5] which will give you the total amount you've taken. But it's best to leave a line under there which we can fill up later with just minuses or something.
(moves cursor to E6)
You now want another equation which is SUM of yes just type SUM, bracket and then you want all the numbers in E2 to E4, so E2 colon E4, bracket and then gives the sum of everything E2 to E4
(types "sum(E2:E4)")
so press RETURN, now again that's TEXT we want a number so press MENU, then FORMAT again (changes to NUM through DATA_TYPE)
[F7 would be quicker] - you've got here something cut off, so can you
yes you need to widen that slot [D] that column which is FORMAT I think so press RETURN again
so formatting does what?

Change width

formatting changes how everything reacts in each little cell, like to start with that said SUM(E3:E4), now it says a NUMBER because we changed the FORMAT and that's actually an equation. So the FORMAT of each one can be changed and we want to change the FORMAT of this one to make it longer so FORMAT WIDTH
[Set width of this column to: 12]
and the width is already set to 12 we want it to be - another two and a space after it, another three, to get the so if you type 15, that gives you a column width of 15.
[Set how many columns to this width: 1]
How many columns this width - just one.
[column E set to width 15]
I think we did it to the wrong column, we did it in E it should have been D, sorry that's my fault, if you press UNDO
So if you put it back onto column D which is the one you want to widen, press MENU again, FORMAT,
(sets column D to width 15)

Change attributes

yes to CENTRE numbers we want FORMAT again and ATTRIBUTES,
[NUM [R 2 -] LCR1[????????]]
now you have a whole lot of choices, the LCR is LEFT, CENTRE or RIGHT justified, well for this number of seats sold it's best to have it in the CENTRE of the column so you just press CHANGE twice I think CHANGE is F7, you want C so that's right, then move across [the question marks] using the arrow, that gives you PI, to find out what they are just press HELP, F1, it tells you how to move around (moves across "?"s) That's how many decimal places do you want, number of seats, you don't want any, press CHANGE once that should give you nought it won't give you any decimal places, if you go across again you could have dollars, deutschmarks, pounds or per cent and you want the pounds for later on for prices of seats so move along.
[Format applies to area: D6]
Area it applies to, if you move the cursor up to the top, move it down one sorry, then press colon, did you see how as you moved the cursor the number changed, move it to the bottom again. Right that's the area it applies to, you could move it across columns as well so press RETURN now
[numbers in D centred and no decimals]
and all those numbers there are CENTRED.
If we come back to the price of the seat now [E] Now if you go up to the top, you can actually CENTRE the name price, put it in the CENTRE of the column, do the same as we did before this time it's (instructs co-experimenter to CENTRE number in E)

Filler character
Another thing you might want to do is to put in a FILLER like an equals line the thing to do there is if you move the cursor across to it [E5] and you could type little dashes or what's known as a FILLER, so go to menu, FORMAT, FILLER
[Set filler to:]
set filler either underline or a minus, it depends on the preference.
[Format applies to area: E5]
Yes that's the area it applies to. There you go.
[lines of dashes printed in E5]
Recalc
If you go back to MENU, you've got loads of things you can do there, RECALCULATE is an important one, if you change some of these numbers those will stay the same until you RECALCULATE and it gives you the choice as to RECALCULATE the whole table which is easy to do now, being a small table but if you get a very large table it takes a long time to RECALCULATE everything, so it gives you an area to recalculate over tells you what you need to know about,
INSERT is to insert a COLUMN or a ROW if you suddenly decide when you've got the column in there that you want to shift that across one and it will also change all the equations for you, or DELETE will do the opposite
so if you want it between B and C everything in C will be in D and D in E etc etc. You can INSERT both COLUMNS and ROWS, DELETE just does the opposite.
Save
Another important thing is to QUIT how to get out of it, just press q and that gives you SAVE OPTIONS,
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
you can either go back to the very beginning of the whole program and it will SAVE it for you if you do that, SAVE BACKUP but it's just if you're doing a long one, a large one - you might want to keep saving different bits of it to make sure if anything does go wrong you've got a BACK UP, SAVE NEW MODEL, if you change an old one and want to keep it under something else
so which one
just MODEL_SELECTION_MENU.

Comparison-Subject 11

[empty spreadsheet]
well that's your actual spreadsheet and it will go down a very long way, you can try it keep going down it will scroll around. There's the letters and they go a to Z and then it goes AA AB AC, so there's all kinds of entries you can use
Enter text
It's just like a matrix and each of these entries you can enter DATA or TEXT, you can either input TEXT or DATA or FORMULA because then it will work out from previous entries so have you got any actual particular thing ..If you put in a number of items, how much each one is. You want text at the top so type in item, number of items
(types "number of items")
it might not fit in there [column could be widened] so try and abbreviate it to N-O, that should fit in
(changes to "no of items", CR)
yes it's telling us it's TEXT, as that box there is full you can move over to the next one [B1] using the cursor keys and then have another column here of cost
(enters "cost" in B1)
later on I'll show you how to use simple arithmetic to work out a total cost
(starts typing "total")
sorry you have to move across first.
(moves cursor to C1, finishes typing, CR)
[entry in B2 overwritten]
We should have moved across first before, so start again, total cost, move across first ...
(sorts text entries out)
Enter numbers
I'm trying to think of any other columns I could do. We want to arrange it so you have all your columns going down with different values put in.
(instruct co-experimenter to enter number in A2)
(does) What's that? [NUM]
well it's a NUMBER and the number of decimal places is two, I'm not sure what the others mean
so how do you make it NUM then, or TEXT
Enter numbers as text
well if you wanted to type in, you see that just thinks it's a NUMBER, but say if you just wanted to type in 10 rather a TEXT 10 you'd got to the MENU, press MENU there then it's WINDOW, so W, then it's - [tries to

toggle display instead of data type] sorry I'm confusing you there that's completely wrong, so if you make a mistake like that press UNDO to go back to the start again you can actually change it by pressing that one there
[warning beep]
type in 10 again, that one, that's it so we actually want it as a number, Ok now move over to the cost, (instructs coexperimenter to enter number in B2)

Formula

and total cost would be number of items times cost, so move across [to C2] so now you've got a formula you have to work out, and that would type in by looking at the values in the formula which in this case is A2, that's the box A2, so just type in A2 press multiply which is that one - asterisk, and you have to multiply by the cost which is in B2. Now as it thinks that's TEXT, because it sees the "a" but we want it as a formula so you have to press F7 to change it to a NUMBER. Now press RETURN
[result displayed in C2]
it's worked it out for us.

Copy formula

Now if you don't want to do that every time, moving across and typing the formula every time you can make it a lot simpler for yourself by COPYING it down the page, let's see, press MENU

what is it that we are trying to do?

well what you want to do is say you've got 10 lots of different items say A3 time B3 in the next row you can make it a lot easier for yourself you can COPY that formula there 10 times. If you wanted to COPY it press c for copy,
[Copy from area: C2]
now it's asking us for the area, in fact we want, that actually says, it's asking how far across, how many columns we just want one column, so it's C2, press a colon, shift and that that starts at column C2, there where you want it to go up to, column C2, if you wanted to copy two columns say, column C and column D you'd put C2 and then D2, but we just want that so press RETURN.
[Copy to base coordinate: C2]
The base co-ordinate, that's telling us how many rows, so we're going from row C2, there which we want so if you press colon again, now if you press the cursor keys again to keep going down, the down key, how many rows we want is down to 10, just press RETURN.
[Copy Values All]
Now then that's telling us either to copy all the VALUES so print down 25 or ALL which tells us that we want ALL, in other words formulas and everything formulas not the actual VALUES, so press ALL which is a.
[Copy Relative Absolute Prompted]
Now I'm not sure what the others mean here because I've only ever used the RELATIVE. So we just want RELATIVE here

you don't know why though?

no I don't.
["?n?" printed in C3 - C10]
Oh it's put up these query marks because we haven't actually inputs the values here so now if we went back to these columns and typed in something, you have to UNDO it first, every time you've finished with the MENU press UNDO, so just go down and all the empty spaces put in

(enters data in A3-B10)

Recalc

ok as you can see it still hasn't actually worked out the total cost because we haven't told it to do that yet so when you actually input it all, the values you want to work out you have to go back to the MENU again and actually tell it to work out the values for you. So go back to the MENU again

(does)

(reads) which one is it? RECALCULATE - so you have to press R

this will do

yes it will do all the calculations. It's a lot easier way than working out where you want the values to go to. If you just press F4 which is CALCULATE it will work out all the values for the whole square, for the whole matrix that you've got.

(does)

yes that's it so it's actually worked it all out, it worked out all the values there. So if you want to get back out of the MENU again press UNDO.
Now then, the pointer here [below spreadsheet] is actually which square you're in so in this case it's B10 and the current one if you were using COPY, if you remember we started up there and moved the cursor all the way down to the bottom. Now at that stage the pointer would have showed that as C2 and the current would have been at C10. This tells us you've gone from C2 where the pointer was and the current position of the pointer, sorry the cursor C10. You understand that?

?? total cost it's working all out here now, but cost is over there and number there can you

Change attributes

you can actually FORMAT it to make it look nicer, yes. Or an easier way is just put a lot of spaces in before cost to move that across. It's cheating a bit really but if you want to FORMAT it better it's quite complicated to actually do. I'm not sure how you FORMAT it, I tend to leave it. If you did want to bring that across go back up to the top again (moves to B1) and put in lots of spaces, like that (types a number of spaces then cost) and it would actually take it across because when it actually works out these values it puts in two decimal places, there are ways of changing how many decimal places you've got and the actual decimal pointer to the box

so there's a limit to the number you can put into each box?

well for characters and that you've got the whole of that box, is actually that, but you'd only actually see that bit, I think there's about 12 characters across there. You only actually see 12 characters in the screen for that box but you could have that many. You could try it if you want, try putting a really big number

in here (does)

yes. See what happens, does it take it. Oh it's actually abbreviated it to 1.23 and the "e" stands for, exponent. But now you see it still hasn't actually worked out the cost for us

so how do you do that

so we'd have to go back again and RECALCULATE it which was the MENU, recalculate and over the whole area so it was CALC, see it's quite messy because you're using big numbers

Delete row

ok, say you didn't want any of those values any more you have to go down to the row you want to DELETE, go back to the MENU again and press DELETE,

[Delete ROW COLUMN]

it's asking do we want to DELETE a ROW or COLUMN and we want to DELETE a ROW,

[Delete row(s) starting at: 4]

a ROW starting at 4, which is the one we want to DELETE

[How many rows/columns: 1]

we only want to delete 1.

[row 4 deleted]

That's deleted it and moved all the others up

so what's happened now

it's deleted the row which we didn't want and all the rows below it it's shifted up 1. In the meantime it's recalculated all these, all the formulas here and the formula for that could be quite complicated and it will still work out the new formula since it's shifted it up one.

Save

Now say you've done all the s/s now and you wanted to SAVE it and you want to come back to it again the way of saving is getting back to the MENU, it's QUIT/SAVE so press q,

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

now it's asking us what we want to do, we want to actually SAVE THE NEW MODEL, sorry MODEL_SELECTION_MENU, go to that menu and it will ask us -

[opening menu]

it's come back to that - because if you do that first time it will automatically SAVE it.

Comparison-Subject 12

Right what you can see there is actually the s/s itself which is divided up into columns which are labelled with letters and rows which are labelled with numbers, in each of, ok you can put virtually each of these is a cell, you can put virtually anything into it, TEXT or NUMBERS, and if you imagine say a shopping list right, at the top you'd have a title saying item and then price and then a whole list of numbers with prices and at the bottom you'd have a total and you can, this sort of idea is the s/s

so you can put different things in the columns

Enter text

so for example I'll just show you how to move round it, just use the arrow keys so you can see the cursor move around. So if you put the cursor toward the top somewhere and if you type example spreadsheet,

(does)

Change width

press RETURN you'll see it's actually entered it onto the s/s. Now as you can see it has actually gone over two columns and that's because the column width is narrower than the text you've put in. If you want to tidy that up for example so it fits in the column you press the menu F8 key, this gives you a menu of all the options available to you and what we're interested in is FORMAT, so if you, you can either move the bar around using the cursor keys or you can type the first letter of the option you want, ok so if you press f.

[Format Width Attributes Filler_char Data_type]

Right now we're interested in the WIDTH so if you press RETURN,

[Set width of this column to: 12] it tells you the current width is 12 and so you can set it to 20 [need not have done this unless he wanted to enter something in B1]

(does)

[Set how many columns to this width: 1]
and it gives you the option now of setting all the columns to width or just leaving it at that one so we'll just leave that one, so it's widened it
Well for example if you, the usual way is of costing, trying to work out how much something's going to cost, you've got a number of variables and you can juggle with the variables to see the effect each one has on the final outcome so if we try something like - if you move down a number of columns
(moves cursor)
Oh sorry what's happened is we're still in the MENU so you type UNDO that gets rid of the MENU and now the cursor moves around the s/s. Right now if we're talking about something like building an extension of a house and you give it certain parameters like how much floor space, how many doors and windows, you can work out a rough cost so for example if you move down and put a heading, floor
(types "floor") so what happens here, you type there and it goes into there [input line]
yes, enter that in,
(does)
Enter numbers
that becomes your heading if you move down under there [A5], that's it you now have to specify what you want to give it, now in this case it's going to be a NUMBER you want to put in, so if you type in a number,
(does)
say 10 or whatever, you see it's come up there it says NUM for NUMERIC if you press RETURN you'll see that it's RIGHT justified so it's right to the other end of the column. And that on the end is a thing called the ATTRIBUTE and we'll see what that is in a minute.
Formula
Right. Next if you move across to the next column you can put a formula in there, now that is actually a calculation using data that is in the s/s already or if you want to work out the amount of concrete needed to cover the floor area you do, you want the data you've taken out of there, so it's stored in cell A5 and you index it by the column first and row and then for example say it's two kilos of concrete to cover 1 sq. metre, then you'd type here A5 times 2 that's the basic formula, we could actually enter it into the s/s. At the moment it thinks it's TEXT, we haven't told it any different, if you press the F7 key, that's actually the CHANGE key and that will change it to NUMERIC, enter that now, it will actually do the calculation and you've got your answer there. And that's basically
so it does ???
Change attributes
yes, if you move up to - say this title here using the cursor [A1] you can see it says it's definitely TEXT and it's left justified, see that's NUMERIC and it's right justified, you could use this to actually tidy up the FORMAT of the thing so it will all appear in columns. We're looking at this this is the ATTRIBUTES of the number you're looking at and if we go to the main MENU again which you get to by pressing MENU and if you type f for FORMAT now
[Format Width Attributes Filler_char Data_type]
if you move the bar over ATTRIBUTES and press RETURN,
[NUM [R 2 -] LCR1[????????]]
right, this is a bit, it's double dutch really but it's alright once I show you what it is. It's an attribute of NUMBER this one for example is the number of decimal places after a number, that one is what the figure represents, for example dollars, pounds or percentage, and that one is set up so it's RIGHT justified and to change it you just use the CHANGE key [uses F7 instead of space bar]
so LEFT centred, RIGHT justified the first column so if you press that to say C, that's it now press RETURN.
[Format applies to area: B5]
What you've selected you said right I want to CENTER the column and it's asking you what area to apply it to so you can either leave it as an individual cell, or apply to a whole area, the way you specify areas you use colon to delimit so that's the top left hand corner and you'd have to set the bottom right hand corner. For the moment, you can leave it just as a single cell so if you press RETURN
[entry in B5 centred]
right and it's done what you asked it and CENTERED it.
Using the ATTRIBUTES you can set up to, you could have, it would recognise it as pounds or percentage or things like that.
Formula
Right, OK, so we'll try something next, if you want to move to the next column, still in the MENU so UNDO that's it, now if you want to enter say you said that if cost two pounds per kilogram of concrete and we've got the floor area and the amount of concrete we're going to use so we want the total cost of the concrete so right if I said it's two pounds for a kilo of concrete, what's the number of kilos we need then you enter a formula to concrete that
so what would that be? B5 times 2

that's it, great there we go and if you go to the MENU and select FORMAT, you want to change the ATTRIBUTES to show that is money so use, that's it to move through until, yes, that's the options, that's it, now you just want that cell for the moment, good. Next thing. Trying to think what to show you next
if you move the cursor to actually,

(moves cursor to A4)

you see it says TXT for TEXT and actually treats it as just a piece of TEXT, as far as we're concerned it's just a heading for a column to make the layout easier to understand, for example in the next column you could put say kilos of concrete used and, that's it so if you,

(enters text label in B4)

press RETURN
and again the column's not wide enough so you could widen that

(does)

Right so if you go out from the menu then if you change some variables for instance floor area, so if you now type, 50 say, enter

(does)

Recalc

you see it's actually put it in the spreadsheet but it hasn't recalculated the values and to actually get to do that you have to go into the main MENU again. There's an option there RECALCULATE, right now it's asking for an area. There's two ways of selecting areas you can either type the area you want to recalculate into, for the moment all we've got is this area here with figures in so that would be A5, colon, and then C5, right.
So if you press RETURN now,

(does)

it's updated the values.

Copy formula

It's actually set up to be large and you can move in either direction but you only see a part of it. As I was saying once you've got one row sorted out you can expand that, if you wanted to say compare several options for the same thing instead of having to go through all the process again of typing in the formula for each, under each heading and putting figures in you can COPY the whole lot down, so if you go back to the main MENU you'll see there's a copy option which is C,
[Copy from area: A5]
it's the same idea again with an area, so if you select the area that we've put numbers into
it actually asks for an area there so you want a colon in between and then the column.
[Copy to base coordinate: A5]
What it says here is base co-ordinate so once you've told it the area it knows the size of the data so all it wants now is the new position for it, so say for example we just move down one column and go, no what it needs is actually the one co-ordinate for the area, so as I was saying now it knows the size of the area you want to move so if you give it the top left hand corner it can fill the rest in itself
[Copy Values All]
now what you can do there is you can just COPY the VALUES which is what you see here or if you use the other option which is the more useful one, ALL - that will COPY all the formulas you've put in and relate all the data together,
[Copy Relative Absolute Prompted]
in COPY there's three ways of doing it, RELATIVE which means that - for example we're copying down a line it will COPY all formulas down by a line and it will increment the values for example this formula in here relates to the data in here so B5 equals I think it's A5 times 2, move it down using the RELATIVE option it will go to B6 equals A6 times 2, ok, if you use the ABSOLUTE option the formulas stay the same so you'll be copying it again, and the last one is PROMPTED and that's used when for example you put a constant value up here, for example, the cost of concrete per kilo because that doesn't change throughout the calculations so you can leave it in one place and if you used this option to COPY it would actually change the address of that cell and it wouldn't be able to find the data. At the moment we haven't got any constants so use the RELATIVE option.
Saving it well there's an option on the MENU QUIT/SAVE so if you type q which is the first letter,
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
just press return for that

why?

Save

each of these different options, that one, sorry this is actually leaving, you typed QUIT to leave the s/s, this if you hadn't made any changes type RETURN now it would just go directly back to the selection menu, I'm not sure what the options do but these two here that SAVES A BACKUP copy under a different name so you can keep a record of what you've done before you change it, that is SAVE A NEW MODEL, which is what we're interested in. You'll find, if you go back to the first option and press RETURN, because you've made changes and haven't actually saved it already then it should come up, oops, sorry

what's happened?

I think we've just lost it
A- have you
I'm not sure
A- why do you think you've lost it?
it did on my model when I did that before
A- you were waiting for quit before and after saving were you?
yes
A- has it saved it now?
?? I don't know
A- you could look up what you've actually got on disk now couldn't you? Try to load that one up again
(does - model is there)
A- so why didn't it ask you to quit BEFORE or AFTER SAVING
was it because it was a new model

Comparison-Subject 13

[selects existing model from disk]
This one looks like, right, this is what I meant by the rows and columns and the information in the rows
so it's like a table really?
yes that's right, it looks like marks or something, exam marks or something. See these are the names and that's what John got on course A and course B and then you see that column's the average, the average would be worked out by adding those up and dividing by 4, because you can, this, that, you move that again with the cursor keys and then, yes, because these are like little boxes labelled A2 or something, which we're in at the moment you see? and then this [pointer] tells you where you are as well it goes from a to z and then starts again aa, ab, ac
however much you want?
Enter text
yes it depends how much space you've got in the row or on disk, it probably goes down quite a way as well, I don't know you can just and then as well, see it's got 97 there [above input line] that's because that's where it is at the moment, this means number because the 97 has gone in as a number you see because if you write, go down here, and then you can put some TEXT in just like for instance, and this means TEXT, and then, this is C9
so how did you do that, how did you get to that
this, just by moving it, with the cursor
and you just type anything in and it will come up, ok
Enter numbers
so it does it itself that and you delete it with that, I'll show you and if you want to put a number in, like 67 - see it does it automatically
and you just press RETURN and it goes int he table?
yes. You see that's gone in to the right of that, I don't know if I can remember how to CENTER it again actually. We'll leave that there for a moment. And then press the MENU button, that one and it comes up with all the options you can do, I don't know a lot of them, what they actually mean, but, let's see which one was it. I didn't actually use a lot of these, the COPY one's quite useful so and also
what does the copy one do
that, yes if I just, - right there's a thing called - if you toggle it you can see because you can put in formulas as well. Now see for this - it's obviously added these and then divided by 4. We can write in like this would be B2 plus B3 plus B4 plus B5 then the whole lot divided by 4, you can write that in so
can you get the average here by telling it what to do with this?
Toggle display
yes and you can see the actual formula you've put in by going to the MENU first, press w for WINDOW, and then v for VIEW, and then EQUATIONS and then CARRIAGE RETURN
[screen toggled]
oh I see
and then to see, if you press the UNDO button that gets you out of the MENU so you can see better, yeah, and if you move the cursor to highlight this one [formula] see it doesn't all fit in on the screen but it comes up there and that's, there's a SUM command and that means SUM B2 to B5, yeah, divided by 4 and that's how you can do it and then, see that is obviously the SUM of C2 to C5 and COPY.
Formula
Yes say, if you go over to the top there, the next column [D1] say you wanted to do, say you wanted to SUM the two marks, course A and course B, so you could write in there SUM so you know what the column means. And if you wanted to make it look a bit neater you could put some spaces in first then put it in the middle so try it again. Just put that, four spaces in
that's better
yes, and so sort of what would you do to add those two up then do you think?
I suppose you say B2 plus C2?

yes - so you want that to go in this box [D2] because that's where you want the result to come out

can you do it so you only put one command in, and it does it for all of them

yes if you use the COPY command to make it go down you see so if you go down, because that's where you want the result to go and then, yes, just write

do you use that, surely it will just print it up on the screen

no because if you just put B2 to C2 because that's what you want it to do

(types)

you put it in, when you put in a formula they have to go in as NUMBERS see it says TEXT at the moment because you've written a letter o it thinks it's still going in as TEXT, in which case it would just print it in, you can see for yourself if you just do it

(CR)

[formula printed in D2]

that's not much good is it? so just do B2 plus C2 again, and then press that and that changes it to NUM that NUMERICAL bit and it knows that that's a formula and it has to do something with it and then RETURN.

[formula printed in D2]

Oh - ah why has it done that? (thinks) I know - yes it's because we're still displaying the formulas so to get back to displaying the values you have to go through that process we did before which means you press the MENU button and then W, and then V again and then RETURN again, that's it, you see it's done it automatically and the thing you have to remember as well is when you put in formulas when you're using values in the cells there have to be values in there already or it will just come up with an error [would print "?n?"] and it won't do it because there's nothing in there and it's trying to do it, it won't do that

Copy formula

and then the COPY right

[Copy from area: D2]

that's right, that means COPY FROM AREA, you're in D2 at the moment as we're only going down it's just from D2, say we wanted to do sort of, more than one row and column then say you wanted to do it in E2 as well for instance, you'd need to go from D2 to E2 down to there so you might want to go and do the next two columns, I'll show you that in a minute but for now just press RETURN because we want to go from D2

[Copy to base coordinate: D2]

TO BASE CO-ORDINATE, that means and the last co-ordinate you want to go to so if you press the colon, yes that means from D2 and then you can change this with the cursor keys so if you move that to where you want it to COPY TO [D5] down again, yeah, and then, well it won't

[Copy Values All]

no so if you just go up one, press RETURN, then we want ALL the values to be copied so press a,

[Copy Relative Absolute Prompted]

and then just press RETURN for RELATIVE, I don't quite know what these things are, that's just what we use and then it does it automatically you see. If you wanted to see the formula you could toggle it again by going to MENU WINDOW VIEW again, if you want to do it just so we see it's done properly.

I think we can see that

Change attributes

right, so that's the copy. What else, yes, I think we'll try and CENTER this, it's FORMAT so, if you press UNDO first and then UNDO again, now if you go to this value 67. I hope I can remember how to do this now. Press the MENU, F for FORMAT

[Format Width Attributes Filler_char Data_type]

then you want the ATTRIBUTES so A, yes

[NUM [R 2 -] LCR1[????????]]

let's have a think, maybe F7, try it because you want this to come up, it goes L, R and CHANGE, which one's CHANGE, F7, try pressing F7, is that

is that change - you just have to know that do you?

we've all been given the information about the. Yes it's just changed to L that would LEFT justify it, that means it would be printed to the LEFT, you need to do it again, that means CENTER, so if you press RETURN,

[Format applies to area: C9]

FORMAT WHICH AREA, we're in C9 so if you just press RETURN

[entry in C9 centred]

Recalc

it's centred it. Quite clever isn't it. Oh to change values RECALCULATE something we could do that

so you just go to a box and change it

so press UNDO to get out of the MENU. Right, what shall we give her (types 60 in one of the columns for marks), right, it won't RECALCULATE automatically, you have to tell it so,

press MENU?

that's right and then, yes and then you can either tell it do a set area or to RECALCULATE everything that's there you press that one [F4] and it does like right to the end. It's done it see.

so this is showing you how to put things in and store them, what else can you do I suppose ??
it really depends, you know what I said about the glass manufacturer [classroom example] ?? accompany to show it's figures and profits, so it's quite useful for accounting purposes as well.
Save
If we look at one of the others on there, SAVE it
so how do we do that?
press MENU
and exit
no QUIT
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
MODEL_SELECTION_MENU, that means we want to go back to the MENU, so you want that
[Quit Before_saving Without_Saving]
WITHOUT_SAVING?
yes. Right. (decides to make up a new one]
[empty spreadsheet]
so that just gives you the basic table
yes that's right. Try to think of something now. You could, I don't know, days of the week and then some sweets you buy or something
say if I put Monday, Tuesday Wednesday Thursday down
yes if you want to do that go down the rows first and leave the column headings until later. Go down one first.
(enter text labels A2-A6)
right so we've got 5 days. Along the top you could have names of different sweets or something and then in the columns the number, how many you buy
Right so if we got to here, so put the column headings in ... (instructs co-experimenter to enter column headings in B1-E1, and numbers in B2-C6, and E2-E6)
if you wanted the computer to work out the price then how could you do that, you know the price that you spent on Monday.
well the price is 10 pence say and then you can add up how many packets he's bought times 10p and that will give you how much he spent
that's in a week though but if you wanted to add up all what he spent on Monday on different things
oh I see then you'd have to have a column in here price times 10 times number of smarties. If you want to just delete this then, just enter nothing, just put a space and press RETURN. Leave that there I suppose, it will just ignore it. Right, so if you put here money spent if it will fit in.
(deletes current text label, and enters "money spent" in D1)
[could have inserted a new column]
Formula
Oh just, and then a formula for the next bit to tell it how to work it out. Go down one. Right say you have the value in B2, times - put bracket first, times, 10 then bracket plus
bracket .
actually you can use these.
*(types "(b2*10)+(c2*10)", CR)*
[bad syntax at entry D2]
I didn't put the (closing) bracket
just press undo. (the machine beeps)
I think I pressed RETURN rather than SHIFT, try pressing RETURN, oh that's ok
Copy formula
and then to COPY down to make it
so how do we COPY, do you have to go back to the menu?
yes, c, right just press RETURN, move the cursor, that's it, can you remember which one
values, all (finishes copying)
that's done it and like you say you could tell different things now, say how much money he's spent in a week, there total, sorry, UNDO first, move down again to make it look a bit neater. Yes just put TOTAL. Now you have the SUM, sum, you want the SUM of D2 to D6
I just write SUM?
yes, then bracket, D2, colon, press F7 to make it go onto number
and RETURN?
[result printed in D8]
Save
now press the MENU and Q for QUIT/SAVE
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
right you want this again [Model_Selection_Menu] and it asks you whether you want to do it BEFORE or AFTER SAVING, press RETURN.
[returns to spreadsheet main menu]

Oh, it does it automatically

it saves it

yes, it only asks you when you've altered it, like if you went into it again, if I just show you. Press RETURN it was called percy wasn't it. If we just change one of the values make it six packets of polos for example, and then RECALCULATE the values again.

(does)

it's done it so that's been altered you see so press Q and ENTER, you want it AFTER SAVING so you press RETURN again. So it SAVED it, initially it always SAVES it and then if you alter it it asks you

Comparison-Subject 14

[empty spreadsheet]

Right this is the basic spreadsheet design it will give you so many columns A to whatever, I,J, I don't know, however many you need for your spreadsheet

so what happens if you get to Z and you want more columns?

Enter text

I don't know. I'm not actually sure ... [AA, AB etc.] and we've got all columns down It's just the cursor to the left or up/down. Right so say for example you put in, start of by heading it to give you some example of what we're going to put in, say if we call it I don't know - glass. (starts typing) What we actually type in gets recorded in this box [input line] and what goes onto that white line is what it's going to record in then when we press the RETURN key

why glass?

it's the s/s we had to do for a project. [classroom example] So then say as an example we could put different sheets of measurements for different sheets of glass so we calculate the density, how much they'd be per sheet and then their cost price and that sort of thing. Press ENTER

[entry printed in A1]

Enter numbers

and it deposits what I first typed in into there, that box. Right, so then we can carry on down if we start putting in the length of the glass sheet so if we type in length (instructs co-experimenter to enter text labels in A2 and B2, and numbers in A3 and B3) Right, if we want to calculate the area of that glass say length times height then we'd take A3 which is that figure in that column and than we'd take B3, so A3 times B3 right? (types heading "area", enters in C2).

Formula

Now to put your formula you type in say A3, these three letters mean it thinks it's TEXT, you want it to be calculated as a NUMERICAL formula so you toggle between TEXT and NUMERICAL, just shifts it one to the other. Right, which is F7. (does, CR)

[result printed in C3]

Toggle display

So you want A3 times B3, right it's input into there, it's taken A3, B3 and you get the result, if you want to see what formula you've put in, MENU, that is standard, this is just so it will show you what formula you've got in each box, so you can check the formula, w,

w?

v, yes, W gives you the WINDOW VIEW

that was in the MENU was it?

yes, and then so we want EQUATIONS, so that you can just check our formula [she could see formula displayed above input line if cursor is positioned on cell in question]

let's get out of here, we get out of the menu by pressing UNDO, I suppose we ought to have the width really. Well we can do a spreadsheet saying, we could do the cost price times area by a certain number of panes to find the cost of that sheet of glass, so do cost

(starts typing, realises cursor is in D3, moves cursor to D2, finishes typing) I that all right now?

yes

(CR)

[entry printed in D3]

ah well, you'll just have to type that again, and write over that one [in D3] so say we want the average price, I don't know say per square metre, so what you want to do is take the number of square metres we've got here

that's C3 is it

yes, so we take C3 times whatever we choose for

*OK (types "C3*2.50")*

right that's gone in as TEXT so toggle it, F7, then just RETURN,

[formula printed in D3]

that's just the formula

Toggle display

yes if you want to check whether it's gone in we know that's two, the area's going to be 2 metres square, just check that it's right, just do MENU, this is just a reverse way of doing it

what was it - WINDOW?

now v, just a standard, just RETURN. If you remember MENU, w, v, RETURN and it just goes through the stages.
[toggles to display result]
how do you, can you put the numbers so they're in the centre of the columns? Because it looks a bit funny on the end there.
Change attributes
good question. I haven't actually done that you thought it was FORMAT, right?
yes
(selects FORMAT)
[Format Width Attributes Filler_char Data_type]
(reads options) WIDTH, ATTRIBUTES, FILLER CHARACTER, DATA TYPE, we'll go for FILLER_CHARACTER I suppose.
[Set filler to:]
Maybe not. We won't try to do that one then (quits menu).
Copy formula
Right, so now you've got those two formulas there, you now want to repeat the calculation for say a list of five different widths of glass. Right so if we go back and start with the two formula windows, what you can do is COPY the formula down the column, where that one is A3 times B3, you can have it there so it goes A4 times B4, A5 times B5, without having to do any more individual calculations, so if you go back into MENU, ok and press COPY.
[Copy from area: C3]
So you want to copy from C3, so you put C3 colon C3, that gives us that area
[Copy to base coordinate: C3]
So press RETURN - oh that's to base coordinate, oh fine. OK we'll go back to, MENU, start again, press the first character see it picks up ??
[Copy from area: C3]
so we want from area C3 so you put C3, C3, because we want to start from that,
(enters"C3:C3" as instructed)
that's fine press RETURN.
[Copy to base coordinate:]
Right copy to, so how many do you want to copy - down to row 10?
ok
right so you're going to press colon and you move the cursor down to where you want your list of all, to go down to - row 10?
oh I see
so you get C3 colon C10. You press RETURN.
[Copy Values All]
Right you want to copy ALL
[list of "2.00" displayed in C3-C10]
OH it's given you a row of two's Right, we'll go back to the MENU again
[warning beep]
we're already in MENU, Right if you go back to formula again and it will obviously do (tries WINDOW, VIEW, CR, no change tries again, nothing changes). Oh dear. I don't know what to do.
(experimenter explains that she has overwritten the formula by copying the result over it)
(enters formula again, toggles display to show formula)
[which has nothing to do with how it is copied]
[Copy from area: C3]
so from area C3, I think we got the copy from and to bit right
[Copy to base coordinate: C3]
we want C3 colon, just go down as far as 10
and RETURN
yes
ALL
yes.
[Copy Relative Absolute Prompted]
Right RELATIVE, ABSOLUTE or PROMPTED, if you get RELATIVE as it goes down it will change the row to A4 and as it goes down each one it changes the row number, A4 times B4, A5 times B5, so you want RELATIVE.
[adjusted formula printed in C4-C10]
Oh good one so you want to do the same for cost price (instructs co-experimenter to copy formula in D3)
right so we've got those formula in, so now we could say go away and find me different sheets of glass, if we were entering in the length and height down there it would calculate it, it will just give you their area and cost

price. Right I think you ought to enter some different values for length and height (instructs co-experimenter to enter number in A4-B10) it would calculated the actual area until you recalculate it.

Recalc

So if you take the cursor back to the top now, right so if you look in the MENU, you want to RECALCULATE the values, so press R, that selects the one with R as a capital,

[Recalculate equations over area: A3]

equations over area so you want A3, then colon (moves cursor so it reads A3:D12, CR

[display moves, but still displays formulae]

Oh! right um

do you have to get the formula - take the formula away

Toggle display

it's worth a try, right. Perhaps we ought to get rid of the MENU No we don't want to get rid of MENU, we want WINDOW VIEW, F7 will give you just ???

(selects WINDOW)

and we want VIEW ...

[results displayed]

it's done it

Recalc

If we changed the values, say we changed 10 to , let's try it, change, change that number say to 3 then so you want to see, RECALCULATE (repeats recalc on another example). So if you had an area and one figure instead of going all the way through altering that one figure and then it would alter the rest of the column or the row for you

but what about the other things, like delete, you could just delete a single cell or something could you?

Delete row

yes, it gives you the option of deleting a row or a column, just d, so which row shall we do [single cell: BLANK]

[Delete ROW COLUMN]

it wants to know row or column first, ok just press RETURN for row

[Delete row(s) starting at: 10]

so it gives you the option there of deleting the ROW you're on

oh you have to move the cursor do you

yes it says you're starting at row 10 so if you just press RETURN -

won't it just delete one row, or deletes all the ones after the one you've deleted

yes, it's starting at so say if we give it a colon ... (CR)

[Delete how many rows/columns: 1]

I said starting at row 10, it says how many rows so we say 1, and it's gone.

[row 10 deleted]

Save

right if we want to say finish the spreadsheet because we've done as much as we want to do, you go to QUIT and SAVE

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

right MODEL_SELECTION_MENU that's what we want to do that will then bring up the section you saw at the beginning

why doesn't it save, though?

Should have been SAVE_NEW_MODEL? let's just see if it's been saved right, right F3 gives you a listing, yes there you go, our one there, at the end of any session it gives you the option of saving the file so you can use that or you can SAVE it updated so say if I altered that, went back and altered that file name

yes

I could save it as a new name as opposed to

Comparison-Subject 15

[empty spreadsheet]

When you've got the spreadsheet here you can move about just using the cursor keys. So the idea is just to put data in

but into what?

There is different cells, you can access - you can have a table of data ... So if you start by, we'll have to think of something you can use, say we use one which we did last week, different sheets of glass, so start with the thickness so if you type in thickness, just type it in because you're in that cell at the moment

so this line is a cell

well, if you imagine sort of a table

like columns and rows

Enter text

so if you type in thickness as the heading for the first one

it's down here [input line]

right and that tells you what's in the box. Press RETURN and it goes into the box. We want some kind of length so if you go along using the arrow keys to the, now move along and do width and then, say, area for the sheet.

(enters text labels in B2-E2)

Enter numbers

We'll just leave that for the moment. If you can imagine for these values - you can have different values which the user will input then if you put a formula in for area it will calculate the area by itself. So if you move down to the next row [B3] if you move to thickness and imagine some thickness, say 0.1 or 0.2, anything really

and you're defining thicknesses in this column? (enters number in B3)

yes and the same for height and width. It could be anything, say 10 or 5 ...

(enters numbers in C3 and D3)

Formula

right for the area it allows you to input a formula, (points to cell) so if you imagine that that's C3

that's like co-ordinates?

yes - so if you type in the area for the co-ordinate, C3 times D3 -

(starts typing) won't it just put C3 into the box?

no - well if you leave it as TEXT - because at the moment it's TEXT but input C3 times that and before you hit RETURN press

(finishes typing)

if you press the integer key [F7] it will convert it to NUMBERS

(F7)

and RETURN

[result printed in E3]

Copy formula

so at the same time, if you type in loads of formulas or numbers if you get the menu which is that one [F2] it allows you to COPY the values down the table, so say for formula you've got C3 times D3 there it allows you to COPY say formula C3 times D3 but allow you to change the values so in this row it will be C4 times D4 and just carry on down like that

I see

so if you select COPY you know how to do it using the cursor keys, but you can just press C,

[Copy from area: E3]

so if you, let's think

so it just copies the formula so when you put numbers in it?

it gives the option of whether you want to COPY the formulas absolutely or just the numbers so depending on how many numbers you want to put in - if you press RETURN now

[Copy to base coordinate: E3]

then move the cursor down onto

what shall we do, just 5?

yes

(moves cursor to E7)

then press RETURN

[Copy Values All]

if you leave it as VALUES, it will copy a 100, just the value 100 if you move the cursor onto ALL and it will copy the whole formula

[Copy Relative Absolute Prompted]

and you want it RELATIVE so it's relative to the different columns, different rows I mean

what do you mean?

well it will copy it down and change all the 3s to 4s and 5s and so on RETURN

["?n?" printed in E7]

oops- what's going on. There's also a help facility so if you press HELP ... (reads HELP entry on COPY)

did you put the right notation in?

I think so, try again, type UNDO to get rid of that window, then press RETURN I think,

[Copy from area: E3]

right, so, press RETURN,

[Copy to base coordinate: E3]

now if you move it down to

(moves cursor) that's what we did before, though ...

I don't know why it hasn't worked, press RETURN (makes same selections as before)

[display unchanged]

ah yes, that's it I remember, it's copied the formulas but it hasn't got any numbers in. [Correct] so it's not actually copying the - so if you

so we've got to put some data in?

well you'll have to put some values, (instructs co-experimenter to enter numbers in B4-D7)
Recalc
Right, so now it hasn't calculated any of the formulas so if you get back into the MENU, there's a RECALC which will RECALCULATE all values in the table, so if you press r -
[Recalculate equations over area: D7]
so you really want to recalculate all values so if you start with this, E4, then press RETURN
["?n?" printed in E4] [formula was only copied to E7, so there is nothing to recalculate]
then, oops -
(experimenter explains)
right try the copying operation, press c,
[Copy from area: E4]
we want from area, can you move that up to [E3] the press RETURN
[Copy to base coordinate: E3]
if you move move it down to E7
E7?
yes, so if you move the cursor down
but it's already there isn't it?
yes, it should work - ah, I see press UNDO we should - press COPY again
[Copy from area: E7]
move it up to E3 then colon E3
(enters "E3:E3" as instructed) [just E3]
then RETURN
[Copy to base coordinate: E3]
then move it down to E7 - then colon E7, so if you press RETURN
[Copy Values All]
ALL
yes
[Copy Relative Absolute Prompted]
RELATIVE
yes
[result printed in E7]
arrgh -
(experimenter explains how to define target coordinates)
(does it again, works)
right, so there's also a way that you can actually see the formulas which is - I've forgotten what it is now, shows you how much I used it [Window, View]
what, you actually get it to print out somewhere what formulas?
yes, you can flick between the formulas and numbers so you actually see on the screen what the formulas are, so
so you press one of these, let's see if we can guess which one, is it window?
Toggle display
yes WINDOW, so if you press W, VIEW, so V, then EQUATIONS so just press RETURN and it shows you equations.
If you want to get back it's just exactly the same, view then equations, then so you can go on like that.
And you can all different, we've used multiplication, if you want to have a total, say of all the thicknesses use the, put the formula in say total, in there and then like
so it will add up something in a column
yes, it will add up the whole column
what if you want to add up just those two, or the last two in a column can you add up part of the column?
if you want to select things out of columns
yes it should do I think, yes because if you specify the separate elements - say B6 and B7 so if you
shall we have an - add column
yes if you put totals
(enters text label in A8)
Formula
right now if you want the equation is, you've got to type SUM first then brackets then if we start at B3 then colon and then B7
so what does that do, add B3 and B7
that sums from B3 to B7
oh the whole lot
yes and close the brackets and then change it to formula
F7?
yes, so then RETURN.
[result displayed in B8]

Copy formula

So we should be able to COPY that along relative to the rest so try another COPY (laughs) (instructs co-experimenter to copy formula)

and you can put any algebraic formula in you want really?

yes, there's also some other functions, there's one called MAX so you put MAX and bracket so it will find the maximum say you want C and D it will give you the maximum value

in that column

between the two of them, say there it will be height maximum so try that move to column F

(moves cursor to F3)

so you put MAX then brackets then say C3 colon D3

so it compares those two (CR)

yes, oops [entered as text] , I'm not sure how to edit it, I suppose the quickest thing is just to type it in again

(enters correctly)

Save

so save you select QUIT/SAVE, so you want

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

is it this one, SAVE_NEW_MODEL?

I think if you just press return on MODEL_SELECTION

it automatically saves it?

it automatically saves it the first time but the second time - if we go to it the second time you get the option of saving it after you've

Comparison-Subject 16

[empty spreadsheet]

so what really do you use a spreadsheet really for then?

They're useful if you've got a lot of equations that have got a lot of variables in, adjusting one thing, or a lot of other results - the one I've just done is a maths one for plotting the trajectory of a projectile because there's a lot of figures, there's a lot of variables so you could simply edit the variables and then get it to recalculate, it will recalculate the whole projectile trajectory in one go rather than sit there going through step by step.

so it's like presenting data

yes presenting and processing it ... I have seen better ones than this [spreadsheet package] for presenting it it's one I'd use for myself, but not to show results to someone else it doesn't look brilliant. Basically it's divided into cells which are these blocks which are referred to by co-ordinates.

so that would be A1

that's A1 yes. Down here it tells you which your current cell is. Each of these cells can hold - Well this particular spreadsheet cells can hold, as far as it's concerned either NUMBER or TEXT, TEXT is just basic text, a NUMBER can either be a straight number like 21, 16 or an equation and so you could use that to specify if you wanted something to be the result of another two cells multiplied together you could say that that one was A1 times A16. Have you got any sort of application you want to do?

Enter text

Basically, you move around with the arrow keys. (demonstrates) When you want to put something in, you just type it in

just type it in?

yes just type it in. If you did a spreadsheet say, what's a simple example. Say unit costs, unit quantities - total cost for that unit, it is a universal initial example. You can set up the text for the heading. So the first one has got to be cost (instructs co-experimenter to enter text label in A1-C1)

To jazz up the presentation, it doesn't do a lot, you can do a line of single dashes so if we move down and back [A2] you can just put a line of minuses in

(types line of "-")

the only trouble with that is because you've put a minus in it thinks it's a NUMBER so it would try to evaluate minus minus minus ...

oh right, so you put a dash in do you

well you could leave it as minuses or press the F7 key it's got int [label] on it it but this one is CHANGE and it will change, down there it tells you it thinks it is a NUMBER, if you press it it now thinks it's TEXT and won't try and evaluate anything it will just put it in as it is, that toggles between what I tend to do is, instead of putting in the right amount [of characters] I tend to put it more than enough it will display it over [the width of the cell] as long as there isn't anything in these two [B2 and C2] so just put a longer line to underline the lot.

well that's well underlined (line is too long)

you can EDIT, rather than retype it if you press MENU, which is F8 these are all the different commands you can give to the spreadsheet AUTO, BLANK, COPY, - COPY if useful for copying things, obviously, I'll show you, which ones - HELP is quite useful, I was quite surprised, you know if you are stuck, call up HELP and it will give you a bit of help on what you are doing or on something you're not going (laughs) but you've also got EDIT, the same use the arrows or just type the first letter

so if I put e ...

yes, they all start with a different letter, you can now delete that -

(deletes until line is right length, CR)

Enter numbers

now these ones are just going to be figures and these ones are just going to be figures, so just type in whatever you want (instructs co-experimenter to enter numbers in A3-A6)

can you get them in the centre of the column?

Change attributues

yes, in between these square brackets it shows how it is going to treat the number, different ATTRIBUTES, I don't know I've only found out about this one..this means where it puts it in the column, R means it's RIGHT aligned so capital L means LEFT aligned, capital C CENTRE, PADDING, change that by pressing the justification key but the F7 hasn't got a justification key, SHIFT F2, that moves it to the next one which is L, press and it will cycle through [instead of going through FORMAT, ATTRIBUTES]

press it again?

yes, that's got to, press it again and it will cycle back right through the whole

I see, yes

you can if you want everything you want to be centred there is a set-up section on the menu press S, ATTRIBUTES, slight problem it starts with so you have to move along so SET NUMERICAL ATTRIBUTES, then get the ATTRIBUTES, try DEFAULT ATTRIBUTES ah yes, that's returned it to the default ... (repeats first part of process) GET ATTRIBUTES, it's going to take attributes from a certain cell, you can arrange which cell

and then it adopts those

yes

so I just press RETURN now

yes and you've set the DEFAULT ATTRIBUTE

but it's not changed it,

those ones you'll have to change manually

so I've got to do it three times

I think you can probably do it -

what about FORMAT

you could probably try going through to FORMAT, yes, ATTRIBUTES,

[NUM [R 2 -] LCR1[????????]]

now this gives you 8 or however many there is

what

eight ATTRIBUTES - each question mark stands for an attribute and these tell you the alternatives so there you've got LEFT CENTRE RIGHT, LEFT PADDED, so you can move the cursor to which one you want, which is in fact that one [first "?"]

CENTRE?

so press CHANGE which is F7 til it goes to a C, that's all you want so press RETURN

[Format applies to area: A6]

then you can specify the area you want it to apply to, you specify the area by giving two co-ordinates, the top left and bottom right. I think you can sometimes do it by pressing ALL, but you better do it from here to here

top left and bottom right?

yes. You can sometimes do it different ways but it doesn't always work in some of the COPY functions. In this case we could probably specify the bottom so you could say, from A6 to A3, to specify the range you put a colon between them and then you can either just type it which is sometimes quicker or move the pointer to where you want it to go to -

(enters "A6:A3")

[Improper coordinate. Bad syntax or out of range]

ah, improper - it has got to be A3 to A6. If you've got a problem it will come up here [window top of screen] if it's a problem which you've made in the program it will be one like this, if it's a system problem it's a deeper window with junk numbers on, well they mean something to someone, to cancel it you press DO or UNDO. UNDO is F2

is that what I want to press then?

and then you can

(corrects co-ordinates to A3:A6)

now you can put the quantities in (instruct co-experimenter to enter numbers in B3-B6)

Formula

right now this column [C] is going to be dependent on these two [A and B] and to put an equation in specify, you type in ordinary maths equations but instead of numbers put the cell

.. multiply those two together?

you move the pointer to the cell you want it to occupy [C3] and then type what you want so in this case it will be B3 times A3

(enters formula)

the only trouble with that is because it starts with an A it thinks it's TEXT now, before it thought it was a NUMBER when we did underline, now it thinks that is TEXT so you've got to change that to a number using the F7

so press RETURN?

[result printed in C3]

Copy formula

Now that equation can be copied down but you can't just COPY it straight down because otherwise you'd just get 20, 20, 20, 20 so if you use the COPY command

[Copy from area: C3]

you want to copy from C3 which is correct

so I press RETURN

[Copy to base coordinate: C3]

to, from C4 to C6, that would be the next 3 - so if you move down, move down to say C4 which is where you want to copy to and colon to specify the range and then end of range

then press RETURN?

[Copy Values All]

now you can either copy the VALUES which will just copy 20 or copy ALL of it which includes the equations, just a

[Copy Relative Absolute Prompted]

now these you can either copy RELATIVE, ABSOLUTE or PROMPTED. ABSOLUTE means it will copy the actual ones you've put in, like it'll copy A3 time B3

so you don't want that

RELATIVE will change the rows so A3 will be become B3, A4, B4 and so on. Prompted is if you want to do a mixture like on the one I've just done, some have got gravity as a constant

so it asks you?

yes it asks you do you want this one to be RELATIVE -

[results printed in C4-C6]

oh I see

yes but in this case you want them all RELATIVE, press RETURN

oh, it's done it

Formula

and then you've got, we could probably do with a header but if you want to put the total cost, you've got to add up all these. Now you could put say B6 plus B5 or C6, plus C5 ... but there is a command it accepts, SUM, which takes a range, if you put say the total, say you go down one more we'll put a line there to, later I'll show you how to tidy it up, type SUM, there's a bracket in the brackets you can specify it as a range so you can say C3 to C6

(types "SUM(C3:C6)") then it adds up all 4 numbers? (CR)

[formula printed in C8]

yes, it has taken it as TEXT so you have to edit that (selects edit from menu and changes it to numerical)

[result printed in C8]

there are a lot of these functions that are useful - sine, cos

so it's just like a calculator really

yes, the functions you'd have on a basic scientific calculator. What else is useful about it. The COPY routine is probably the most complicated and the most powerful, you can copy say formula, down there you can copy a whole line.

Insert column

INSERT it lets you insert rows, or -

so you could insert a column

that would let you insert a ROW or COLUMN if you want to do that, just move to I -

[Insert Row Column]

INSERT a COLUMN, so C

[Insert Column(s) starting at: C]

starting at A if you want it to go at the front,

[How many rows/columns: 1]

insert 1, if you want to just change it

[new column inserted before A]

and now it has moved it over, the equations and everything

LOCATE I don't know what it does, NAME I don't know what it does, ORDER, PRINT will print it out but we haven't got a printer or you're not connected to a printer.

Save

QUIT/SAVE very important that, it allows you to save what you've done onto your disk

ok so QUIT, so

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

so SAVE_NEW_MODEL?

this will also decide where you go back to in the spreadsheet if you say MODEL_SELECTION_MENU it will save it then let you go back to the start of the spreadsheet

so it saves it automatically

yes, if it doesn't chew the disk

RECALC is important, if you change all these figures and then RECALC these figures you, if you just go to change that figure and that figure are wrong

(changes one number) so it doesn't do it automatically

Recalc

no it doesn't it just do it on its own - you can select R which is RECALC, that will ask you for the area that you want to RECALC over and if you've only got a few you can specify the area but what I usually do is press F4 which is CALC and it just does the lot

Comparison-Subject 17

[empty spreadsheet]

Enter text, enter numbers

You see there are some columns and rows each space we call cell to contain some element you can use the ARROW KEYS just to move it along and then I'll show you some test, very simple (moves cursor to B3, types "glass", CR) then it appears here and we can have some number (enters number in C3 and C4) also, we can apply some formula

Formula

what do the number mean?

well, this column can be the cost, and the next column can be the price you can put a title on the column later and we can apply some formula for example we can have - I think we need some more data (enters numbers in C5 and C6) SUM, C3 to C6 (types formula in)

so what are you doing now?

you can for example - if you want to know the total for this column -

so you're adding them up

I want to just apply the formula to the spreadsheet

so that's something the computer recognises

yes SUM, that now sums up from C3 to C6

so it's a the range, so you put a colon in to include all the numbers in that range

actually the computer will just recognise this as TEXT because sometimes it will have so we will transfer it to a formula by pressing key 7 and see NUMBER there, so this means formula not TEXT OK, then you see (CR)

[result printed in C7]

it has added it all up

Recalc

it is possible that you want to change this data, for example (changes number in C6) so you need to RECALCULATE

it hasn't gone in has it, it hasn't changed it, oh yes

now we need to RECALCULATE so we just put MENU and then for example we can do this and if you press this special key for all the data, if you want to do just a certain area you type in the range

so this button does everything but if you've got more than one thing to do you can specify one of those things at a time by using

Toggle display

and if you want to get rid of this MENU every time you want to leave some menu you press UNDO, also this menu has several facilities for example, WINDOW (selects) (selects with this means we can translate this to equation, for example sometimes you want to

oh I get it you can get it to print up there - the equations? how do you do that again, show me again

alright, MENU and then you choose the WINDOW, then VIEW, this time I think we go back to the numbers ..

I see it swaps it back to equations

Insert row

that is the basic idea and also sometimes we can, we forget to put the title here, so we want to INSERT a title here, you want to INSERT a COLUMN, you want to shift this down a little bit, so MENU

[Insert Row Column]

you can INSERT a COLUMN or ROW

so you want to put a space in, you want to insert a row, I can either press RETURN -

[Insert row(s) starting at: 2]

yes, starting at, you want to INSERT it here

[How many rows/columns: 1]

how many - I want two -

[two new rows inserted] now for example how many

it moves all these down, yes? so that helps you present it

and data you can see there automatically adjusted
Save
If you want to QUIT (selects)
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
before you leave usually we have some choice, for example to SAVE that to a file, or SAVE to a new file or if you want to SAVE into another, but usually we just, to SAVE it to the file (selects MODEL_SELECTION_MENU)
so it just saves it automatically?
Yes (returns to spreadsheet)
Ok so you can try yourself (...)
and if you wanted to put a title on top of the column, so if that was price (enter text label) and total there, umm can you CENTRE these, put these numbers in the CENTRE of the column?
actually I don't know but I think you can - just put the spaces in
what does all the other commands do?
Copy formula
well actually I just know a few of them, for example, COPY you can just copy this to the other part ...
do you want to show me that?
[Copy from area: C5]
for example move this data from C5 to C9
[Copy to base coordinate: C9]
no, move it here, move E5 move the cursor to the cell containing the location
[Copy Values All]
right VALUES means data, ALL means the equation also,
so ALL
[Copy Relative Absolute Prompted]
RELATIVE means there are - for example this equation for C5 to C9 but if I move to E, E5 to E9, the equation will be linked to the location
[data copied to E5-E9]
and keep the same equation, yes OK
I think I shall show you the equation (toggles WINDOW, VIEW, EQUATION) see it is not copied as C5 but as E5 to E9 every time you move the cursor there is nothing here

Comparison-Subject 18

(selects existing spreadsheet)
This is the spreadsheet here, if you press the right button
what's the spreadsheet, is it just a table that's got numbers in?
Right it's put in tabloid form, you put the numbers in here where you want the numbers and then a formula, you put a formula in using these numbers that you put in and it will calculate that formula and give the correct answer. You can SUM numbers, you can SUM those by putting a simple formula in, you don't have to work them out by hand, you just sum them all, you can multiply certain numbers, divide, working out percentages of numbers
so you can do anything capable of calculation
you can do lots of calculations very simply
how do I alter ...
right, just move around the spreadsheet first to familiarise yourself with it, your columns ABCDEF, they go across, if you press the right hand button, the ARROW KEY pointing to the right, then go across to the right
(does) so that's the column and those are the rows
yes, column A, column B, ... press it quite a few times and it just goes across ... keep on pressing ... see it moves across, so you can see what's to the right it just carries on ... go back with the left, left ARROW KEY and you're back where you started from. It does in fact go quite a distance ... you can put in a massive spreadsheet, it goes well past AA you can move down the rows ... (shows co-experimenter how to move around the spreadsheet) each particular box is uniquely defined, see this one says current pointer A5 column A row 5 so you can find yourself, it changes, at any time you can look at that and it tells you ... an infinite number of rows, you can do down as far as you want, until you run out of disk space
so what do I do now?
Enter text
if you want to input text into a certain row
is that like a column heading then or does it treat that as a number
that there, if you look at this particular box here, B5 [current cursor position] it will tell you what's in B5 just down here [above input line] so it's NUMBER and then it gives what is in the box [the entry]
and what does the R mean
that just means RIGHT justified, you don't really need to know that it just means that the whole thing is moved over to the right hand side of the box, not the left hand side, if you had an L there it would mean that the whole contents of the box were over on the LEFT hand side

so if there were an L there the 2 would be over here underneath

height yes, you can also CENTRE it into the middle of the box, let's stay with RIGHT justified for the moment because it's easiest when it is automatically done (tells subject to move about and see how entries are displayed above input line)

This one is a formula, it's worked out by multiplying those two numbers together, we'll come to that in a moment, you don't need to worry about that

Right if we want to input TEXT, as opposed to NUMBERS we just type in from the keyboard normally we could set up another heading if you want - wholesale price, or something like that or just, anything, wholesale price, wholesale, just type something in

(starts typing)

as you type you can see it comes up on this line here [input line] so you can see what you're typing. I think wholesale will do because wholesale price won't fit into that box, so just put wholesale, if you make a mistake, you can just delete the couple of characters

how do you do that

that key there [DELETE] if you press that once the r goes

so I have to put in only as much as will fit in one column

you can type in as much as you want but it won't come up on the screen [it will unless cell to the right contains entry]

if it doesn't fit in, you can change box WIDTHS but that's quite advanced so we'll just deal with what is going to fit in the box. As you typed that it came up here with TEXT then LEFT justified if you press F7 - just once

(does)

it comes up with NUMBER so you've got two different types of TEXT, press F7 again, so you can have TEXT or a NUMBER in a box

so F7 swaps between TEXT and NUMBERS ...

We want to input TEXT here so we then ... put it into that box on the spreadsheet, press RETURN

(does)

and wholesale is therefore promptly moved into the spreadsheet

so now you've made a column heading so we could put another one by the side

we could put one wherever we want just by moving the arrow keys so

(enters text labels "retail" and "profit") and we've got to make a table ...

Enter numbers

Right, numbers - you've learnt how to put in TEXT, now you can put in some NUMBERS (instructs co-experimenter to enter numbers)

Formula

OK so we've got 2 sets of figures there and then you need to work out the profit or the loss right if you work out the formula for yourself what is the formula going to be?

well you have to take the difference between the two?

right there isn't an actual thing for difference between them there's just SUM, no you can't use SUM oh dear, I'm lost ...

you have to take this one from this one don't you?

so you need to do the retail price minus wholesale price, right if you move up to there the first retail price, with the arrow keys

(does)

right you see the box number is B15 right so we need B15 minus the wholesale price, what's the box number for wholesale price, move along

C15

so we're going to have a formula B15 minus C15 so you want to put that into the box, so move along to the box you want to put it into, so you can just input into that box there so if you just type

(starts typing)

it comes up with TEXT at the moment but we'll change that to a NUMBER in a second using the F7 key. Just type B15 minus ...

(finishes typing) RETURN?

not at the moment, you see it says TEXT here because you put in B first which is a piece of TEXT so it automatically assigns it to TEXT, we want it to be a NUMBER so we use F7, change it to a NUMBER ...

(does)

press RETURN now, it automatically does the calculation ...

[result printed in D15]

and puts the answer up there

so to do this figure here [D16] we do the same the same again

there is another way to do it and I'll describe how, actually we'll do this first, do you want to run through that

(repeats process for B16 minus C16)

any questions so far, anything you want to recap on?

yes, everything we've done so far is quicker if you use a piece of paper

yes because we've been doing very simple calculations, the more advanced you get or the more calculations you do, let's say you're doing a 100 down here but all you need to do is write in one formula here and then ask the computer to do the calculation for all 100

so I just put in one formula

yes instead of that you could have put in one formula and then told it to do exactly the same for all of them ... so if we try to put that formula there [16] for this line here, just rub that out, just blank it out, press the SPACE BAR

space? (deletes result in D16)

Copy formula

yes and then RETURN and that wipes out that space, if we try it now that formula on that line, move up one it will tell you what that formula is here, B15-C15 right, press F8 which is MENU and it comes up with loads of operations you can do on this, what we want is COPY, there are 2 ways to get copy, use your ARROW KEYS or you can press the first letter you see, because it's in alphabetical order, so you can just press c

[Copy from area: D15]

what we want to do is just input the bounds for the COPY operation FROM WHAT AREA to what area, so the area we want is just D15 on its own, isn't it so what we want to do, because it automatically put D15 in so you want that there, colon, you need to press SHIFT, hold it down, Ok let go and it automatically comes up the same, see if we just want that one box

[D15:D15]

what I'm doing now is copying here to here as though I've got 100 of them

but we only want to do it for that one

can we do it now (for 100)

you can't do it now because we haven't given it the numbers here. You can do it

but

if we do it 5 times it won't actually work because we haven't got any numbers in

what happens if I haven't put the numbers in, but I'm going to put them in

we'll do that then, we'll put the calculation in five times and I'll show you what happens

The formula is in D15 isn't it, so that is what we're copying, so it's given the area from, so press RETURN then

[Copy to base coordinate: D15]

and we want to copy it from that location down 5, we've got the first coordinate, D15 so then you want colon again and then we want to go down 5 lines, you can either do that by inputting the formula by saying D20 instead of D15 or you can use your arrow keys and move to the bottom location, as you do it you'll see this changes here press RETURN again

[Copy Values All]

it then asks if you want all VALUES, just VALUES, or everything. You want everything, so press a then press RETURN

[Copy Relative Absolute Prompted]

right it then asks whether you want RELATIVE, ABSOLUTE, PROMPTED or MATH, we want RELATIVE, if you move down one the formula changes from 15 to 16 and then to 17 and 18, so if we're doing ABSOLUTE it will just copy the answer down there but we want the formula to change as we can down

[result printed in D16, "0.00" in D17-D20]

it has worked right, so it is giving you the answer, it has worked out that one, we haven't supplied any details here so it just gives nought anyway

but we need to know total profit

Formula

total profit, right, so what you want to do is work out SUM over this number, this number, this number ... [D15-D20] it could be just that plus that plus that and so on but there is an easy way you can range, you can type as your formula SUM in capital letters then round brackets and inside range like you did before, you give the first co-ordinate colon the second co-ordinate

D15 to D20

put an input formula in there [D21]

(types "sum") space?

just type sum, you don't need a space, round brackets

(finishes typing)

to finish it, now look at the left hand side, as you've put in a formula it tells you that it's TEXT

so F7 (does)

you're now entering a formula

(CR) and it gives you the SUM over that range you've just given

Save

right, you've finished, let's say you've finished, you want to save it back to a disk, clear away then come back and use the same one, ok to SAVE it you go into the MENU

F8 ?

yes F8 then look on this you see QUIT/SAVE, you can either use the arrow keys or press the first letter, Q,

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

right it says MODEL_SELECTION_MENU which is just - if this is the first time you've saved it it will save it automatically, if it's not it will ask you whether you want to save or not save and come straight out and there are other options, SAVE_BACKUP in case you lose it or SAVE_NEW_MODEL under a new name. It automatically comes up with MODEL_SELECTION_MENU so use

it just saves it?

just SAVES it, it then asks you do you want to QUIT SAVING it or QUIT WITHOUT SAVING. Right you can QUIT, if you quit the s/s you can quit

oh I see it hasn't saved it

it hasn't saved it yet. It wants to know whether to save it or quit anyway leaving the old one there

if I press RETURN now it will save the new one, QUIT WITH SAVING

that's the way we want to do it, so press RETURN again

Comparison-Subject 19

[empty spreadsheet]

Right now that's the spreadsheet so we've got to think of something to put on it. You could do something like the one we did, measuring things out like big glass. [classroom example] You could do carpet, like size of different sorts of carpet. You could put a title at the top, so if you want to put a title move across to where you want the title

so this purple thing

Enter text

that's where you put your input in there so to do that you'd sort of type it in there

what title shall I say

Carpet Manufacturer's Spreadsheet, something like that

(moves cursor to B2) OK is that right?

it will appear down here first [input line] you can delete it as well if you make a mistake

so that's like the line I just type in there and when I finish sort

when you finish sort of editing you put it in there. , That's small type [lowercase]

I don't mind (continues typing)

it accepts 12 [characters] at a time. See if you put a big one in it sort of puts it on the screen but when you go off it doesn't exactly exist, I don't understand it. It's, when there's a big thing there it doesn't actually exist, it's a bit weird. Put that for now see what that does.

(CR) it has come up

Enter numbers as text

yes that's fine. We could sort of put like some underlining.

(types in line of "-") RETURN?

No -

(has already pressed CR)

[Syntax error at B3]

no no you see you get an error because it treats that like a minus sign - like a NUMBER, so if you press UNDO - if you get a mistake press UNDO, press it again, right what you do is, if you want to make that into TEXT, press F7 it sort of toggles it between TEXT and NUMBER ...

(toggles to NUM, CR)

[line of "-" printed in B3]

OK so this, do I put like a table there with the figures for my account

Enter numbers

well initially you'd have to make some sort of figures up like lengths for the carpets and width and you make those up initially and then things like area and cost and that you sort of derive from that so we can do that eventually ... a bit further down

I could put down if I make this January, this February and then we can have like different sales underneath, you know if I sell 3 carpets in January -

(instructs co-experimenter to enter text labels in B5-D5, and A6 and A7 and numbers in B6-D6)

Formula

let work out VAT so you don't want to work it out you want the spreadsheet to do it for you. So you're using that one there, column B row 6 so you're going to use that now to work it out, B6, so it would be, to be 15 percent, like .15 times that number, so what you put is .15 then times is that star thing,

(types ".15") B6?*

yes - but you're putting that in as TEXT so it will ignore this as a piece of irrelevant text, so you want that as a NUMBER

(F7)

yes it will print it up as a NUMBER up there so press RETURN

so it's worked out that because I've done that there

Copy formula

it's worked out that for you so it is stored in memory that that equation is in there. You could do that for each of these but what you could do instead ... what you could do is use a COPY facility on it so you press the MENU button and then you use the ARROW KEYS to select COPY. Right and you press that.

just press RETURN? (does)

[Copy from area: B7]

So what you need do, is that equation is stored in there what you want to do is COPY that equation to these two, ... so you press the RETURN key there

[Copy to base coordinate: B7]

yes, then you want to copy it to those to, so it says COPY TO - so you want to move the purple cursor thing on to the first one you want to copy it to [C7]

(moves cursor) and we want it here [D7] as well

yes you want it there as well so what you do is put colon, shift and that

so it knows to copy from to here

so it started there and then colon and finishing there so move your little thing across to there and press, D7.

(CR)

[Copy Values All]

What it's doing there is it says VALUES or ALL. VALUES will just copy 60 to there but you don't want that you want the equation so ALL

[Copy Relative Absolute Prompted]

right. You want RELATIVE because you want it relative to what column so

I see you don't want to do it to that one all the time

no you want it RELATIVE so you just press the RETURN key for that. It has done all them

Formula

OK How do we get a summary of everything, all the figures, do I have to read that that and that ... total sales and total VAT

so you want to have that column here

surely if I make a formula it doesn't matter where I put

no you could have that down here somewhere

so what do I do?

get rid of the menu ... so you'd have to add up those 3 columns [C-D] wouldn't you

yes or these ones as well, that I haven't put in yet

so you move that over there

(enters text label) where I'm going to put my result

yes, and you, like we did an equation for that one there and you'd have to do an equation for this one as well ...

yeah I don't know how you do that ... I think you can let's get the menu up (does, reads menu) for those you could put B6 plus C6 plus D6 but it's monotonous - but I've forgotten how to do

well like copy, you can copy from to ... can't you add up from to, not copy

yes I expect you can I haven't really used that yet ...

I can make that bigger can't I - I mean I want to give to somebody just a little list, a summary of everything, so the total sales over the year, so I add this and this which is January, February, March, add it all up and just get one figure ...

(Experimenter intervenes and suggests they put it in column E)

you could use a blank command, so if you want to get rid of something like that you just use UNDO, right, so if we're going to do that the easiest way of doing is just pressing SPACE BAR and RETURN

(does, moves cursor to E5 and enters text label, moves to E6)

right you want to get a total for that, there should be a way of doing that, but I'm not too sure how to do it I've come across it yet

what about in the other direction adding your sales but as a company you're only interested in the sales so we can leave out vat and just add these up.

so that's just B6 plus C6 plus D6 ... [doesn't know SUM]

(moves cursor) and now I put B6 just plus? (types "B6+C6+D6")

yes. What you want to do is change that to a NUMBER because it is not TEXT, the INT key [F7] and you press RETURN to print in there

[formula printed in E6]

it's put it up. Ok so I want like this here and down here a cumulative total for the year

Right so if you wanted to total VAT for the year you'd use exactly the same equation so you could use that COPY command, but it's just as quick to type it in just move down to there ... B7 plus C7 plus D7

surely there's an easier way because if I put it all in I have to do twelve of those

yes, there is I'm not too sure how to do it [SUM]

Save

Right we'll save ... so you press the MENU key then select QUIT/SAVE there,

[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]

they don't go down they sort of go across, right now press the RETURN key. Right so you've already selected a name earlier on so you don't need to so we want SAVE_BACKUP because we want to save the file you've already got. if you choose SAVE_NEW_MODEL it'll ask you for a new name

(moves to SAVE_BACKUP)

then just press RETURN.

[returns to spreadsheet] Right so that should have saved it

that saved it?

you could test that by like quitting this and loading it back in again

Comparison-Subject 20

Right now the s/s, I'm not sure of the maximum size but imagine you've got a huge paper there and you can go anywhere along there and you can pick any co-ordinate by, you've got numbers alongside

is it divided into squares

yes - and so you start off with say 1A and then your rows can go on along and you use this arrow to go along as you get to the end the screen sort of moves across so you're on J now say so you can actually pick your co-ordinates and you can also go down

these numbers are changing what's that

I think that's your actual position so that's M15 so that's where you are so if I move down (does) that's M16

Enter text

If you go along you're at row 16 and you go [column] R then S so you see you're told. Now if I go back here and that's back to A1. Now if I want to put something in the spreadsheet. Let's say we give it a title first, right, so we can go anywhere on the spreadsheet. So we'll give it a title just about there (moves cursor to C4) To do a nice layout (instructs co-experimenter to enter a text label)

(starts typing) Is that right?

Yes - effectively what you type here is what you want to put in there so if I type something there and press RETURN it has put it in there, so if I move away it's there, if I go back and want to erase that, I hit space. That TXT [above input line] is for TEXT so what you've done is you've actually put some TEXT in there, letters your numbers are also characters if you just want them as numbers but say if you've got a set of numbers and you want another column and that has a relationship with this set of numbers say twice that

I see so like this column is times 1 and that column is times 2

If you like yes, if you've got a set of numbers there and you want this column two times this, instead of having to input each number separately working them out and typing them in you can make, create a formula and that will save you having to do all the working out, it will do it for you, you'll just have to type out the formula I'll show you how to do that in a moment so say if we call it FRED, underline it

(enters text label in C4)

and say if we want to underline it

(underlines using a row of "M"s)

Enter numbers as text

you can do that, but I wouldn't recommend M because I mean something like say minus (types a row of minuses, CR)

[Bad syntax at entry C5]

what's happened here is when I said minus it assumes that I'm using not TEXT but I'm going to put a formula in that it's a NUMBER - I want to erase it so what I can do is, press DO or UNDO to continue, well there's your UNDO so if you press that yes I think whenever you have an error you usually - well what you did last it will undo it it assumes you've not done it

if I make a mistake and I realise it I can say escape and then it will take me back

yes to the step before that I'm not sure what that does

it still says, umm, so I press UNDO again

press UNDO again yes as if you've just put that. You don't want it in, like I said before you can put it in TEXT form and it just puts it or as that there as a formula. At the moment you don't need a NUMBER so to change that into TEXT you press F7. You can keep changing from TEXT by pressing that (demonstrates) so if you'd like to press RETURN

Enter numbers

Right, now say if you do a s/s underneath that, say if we have a type, price, qty. and then product price, so if you if you type price there (instructs co-experimenter to enter text labels in B9-D9, underline B10-D10, and numbers in B11-C15)

Formula

Right now if you go along there and up one [D11] for the first one you want that [B11] times that [C11] to be in there [D11] so what you've got, you pick the co-ordinate B11 and C11, so what you do is B11 times C11

*just type it? (types "B11*C11")*

Well if you press RETURN, here I'll show you, it will just print that because it thinks it's TEXT so it assumes you've just put some characters right what you want is it under the NUMBER that will put it as a formula so if I do B11 times C11 and change this and that will give you the product
[result printed in D11]

Copy formula

you can do that for each one but there's a COPY facility, you can actually pick a MENU at any time you want when you're in this sort of state, press F8 for MENU and what you want to do is COPY

I've got a formula here

and you want to COPY that formula all the way down there. So if you press the ARROW KEYS and RETURN
[Copy from area: D11]

it says COPY FROM -

well you want to COPY FROM below there don't you. No sorry that's what you want to COPY press RETURN now

copy this, that is the square isn't it (CR)

[Copy to base coordinate: D11]
now you've got to specify the area that you want to copy it to, so you want to copy it there to there

D12?

that's right, D12 to D16 so if you go down one with the arrow, that's it you've got D12 there, colon, shift D16 and you go to the co-ordinate, that's it then press RETURN
[Copy Values All]
I know you want ALL I'm not sure why, what VALUES means so press RETURN there
[Copy Relative Absolute Prompted]
I'm not sure what this means I'd use RELATIVE but press RETURN again.
[results printed in D12-D16]

back on the MENU now, it's got all, 5 eights are 40 yes it's got it right

Delete row

What other things - if you go to edit what that means is that you can go back to, press RETURN, press RETURN again, you're now back into the spreadsheet so edit you can go back to the spreadsheet carry on putting characters in, so if you press the MENU again there's - DELETE you can erase - if you want to erase any character or number or whatever [only whole rows or columns] so if you try that, left arrow, RETURN.
[Delete ROW COLUMN]
you can rub columns out or rows

so I can blank out lots of boxes at once?

Yes - you can erase that column there, not just that that whole column, you can erase just that if you want or a row, so

well shall we just erase that bottom line here?

so we want to erase a ROW don't we? so press RETURN, if you want it on ROW, just press return
[Delete row(s) starting at: 11]

it says delete rows starting at ...

you don't want it to start there so if you go down [to row 16] it will actually change it, press RETURN,
[How many rows/columns: 1]
it says how many rows or columns so if you had say another 3 rows there and you want to erase all three, then you type 3 in this case you only want to erase one row so it's on 1 anyway just press RETURN.
[row 16 deleted]

it's gone, so it works ...

Save

That's about all I know of there, oh and to SAVE your file, now to save your file what, your spreadsheet you've created is just on the screen at the moment and to get it onto disk so you can use it later you go back to MENU, F8 and you've got QUIT/SAVE there so go to there using the arrows, I think it [cursor] only goes left or right] [but could type "q" to select] press RETURN there
[Quit and Save: Model_Selection_Menu Options Context Save_Backup Save_New_Model]
if you wanted to SAVE_NEW_MODEL it means you'd save it and you'd have to type in a name so you actually want to, go to SAVE_BACKUP

SAVE_BACKUP, so do I just press return

that's right.
-that's just saying ...
That's that done, if you just want to you can leave now [MODEL_SELECTION_Menu would have saved automatically just take the disk out and switch off

Database Study

Subject 1

1. FILE

Like a book, it's individual, it's not related to anything around it, so I can individualise that one file.

What about the structure of a file in the DB?

Pieces of information ... I suppose the advantage over a book is that you can update it and set the order, you can pre-set how you want it to be set out ...

2. Field

Column ...

3. Record

Row ...

4. Entry

No.

5. Difference Field/Record

You get some are numbers, some are names, they [records] are different as opposed to all the same ...

6-10. Data Types

Other sorts of information? Numeric numbers, and then I can't remember ... text

We distinguish between different types of numbers - the one you pointed to are decimals.

It's just information (no manipulation) ... dates ... information that relates between different rows and columns?

11-14. Query Language

FROM, LIST ... no, second one umm, ...

How about SELECT

Oh yes, SELECT, WHERE, ... and ORDER

18. Task 1

(types FROM CUST SELECT NAME,ADDRESS,ZIP,CITY,STATE)

What does FROM address?

FROM that file

And SELECT?

The NAME - the field that I'm interested in.

19. Task 2

(types FROM CUST SELECT NAME,CONTACT,PHONE) and then we want WHERE ... OVERDUE equals FALSE?

FALSE?

Oh sorry, yes TRUE (adds WHERE OVERDUE=TRUE)

So what does WHERE do?

That then specifies which parts of the fields it wants it restricted to ... sections of records ...

20. Task 3

(types FROM CUST SELECT NAME,) Are we going to send them an invitation?

No, we just want the list - we want to know how much they buy.

So that's PURCHASES (adds PURCHASES) I can' remember I want it in an order, do I, WHERE ... I can't remember the fourth line ...

ORDER

oh yes, ORDER (add ORDER) Equals descending?

If we wouldn't specify anything, it would order them by company name -

Yes I want it sorted by PURCHASES

(explains ascending/descending)

(adds -PURCHASES)

DIFFERENCE DATABASE/SPREADSHEET

A spreadsheet I'd use for, well I'm not going to update it, when it's fixed, like exam results or it would be perhaps one would use once a year for each year, sort of thing, but this would be a constantly updated on-going situation and where I would want to achieve, like this, parts of records ... like mathematical

Subject 3

1. File

It's a collection of information put under a certain heading and about specific things, which is probably shown in the heading. You can have as many files as you want depending on how many specific things you want to show. It just holds information which you can collect things in, at random.

What sort of things have you had in your files?

You had names of companies, names of contacts, and addresses and phone numbers and the amount of money they've paid, invoice numbers

What about the structure?

3. Record

Every line is a file, mm every line is an individual piece of information but I can't remember how it goes now ...

Can you remember what it's called?

No.

What about the columns?

2. Field

4. Entry

(Doesn't know term)

I don't remember that

5. Difference Field/Record

(looking at example file) The record holds different information about one thing, about one company whereas a field is one aspect of all the companies.

6-10. Data Types

How do you mean?

If you compare the NAME field with the DATE field and the PURCHASES field, you've got different sorts of information ...

Some are text, some are date and some are numerical ...

Is there any different between the numerical data you've got in PURCHASES compared to ZIP or and invoice number?

Some of them I think, the zip codes, well those are decimal numbers because those ones can't be used numerically for adding and subtracting them they have to be put in as text so you have to write them in quotation marks

So you would say the zip code is text rather than a number? What about the date?

Does that come under a separate type date?

11-14. Query Language

Well it consists of just normal words ...

What are the words?

FROM, then you put the file name, SELECT, when you want certain things, and then you can make conditions as well, using WHERE so and so is equal to or greater than -

When you use select, what are you actually selecting?

You're addressing one of the fields

Any other one apart from FROM, SELECT and WHERE?

I can't remember the one ...

Order?

Oh yes.

18. Task 1

(types FROM CUST SELECT NAME, ADDRESS, CITY, STATE, ZIP)

19. Task 2

(types FROM CUST SELECT NAME,CONTACT,OVERDUE,PHONE, WHERE OVERDUE=TRUE)

[FIELD WHERE NOT FOUND]

It says where is not found.

It says field where not found ...

WHERE is a command. I've got a comma after PHONE (corrects it)

[done]

20. Task 3

(types FROM CUST SELECT NAME,PURCHASES

You have forgotten to order them.

It's ORDER, is it? How do I tell it to order them in numerical order rather than ...

By what do you want to order it?

PURCHASES (adds ORDER PURCHASES)

[listed in ascending order]

Explains ascending/descending

Subject 4

1. File

A piece of memory in the computer in which you can store information. You can load files into the computer so you can store information in a file and then transfer that file into the computer screen by, through the disk drive

In the particular information we've got here in the database, what have we actually got in the file?

Information about a certain ... the files are, information about a a certain ... data about certain characteristics?

3. Record

A line?

It's called a record. Could you describe what a record is?

A record is a - well you've got the subject of a record, you've got data about whatever subject it is which describes and tells you something about the subject

2. Field
Information field?
It's called a record
5. Difference Field/Record
Will a field always be numerical? A field contains a field of all the same type of information, so just price would change, just the value would change, not the actual attribute that it's describing, would change whereas the record will include many of the different fields.
6-10. Data Types
Types? You mean like purchases?
What different data have you got here?
Well, it's just a name ...
Or a string of letters ...
Oh yes string ...
What about the others?
Numerical ... not just any numbers, dates ...
What about "PURCHASES"?
Just numerical, just numerical value for each name, each company ... OVERDUE - whether it's in debt or not, whether the payments it owes no as long as it ...
How many possible values can it have?
Yes, oh sort of binary.
11-14. Query Language
If wanted to retrieve something FROM this file, what sort of commands could you use?
You can retrieve the companies that are overdue ... so you SELECT that from the menu
18. Task 1
Put FROM CUST ... new first, ... FROM CUST puts you into the database. It's just names and addresses? So you retrieve, just retrieve name
What is the command? What are you trying to address now?
Two of the columns ... fields ...
How do you get those? .., SELECT
Oh SELECT ... name, address. Then just ...
[done]
19. Task 2
(types FROM CUST SELECT NAME, CONTACT, PHONE - WHERE ... Can you just put where payments overdue?
Can you? Where's that information whether payments are overdue?
It's in the overdue column true or false, where overdue equals true or something? It's just (types OVERDUE=TRUE) then just F9
[done]
20. Task 3
(types FROM CUST SELECT NAME, PURCHASES Greater than or equal ?
no, its ORDER
DIFFERENCE DATABASE/SPREADSHEET
Don't know.

Subject 5

1. File
It's a set of information - each file is like a specific reference to a certain thing, like a names file and purchase file, and another file you could cross reference between the files, information that goes between the two.
2. Field
These are fields, different fields.
3. Record
An entry in the file?
4. Entry
Actually, an entry is -
... an item, an individual item.
5. Difference Field/Record
A field is all dealing the same sort of information, like all the names, all purchase records, and a record is dealing with all the features of a certain, in this case company.
6-10. Data Types
We've got text, which is like the letters, the names, decimals is a term that keeps coming up (laughs)
What else?
Dates, numbers - numerical data - qualification, true or false ... so what would you call it, true/false? And dates
11-14. Query Language
What ways of getting ... I don't know. I could go through and find them out, like do SELECT ...

18. Task 1
(types FROM CUST) For the customer file (adds SELECT NAME We want the names of the customers what else do you want?
For a mailshot?
(adds ADDRESS,CITY,STATE,ZIP)
You have used two commands from the query language now -
FROM tells you which file you want, a customer file or an orders file. SELECT the fields that you want
19. Task 2
(types FROM CUST SELECT NAME,CONTACT,PHONE,OVERDUE) Is overdue a true or false column? So that's all I have to do - (adds WHERE OVERDUE=TRUE)
20. Task 3
(types FROM CUST SELECT NAME,PURCHASES Do you want me to order the purchases? Can you use just order plus purchases? ...
It's minus (explains)
(adds ORDER -PURCHASES)
DIFFERENCE DATABASE/SPREADSHEET
The information in the spreadsheet was like trapped within the spreadsheet. You could do calculations outside that and you couldn't actually change round the information within the spreadsheet - that's probably a load of rubbish ... but you seemed to have the columns after the information that you kept adding on rather than extracting more information from it ...
(with s/s not db?) ...
... like mean, average ...

Subject 6

1. File
It contains all the information on certain, a variety of clients things like that so all the purchases they're making and their business details.
In more general terms, what does a DB file consist of?
It's - how do you mean? specific information?
3. Record
They are all the individual companies - these ones are the records ...
2. Field
Don't know.
4. Entry
Don't know.
FIELDS/REC
Well a record contains each side of the business and the field is one specific thing that refers to all of them.
6-10. Data Types
Terms again? The ... don't know
What type of data have you got here?
You mean like text, oh, decimals, date, it's actually dates, not really decimals ... that one's either TRUE or FALSE
Zip codes?
There's no real restriction, as long as you have only five numbers, five figure numbers ...
11-14. Query Language
Initially we list, call up the menu ... that's what we're in now, it depends what we're calling up ... so you don't want to be in CUST necessarily at all ...
18. Task 1
(types FROM CUST SELECT) So the names and the addresses? (adds NAME,ADDRESS,CITY,STATE,ZIP)
19. Task 2
(types FROM CUST SELECT NAME,CONTACT,PHONE,OVERDUE PAYMENTS as well?
If a client's payments are overdue, where would it say?
TRUE or FALSE. Where OVERDUE is TRUE or FALSE, is that it?
You only want the ones where it's true.
(adds WHERE OVERDUE=TRUE)
What does FROM do?
The file.
SELECT?
The records?
And WHERE?
A particular record ?
20. Task 3
You'd have to get a list of all first ... (types FROM CUST SELECT NAME,PURCHASES
Now we want a list with the biggest customers ... how would it list them now

In alphabetical order. We need to put in something WHERE PURCHASES ...

We don't want to select particular records, we want to change the order in which the appear

I can't see how you do it.

You have to tell it to order them (adds ORDER -PURCHASES (after much prompting)

DB/SS

You can, on a spreadsheet, alter what's there on, you can put in take out individual bits of information. You've got much more control you can alter things while having an overview of it as distinct from ... you can have it all up on the screen and ... you have to go back into the menu ...(screen mask - db vs ss) it selects out for specific information which you couldn't do there ...

Subject 7

1. File

It's either a term you use for the complete lot - it is isn't it? And it contains lots of records which consist of fields.

2. Field

A field is, in this case an example would be NAME.

3. Record

An example record would be AA Aerospace.

5. Difference Field/Record

Records contain all the information pertaining to one particular company in this case, fields contain all the various companies' particular characteristics i.e. pertaining to ZIP code or purchases made

4. Entry

No.

6-10. Data Types

We've got date, data, we've got numerical, at some point something, I can't remember the technical term but it's basically binary so it's going to be TRUE or FALSE.

We've got numerical ones - are all the ones with numbers the same?

Ah yes, I know what you're getting at, because this is not a - you cannot manipulate these [order numbers] mathematically whereas these you can add and average of but I can't think of the name ... it's a different type of numerical.

11-14. Query Language

FROM, SELECT, WHERE, ORDER.

18. Task 1

(types FROM CUST SELECT NAME,ADDRESS,) You wanted the name and address?

Postal address

(adds CITY,STATE,ZIP)

So what does FROM do?

It refers to the file

and SELECT?

selects the field.

19. Task 2

(types FROM CUST SELECT NAME,ADDRESS,PHONE

We don't really want the address.

(edits address out by typing CONTACT, OVERDUE, enters query) Ah -I've forgotten (adds WHERE OVERDUE=TRUE)

So what does WHERE do?

WHERE picks out the, what's it called ...

20. Task 3

(types FROM CUST SELECT NAME,PURCHASES WHERE Do you want the top ten

No.

Can I skip the command, not use WHERE? adds ORDER PURCHASES Now I've got to order the purchases, will that just do it?

The default is ascending order.

(goes back inserts -)

DIFFERENCE DATABASE/SPREADSHEET

This package seems to be, perhaps because we haven't explored it, but less easy to set up. It's designed for a company employee who isn't going to make radical changes whereas the ss that we had was actually, appeared to be much easier to create fields and files and also you could do more manipulation on the ss. You could do more mathematics ... (db v ss) you can swap between files quicker, query language is easier, other than that I don't see what you can do here that you couldn't do there, it's got the same set up ... yes, you cannot, yes you can actually zero in on things.

Subject 8

1. File

A file is sort of self explanatory, it's anything that incorporates information about certain things, so you can to go it and find out if you're doing a file about tax balances or whatever, you just keep that file and can go to it whenever you want. It has sort of headings and things, like it refers to purchases or whatever, that's a file is it

2. Field

Fields

3. Record/4. Entry

An entry? No an entry is what is in the fields isn't it? ... yes right, a record.

5. Difference Field/Record

A field's just like a column gives you one sort of information whereas a record gives you right across everything, a combination of fields.

6-10. Data Types

In this file? Decimal, and text, ... so you're asking for 4 things?

11-14. Query Language

Yes - is it FROM,SELECT,WHERE,ORDER?

18. Task 1

(types FROM CUST SELECT So what are we looking for)

Tells her

(adds NAME,ADDRESS,CITY,STATE,ZIP)

What does FROM do?

Information about ...

And SELECT?

fields

19. Task 2

So it that the same that we've just done, or is it different? (types FROM CUST SELECT NAME,CONTACT,PHONE So do we have to put a WHERE statement in? Do you just put OVERDUE?

How is the information whether they are overdue or not encoded?

TRUE and FALSE. So is it WHERE OVERDUE equals? (adds WHERE OVERDUE=TRUE)

So what does WHERE do?

The entry?

20. Task 3

(types FROM CUST SELECT NAME,PURCHASES Is there something else [field] you want? WHERE something greater than something?

We just want a listing of how much our customers bought.

So you don't have to use ... (deletes WHERE) So it's ORDER ...

You're ordering them by the size of their purchases.

So just PURCHASES?

(Explains ascending/descending)

Oh I see - (adds ORDER -PURCHASES) So the order command you can do things like find out people's balances ... you want them in the order of preference

DIFFERENCE DATABASE/SPREADSHEET

They are very similar in the sense that they can work things out, you don't actually have to work them out yourself, it will work it out and everything. It's hard to think of what difference there is. A ss will actually sort of, what we did was trying to find out averages and things like that, but we haven't done that here so I'm not sure if you can do it ... this can't do it, but the ss can work out averages and things I think a ss can do much more I can't think of what this can do ... you can't actually separate select ... how come you've got two different systems, they're very similar why can't you get one that does everything?

Subject 9

1. File

A file's part of a computer memory where you go for information which is stored within it and it's broken down into various parts so you can access that file and by putting in another name of which part of the file you want it will go direct to that part of the file.

2. Field

They have a file as a name which is how you get into the actual file, you access through a name. From that you select what are called fields, field names within the file and you can have more than one field, depending on how much information you want from that file you can run so many fields together to get the information you want. A field is a block of information ... so that is one field, that is another (points to fields on screen)

3. Record

A row.

4. Entry

A piece of information (laughs).

5. Difference Field/Record
A record takes more than one field, takes part of every field which is stored in that, which has been put into the file. Whereas a field has one type of information that goes through and associates with every piece of ...
6-10. Data Types
Text and numerical data
What sort of numerical data have we got here?
Most represent money in the sense of finance, you have dates and as well ... [TRUE/FALSE] I know what it is, I know what it's doing ...
11-14. Query Language
FROM
And what does that do?
Addresses the filename. SELECT which field it would go to, and ORDER, puts it in order if you want the figures in order or the companies in alphabetical order ...
And? .... How about WHERE ?
Oh yes. It gives the conditions of the field entry ... you subdivide the information
18. Task 1
So you're going to the customer file ... (types FROM CUST SELECT NAME,ADDRESS,CITY,STATE,ZIP) That's all
19. Task 2
So you go the customer file again, SELECT NAME, CONTACT, PHONE and OVERDUE, yes? (types FROM CUST SELECT NAME,CONTACT,PHONE,OVERDUE)
Anything else?
What was it you said we want?
A list of all customers whose payments are overdue. We're not interested in the ones who have paid.
Haven't you already got that? Oh no - WHERE OVERDUE equals yes, or TRUE. (adds WHERE OVERDUE=TRUE)
20. Task 3
NAME, PURCHASES. BALANCE?
PURCHASES is sufficient. What else do you have to do?
Order it with the largest ones on top. (types FROM CUST SELECT NAME,PURCHASES ORDER) I don't know how to do this, actually.
What do you want to do?
Order them by the size of the purchases.
So the field that we want to order by is PURCHASES. By default it would sort in ascending order.
So we need a minus.
(adds -PURCHASES)

DIFFERENCE DATABASE/SPREADSHEET
This one [DB] is easier to use for a start. A spreadsheet is when you want to sort of print out, make up a presentable package as it were that you can show somebody else, this is just extracting information quickly and just a form of keeping records so you can touch a button and have, umm ... Can you do the formula thing on this one? This [DB] to me is storing information rather than actually working information, you can't do calculations, it's just like you might as well, instead of having the files you can actually store it on the disk.

Subject 10

1. File
A certain set of information, the computer allow it under a single name
Database file?
Reports, and fields (cont.)
2. Field
...which are columns
3. RECORD
You mean records rather than reports?
Yes records ... the rows
5. Difference Field/Record
A field will be say updated it will give you say a date, which particular company, customer was updated whereas a record will give you information about one particular customer, so say for AA Aerospace it will give the date updated and all that ...
4. Entry
I've forgotten
6-10. Data Types
In terms of text, dates ...
What would you call [PURCHASES]
Numbers.

(explains they are decimals) And what are those [TRUE/FALSE]
Is that binary, where we've only go' two types of entry
11-14. Query Language
FROM, SELECT, WHERE, I'm stuck ...
FROM?
The files.
SELECT?
Particular fields.
WHERE?
What you want from those records - with purchases, say, you'd have where somebody have over a thousand pounds worth of purchases. Say where purchases is greater than a thousand ...
What do you actually get?
Particular entries?
Last one is ORDER.
18. Task 1
So is it only the address that is required? (types FROM CUST SELECT NAME, ADDRESS, CITY, STATE, ZIP)
19. Task 2
(types FROM CUST SELECT NAME,CONTACT,OVERDUE,PHONE WHERE OVERDUE='TRUE')
20. Task 3
So you just want me to list the purchases? (types FROM CUST SELECT NAME,PURCHASES ORDER PURCHASES)
(explains ascending/descending)
(inserts "=")
DIFFERENCE DATABASE/SPREADSHEET
With this you can draw particular information out. With the ss it just gives you all the columns. When you input [enter] information into this, you just see the information as a single little block whereas with the spreadsheet. You can see the entire ss, you can see what you're doing ... (ss not db) you can order this, set it out in certain ways, you can't print this out can you? You can work out means and averages [with ss].

Subject 11

1. File
It's a collection of records. Each has the same structure but containing for all different people or all different items within a file.
3. Record
A record is like one for this company.
2. Field
Well fields are what the record consists of. Fields are the individual items like NAME, ADDRESS
4. Entry
An entry.
5. Difference Field/Record
The field's more specific to - like a little part of the record, the record contains all the fields.
6-10. Data Types
Text, like this [NAME] is text, that's a decimal [PURCHASES], numerical, or is it codes, they are just positive or negative numbers, but not actually decimals. And then the date which is a date. And the OVERDUE ones which are FALSE or TRUE where you've got two alternatives.
11-14. Query Language
FROM, SELECT, WHERE, ORDER
FROM?
From which file
SELECT?
Which fields you want to have taken out.
WHERE?
You can restrict it further like saying where balance is above a certain ... the number of records
18. Task 1
(types FROM CUST SELECT NAME,ADDRESS,CITY,STATE,ZIP)
19. Task 2
So that's the OVERDUES then, NAME, OVERDUE and PHONE. (types FROM CUST) Does it matter which order I put it in?
They will list the fields in the order that you type them in.
(adds SELECT NAME,OVERDUE,CONTACT,PHONE is about to press DO)
How many records will that give you?
Oh - WHERE OVERDUE equals TRUE (adds WHERE OVERDUE=TRUE)

20. Task 3

So you want it to see who put the biggest purchases? (types FROM CUST SELECT NAME,PURCHASES WHERE) No (deletes WHERE) ORDER (adds ORDER) Can't remember - is it a negative sign?

(explains ascending/descending)

Is it just minus, or?

By what do you wand to order it?

PURCHASES (adds -PURCHASES)

DIFFERENCE DATABASE/SPREADSHEET

With the db you can pick things out and ask it more specific questions and it will just give you what you want to know, a ss I suppose is more useful if you want to be able to just see everything at one time

What can you do with a spreadsheet that you cannot do with a DB?

Formulae.

Subject 12

1. File

Isn't it the thing that the information is stored in? Everything like the customer and invoices which is contained in the computer, split down into fields and customers and orders

2. Field

What else?

What in the fields? say like the customer's name and address, orders, invoices with numbers, products (points out field) that's the main field and just when it was last updated, the zip code, postcode

3. Record

A line? where they are all relating to the specific customer, the line goes across for the whole customer ... a record?

4. Entry

Don't know - an item?

5. Difference Field/Record

A field has say all the names of different customers but the record is just details of one specific customer.

6-10. Data Types

Numerical and text data

What sort of numerical data is this [PURCHASES]

Is that something that the computer, well it's worked it out for itself? This is just like standardised really.

(explains decimals) What about these [DATE]

DATE ... and fact, TRUE or FALSE

11-14. Query Language

FROM, SELECT, WHERE, ORDER

What does FROM do?

It tells you the field you want to get information from like the name field or order field, purchases field

What does SELECT do, then?

SELECT? - the specific information you want from that field, say you said from customer you'd get the customer field and say from customer purchases you'd call up the customer field or the purchase field and you'd get where, say you wanted purchases over ten thousand pounds you'd say only information in the purchases field that is over ten thousand pounds relating to the customers and then from select where, say from customer, ... that's the customer field

(explains that FROM addresses a file)

Oh file, sorry, customer file ... then SELECT you go to the customer file and then select say their addresses and maybe their purchases and say and then you say where the purchases are say over ten thousand pounds ... select picks the fields

And what does WHERE do?

It specifies what you want, the information you want within a specific field ... information within the field ... oh the record ...

18. Task 1

(types FROM CUST SELECT NAME So you need a comma? (adds ,ADDRESS,CITY,STATE,ZIP)

19. Task 2

So you want all the customers who haven't paid?

All the ones whose payments are overdue.

(types FROM CUST SELECT NAME,) How do we find out about he invoices?

(points to OVERDUE)

(adds OVERDUE,CONTACT,PHONE WHERE='TRUE')

20. Task 3

(types FROM CUST SELECT NAME,PURCHASES ORDER PURCHASES)

Explains ascending/descending)

(adds "-")

DIFFERENCE DATABASE/SPREADSHEET

Well you can't call up, it's different, what did we use it for? I can't remember. Well on the spreadsheet we used it to work out averages, highest, lowest, you don't seem to do that with this. This you can call - with the ss you couldn't call up an individual pupil and ask for their marks in different subjects but with this you can relate it to individual clients. It didn't seem to work on the basis of - ... couldn't divide it into individual parcels, couldn't call up individual names or individual subjects and look specifically at them you'd have to look at the actual whole thing. With this you could add to things separately at the end, you could add new invoices from separate files, you don't have to work at it as a whole, you can work at it separately. ... you haven't made changes ... you could have that on the ss ???

Subject 13

1. File/2. Field/3. Record

A file's a whole load of information and it's got a name, say like customer or orders or something like that and it contains records - I've forgotten the name of the columns, fields, it contains them.

5. Difference Field/Record

Fields go down in a column and then you have data that is sort of the same subject matter for each thing, whereas a record goes across and it has different sort of subject matter but it is relating to one sort of firm or person. Within a field they are all of the same type but within a record they vary because they contain an entry within each field ...

4. Entry

Don't know.

6-10. Data Types

There's numerical data, and there's letter data - I don't know what to call it, words ... text yes. Numerical digits with decimal places as well, and the non-decimal - or is that the same because it's ...

What about these?

Dates ... and TRUE/FALSE sort of yes/no.

11-14. Query Language

FROM, SELECT, WHERE, ORDER

FROM?

You tell the computer which file you want to look at.

SELECT?

Which fields you want to look at

WHERE?

If you want to, say, for instance, pick everybody whose money is due, in or OVERDUE or something like that, you can put where that equals true or false or something. You want to actually select - you're picking out records.

18. Task 1

(types FROM CUST SELECT NAME, ADDRESS, CITY, STATE, ZIP)

19. Task 2

(types FROM CUST SELECT NAME, CONTACT, PHONE, OVERDUE) That's all we wanted?

What would you get so far?

We would get everybody - so I need the WHERE OVERDUE ... (adds WHERE OVERDUE) I can use the equals sign, can't I? (adds = 'TRUE')

20. Task 3

Do you just want the list of customers and then see who's got the most?

You want to list them in ...

Can you actually list them so that the people who have spent most money come out on top?

Yes.

(types FROM CUST SELECT NAME,PURCHASES Is it WHERE then? How do I make it so it puts it in ORDER?

ORDER

(types ORDER) Order by PURCHASES?

(Explains ascending/descending order)

(adds -PURCHASES)

DIFFERENCE DATABASE/SPREADSHEET

This is a lot easier, I don't know if actually on a ss you can call up individual records ... so you'd use this to locate things you need to find where a ss you would use to keep track of all your data ... (calculations) we did them on the ss, I don't know can you do them on this, because then you could do like all maths and stuff on the ss ... but you couldn't here ...

Subject 14

1. File

What is a file, it's a collection of information about certain things - a collection of items about one particular company or something like that.

What things do all DB files have?
A mask?
2. Field
Records or is it columns?
No, this one's called a field.
Oh yes.
3. Record
A track?
No, this one is a record.
4. Entry
Don't know.
5. Difference Field/Record
A record is more specific, it's more - a field contains more information.
6-10. Data Types
Text, numerical.
What sort of numerical data - like here in PURCHASES.
Decimal values.
And these [DATE]
Are they text?
And these [TRUE/FALSE]
They are positive or negative.
11-14. Query Language
FROM,WHERE,SELECT,something else ...
What does FROM address?
The file.
And SELECT?
The title of the different fields.
And WHERE?
Does that go to one record?
And the fourth one is ORDER.
Oh yes.
18. Task 1
(types FROM CUST, presses DO)
[file displayed]
Oh I need SELECT (adds SELECT NAME, ADDRESS, CITY, STATE, ZIP)
19. Task 2
(types FROM CUST SELECT NAME, CONTACT, PHONE, OVERDUE wants to press DO)
Ah, but this will give you a list of all of them - you only interested in the ones which are overdue.
So we need WHERE? (types WHERE) The ones that haven't paid, so TRUE? (adds TRUE)
But what is TRUE?
OVERDUE (adds OVERDUE=TRUE)
20. Task 3
(types FROM CUST SELECT NAME, PURCHASES) And that's it?
You could make it easier to read if you ordered them.
So WHERE purchases are over ... oh no - ORDER (adds ORDER -PURCHASES)
DIFFERENCE DATABASE/SPREADSHEET
I would use the database for storing information and the ss for working out calculations and things like that.

Subject 15

1. File
Something with lots of data in, sort of data listed ...
3. Record
A column - I don't understand what you mean
Each line contains information about a particular company - what do you call those lines?
Don't know.
2. Field
Information ...
You call those fields ...
Oh? I'm learning something here.
4. Entry
Don't know.
5. Difference Field/Record
A record contains all the information about a company or whatever, whereas a field just contains one part of it ...

6 - 10. Datatypes

3 [different types of data], dates, text, and decimals,

What about these [TRUE/FALSE]?

That's text, isn't it?

Well it's text, but it will only accept true or false.

That's four [different types of data]

What about zip codes

That's integers isn't it ...

Is there a difference between zip codes and those numbers [amounts]?

They [amounts] are decimals decimals, aren't they?

11-14. Query Language

FROM, what file you're actually going to take the information from ... SELECT, what part of the information you want, fields, ORDER ... WHERE, where certain things have to be met for that to be brought up, ORDER - can't remember. Yes which way, whether you want them in alphabetical order, how the order is there ... or you want the biggest number at the top... the ORDER of records

18. Task 1

(types FROM CUST SELECT CONTACT,ADDRESS,CITY,STATE)

I think you forgot the name.

Oh, I thought you want the contact name.

19. Task 2

(types FROM CUST SELECT NAME,ADDRESS,CITY,STATE,CONTRACT WHERE) I have forgotten how to do now ...

How do you tell it to retrieve all that are overdue?

Is it PAYMENTS?

Is that where you get the information from whether they are overdue with their payments or not?

Oh - OVERDUE - if overdue is true. Do you just put (types OVERDUE=TRUE)

[Field contract not found]

Ah corrects typing error.

20. Task 3

(types FROM CUST SELECT CONTACT,ADDRESS,CITY,STATE ORDER) Its PURCHASES, isn't it? Do you want the smallest or the largest?

Largest -

(adds PURCHASES) Is that it, is it? Is that positive or negative?

That will list them in ascending order.

(inserts minus before PURCHASES)

If still got another problem -

You want "purchases" there, don't you? (inserts PURCHASES after SELECT)

DIFFERENCE DATABASE/SPREADSHEET

A spreadsheet you can only put actual data in - you can't do things with it. Like this actually pick it out and move it around unless you want ... It's easier to put stuff in - you can actually type on the actual spreadsheet where you can't with this you have to actually enter things. You can work things out with a spreadsheet, like minimum and maximum.

Subject 16

1. File

Certain amount of organised information that's repeated, they've all got names and - I don't know how to describe it.

DB files?

You mean the fields?

2. Field

They are all little sections of information - different categories.

3. Record

Is it a record? What is the difference between a record and a file?

A file is this whole thing?

I see - records are individual

4. Entry

Is it an entry? I was thinking in terms of those [records] being a file .. so can you have lots of files in a db? [thinks a db is one file]

5. Difference Field/Record

Do you mean the numerical and that sort of thing? They are the same [in fields] and different [in records].

6-10. Data Types

Things like that, decimals, alpha-numericals - is it that, don't think there are dates - are they just numerical? Sort of opposites aren't they, TRUE or FALSE.

(explains numbers other than decimal)

11-14. Query Language
FROM, SELECT, WHERE, can't remember the last one
The last one is called ORDER. What does FROM do?
The file.
SELECT?
The individual field, like address or something.
And WHERE?
You specify what you're actually looking for like purchases under a certain number of something ... doesn't it narrow it down even further?
18. Task 1
So is it FROM CUST? (types FROM CUST SELECT NAME,ADDRESS,CITY,STATE,ZIP You don't need WHERE this time do you?
19. Task 2
So what's that NAME, OVERDUE ... is it just OVERDUE or is it BALANCE as well? (types FROM CUST SELECT NAME,OVERDUE,CONTACT,PHONE, presses DO) Should we just have done a WHERE? (adds WHERE OVERDUE=TRUE)
20. Task 3
Do we have to put a certain number or do we put them in order? I've forgotten how to do that. (types FROM CUST SELECT PURCHASES,NAME)
Now you have to put them in order.
So is it ORDER, not WHERE? I thought you had to use WHERE.
(explains that WHERE is optional)
How do you invert the order?
(explains)
(adds ORDER -PURCHASES)
DIFFERENCE DATABASE/SPREADSHEET
This one seems much wider, there are more things happening. I can't remember what the ss was like. Didn't we have to write out formulas with ss, it's done here isn't it? This is just about keeping files, keeping information.

Subject 18

1. File
It's a part on a disk, where a program or where, I don't know how to describe it, where something is stored ... consist of records and fields.
2. Field
A field is like a column saying you know whether something is overdue or purchases or giving you information like in a column.
3. Record
Records ... a record is like a line with everything about a certain customer or a certain company.
4. Entry
Do you mean whether its numerical? Don't know.
5. Difference Field/Record /6-10. Data Types
Fields you can have 5 different sorts of things [datatypes] - that you can work on, numerical or decimal, dates, TRUE or FALSE
11-14. Query Language
FROM, SELECT, WHERE, ORDER
FROM?
The name of a file
SELECT?
The fields that you want
WHERE?
You select whether it has to satisfy something like - if you want a certain field that has entries that are only greater than or less than a certain limit.
18. Task 1
(types FROM CUST SELECT NAME,ADDRESS,CITY,STATE,ZIP)
19. Task 2
(types FROM CUST SELECT NAME,OVERDUE,CONTACT,PHONE presses do)
You're not really interested in the people who have paid ...
Mm, should have done the WHERE (adds WHERE OVERDUE=TRUE)
20. Task 3
So would you do it using the ORDER? (types FROM CUST SELECT NAME,PURCHASES) Can you go straight on to ORDER? (adds ORDER -PURCHASES)
Why have you put -PURCHASES?
Because otherwise it would have just put them in alphabetical order.
If you put ORDER PURCHASES?

Alphabetical.

No (explains).

DIFFERENCE DATABASE/SPREADSHEET

You'd use the database more for retrieving information, and the spreadsheet more for designing ways of showing information. Like if there was something you wanted to know, like you wanted to make a bar chart or if you wanted to show that say the exams [ss example files], in order to show which students had a certain percentage or whatever you'd use the ss rather than this ...

Subject 19

1. File

A file is something to keep information in. I presume it's called a file because - I mean, it is the easiest way for people to relate to what it is on a computer, rather than calling it something else. I mean because people use files in offices and so a file on a computer ...

What does a database file do?

If you've got different, there are different parts in a file which you can follow up, which you can go down to like invoices, customers and things like that and you can select one of these within the file, but not all files will necessarily have the same components.

3. Record

No.

2. Fields

I know that those are called FIELDS

4. Entry

No. I didn't read the instructions.

5. Difference Field/Record

Fields would only contain something, all the postcodes, whereas records contain a multitude of information, all related to one particular thing - like so I mean these aren't really related.

6-10. Data Types

Well the different types of data are like purchases and payments -

PURCHASES and PAYMENTS contain the same type of data -

It's not a date, it's just how much money ... to do with their address, but they're all related to one particular ... These have to be changed all the time whereas this wouldn't have to be changed ... so that's ... well if it's overdue or something like that. These are the things you work with whereas these just relate to ... you could only get that as a derivative from that ...

11-14. Query Language

No.

18. Task 1

All of them [customers]. You get the customer file - shall I do it? (types FROM CUST SELECT NAME,ADDRESS,CITY,STATE,ZIP)

You've used two things from the query language - what does FROM do?

That addresses it to a particular file

... and SELECT?

Fields.

19. Task 2

We'd get the name and phone number, and also OVERDUE (types FROM CUST SELECT NAME,PHONE,OVERDUE,CONTACT WHERE OVERDUE=TRUE

Do you want anything else?

Do you need anything else?

This immediately tells me whether they are overdue or not -

But they will list all companies regarding of whether they are overdue or not - you're not interested in the ones which aren't overdue -

So where OVERDUE equals TRUE (adds that)

20. Task 3

We have to get their name, purchases, and then it's either ORDER or minus order

(explains ascending/descending)

(types FROM CUST SELECT NAME, PURCHASES ORDER-) Doesn't work

(explains how to use ORDER)

(adds ORDER -PURCHASES)

DIFFERENCE DATABASE/SPREADSHEET

This has ready-made fields, I suppose you can make fields. Mmm can't work things out ... with a spreadsheet you can do the average and things like that. I don't know perhaps you can do it and so from that point of view - this is only information whereas the other thing also did have the capacity to

Are things you can do in a DB you can't do in a spreadsheet.

It can't order things in the same way can it, or can you? It's not done as easily, is it. You can't select information in the same way. I would have thought this has much better practical application, you know for an

office whereas ... I suppose if you just wanted to print, just do basic calculations and then print it out ... is this a type of spreadsheet?

Subject 20

1. File

A piece of a computer where you can keep information ...

And if you think about database files?

... data, information - fields ...

2. Field

A field was each line, no each column

3. Record

Can't remember.

4. Entry

An entry.

5. Difference Field/Record

Fields contain the same information but for different firms or things and records contain the information for one particular ...

6-10. Data Types

Numerical, text, dates - anything else? ...

There are different types of numerical data?

Decimal and just I can't remember, ... TRUE or FALSE, yes ...

11-14. Query Language

WHERE, is one of them, FROM, can't remember the names, SELECT, it's FROM, SELECT, WHERE, ... ORDER

FROM?

You put the file

SELECT?

Various fields

WHERE?

Where, is that the firms or the name or ... ?

18. Task 1

(types FROM CUST SELECT NAME,ADDRESS,CITY,STATE,ZIP)

19. Task 2

(types FROM CUST SELECT NAME,OVERDUE,CONTACT,PHONE) Is that it?

What are you going to get now?

All the customers who are overdue.

Really? I think you'll get more than that ...

But we've put there OVERDUE, so that should be all right.

If you use SELECT, it will give you those fields, and it will give you all records for those fields.

It will not just give me the ones that are overdue? OVERDUE is TRUE? comma TRUE?

Equals.

(adds WHERE OVERDUE=TRUE)

20. Task 3

(types FROM CUST SELECT NAME,PURCHASES) From WHERE purchases equals?

You want a list and then decide ...

Shall we ORDER it? (adds ORDER PURCHASES)

(explains order)

DIFFERENCE DATABASE/SPREADSHEET

A spreadsheet is more for storing information. I suppose the database is as well, I'm not sure ...

What can you do with a database that you cannot do with a spreadsheet?

I'm not sure ... you go and look at the ss, whereas here you can find just the information that you want ...

What can you do with a spreadsheet that you cannot do with a database?

Averages, that sort of thing ...

Prolog Study

Subject 1

1. person(annie, female).

If you type in person(annie,female). what should the answer be?

That she could be a parent, or?

You are actually putting the question to the system whether there is a person annie who is female

Sorry, the answer would be yes [correct]

2. person(X,female).

So try that, yes, if you type in person(X,female).,what should the answer to that one be?

Should give a list of all the females. [correct] So it should be 7 females.

3. parent(jenny, Z).

Ok if we look at the second block of rules you've got the parent relationship type parent(jenny,Z)., what should the answer to that one be?

That she is a female, or ...

what have you got in those parent relationships?

Oh, the husband sorry

No it is, the first object is the parent and the second is the child, so what do you get if you type in jenny, Z?

Any children

... that jenny has he's got, so -

(enters query)

[X = harry, X = james, X = kathy, no]

So she's got 3 children

4. parent(carol, rosie).

Now if you type in parent(carol,rosie) if you look at the facts what should the answer to that one be?

Yes, because that's indicating that they are mother and daughter. [correct]

5. parent(sophie, rupert).

Now if you would type in parent(sophie,rupert).

That might be yes or no.

you can actually look it up - so what should the answer be?

No, because it's wrong. [correct]

6. child(rosie, X).

Similarly, if you would type in parent(rosie, Y).

The answer would be no because rosie's got no children. [correct]

7. all daughters (conj. - TT)

Now slightly more tricky, if we wanted to retrieve all the daughters ...

All the daughters?

And obviously we can't do that by just referring to one of the facts, if we wanted the system to list us all the daughters how could we do that?

person(X,female)

And, that is one condition they would have to fulfil to be female, the daughters, what else?

They musn't be a parent

Well we don't really mind

They just fit the person category

But they have to fulfil another condition as well. If you are a daughter, a you must be female, but what do you have to have to be a daughter

A name?

No

A parent?

So you would have to type in a query that somehow assures that you get returned a person who is female and also has a parent.

Can I just put in capital letters parent (X,Y).? (types parent(X,Y),person(Y,female).

So what should that return for X and for Y now?

That should list all the females from the parents

Yes but what exactly does it return for X and Y

In each case Y would be the daughter and X would be the parent

[correct]

8. test rule

Apart from these two blocks of facts there is a rule at the end of the database and that rule defines what a father is, the rule actually looks like this it says a person is a father to a child if that person is a parent to that child and if the person is a male person.

So if you just wanted it to give you a list of all fathers and their children what would that query look like?
(types parent
No you don't have to do that because you've got the rule so all you have to do is -
... say father (enters father(X,Y))
[X=eric, Y=jenny]
9. placeholder
Ok now if you would put in the same query all the people who are fathers but you don't really want to know the names of their children how would you do that?
Just say father X
But the structure of your query has to match the header of the rule, so you have to have 2 objects, but instead of putting in a variable for the child's name, if you say ok they've got children I want to know the father's name but don't want to know what the names of their children are. Any idea what you do?
List father?
That wouldn't be a question would it?
If you type father(X, - now say I know there is a variable here but don't tell me what it is?
Oh do I just put an underscore?
yes, OK,
(types father(X,_).
yes return that now
10. Repetetion
[gets X=eric,X=eric,X=eric]
That signifies he's got 3 children
11. Analogous rule
And at the end is the father rule, now if you would write in exactly the same fashion the rule that defines who is a mother
(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child). [correct]
12. New rule (TT)
That's right. Now if you wanted to define what a brother is ...
Brothers?
yes
(types brother(Person,Child):- person(Brother,male), person(
I think that actually there are two conditions that that person has to meet the first one we've listed
That it must be a child?
You should have put, you know if you say "Brother" here, you've defined that the brother's got to be male so that should be Brother
Oh Person should be Brother
That's right, because that's got to be the same variable, because you've got to make sure that the brother is actually male ... no the brother has got to be male. I think it would be better to have it the other way round, a brother is Brother to a Person if say Brother with a capital B now
(types brother(Brother,Pers):- person(Brother,male), person
So the brother's male?
Brother has got to be male, yes, doesn't matter what sex the Person is you can be brother to a sister or brother to a brother.
(types brother(Brother,Male):- etc.
What does that variable do there why have you called it Male? You want to say that brother is Brother to a Person?
Perhaps just say person
Yes well but you've got to put a variable there. Like here you say a mother is mother to a child if the mother is female and a parent of that child and the same thing you say here a brother is brother to a person if brother is a male person and then we start thinking about the second condition.
so person there (types brother(Brother,person):- etc.
No it's a variable
(types brother(Brother,Person):- etc.
OK now comes the tricky bit - what is the second condition?
Brother is a person, brother is male, person is a brother if he's a male, person
No if you just say it in English, what is the other condition?
The brother is a person, the brother is a male, the brother is brother of a female
No he can be the brother of a male person, what is the second condition you have to meet if you are going to be a brother?
A person, no, sorry can't see it ...
Well there are essentially two things that you have to be in order to be a brother of someone, you've got to be male and what actually links you to that other person if you're going to be a brother? If you are a brother to

Someone else, someone who is a relative,

What relative?

brother or sister

No what is the link between you and that person you are brother to?

A relative

Which relative

Parents

That's right - so what about the parents

He must have one,sorry it must be the same parent

That's right you must share and we are not fussy here about brothers or half brothers so you must share at least on parent. How would you do that?

I can't say parent, comma, same?

No, because the system doesn't know what same is but you can actually make it realise that both of those people have the same

(types brother(Brother,Person):- person(Brother,male), person(Parent

So who has got to have the parent

Person

Right

(types person(Parent,Person)

I think you might want to change the predicate at the beginning of that line

oh person?

you want to say the person's got a parent so you use the parent relationship because parent comes first in the parent relationship then child so you're saying here person has got a parent but the relationship's called parent not person. The first one is but not the second

(types person(Person,parent,Person))

No, you say the person's got a parent, the relationship is called parent - you are referring to the second block of facts there which list parent, open brackets, name of the parent, name of the child

(types parent,Person))

can I do it for you, perhaps you'll see it then types parent(Parent,Person),)

so the person's got to have a parent and the brother has got to have the same parent (types parent(

So it's capital B for brother and small p for parent

No, the brother is a child as well, but he'll come in second place in that relationship and the parent comes first and since you want them to have the same parent you give them the same variable name as you did with the Person.

Brother?

yes

Subject 2

1. person(annie, female).

So the first question would be person(annie,female), what should the answer to that one be

that's a trick question isn't it, it would come back and say yes [correct]

2. person(X,female).

OK, if you typed in person(X,female). what would the answer to that one be?

It would come out with the answer X = annie, jenny, zandra, carol [correct]

3. parent(jenny, Z).

Ok if you look at the next one the parent relationship, if you type in parent(jenny,Z) what would the answer to that one be?

Z = harry, james and kathy

4. parent(carol, rosie).

That's right, if you typed in parent(carol,rosie). what would the answer to that one be?

Yes. [correct]

5. parent(sophie, rupert).

And if you typed in parent(sophie, rupert)?

No. [correct]

Why not? why would the answer be no?

Because there isn't one, sophie isn't a parent

6. parent(rosie, X).

She is actually there but she's a child rather than a parent. And if you said parent(rosie,Y)?

That would come out no as well, because there's no rosie in the first part of the relationship. [correct]

7. all daughters (conj. - TT)

Right, now if you wanted to retrieve all the daughter that we've got in this knowledge base how could you do that?

Start of with person(X,female)

And then?

With the names that you've got, you have to write them down ...

You're saying you run that query first and then you write the names down and check which of those are daughters?

Yes

Surely there is an easier way of doing this?

You've got to start in the same way -

Well if you type in that first query

(types person(X, female)

and if you think about it, if you want to tell the system, tell me all those who are also, what is the second condition? you nearly said it, the second condition they have to meet?

Use the same X in the second column there to match it up?

Well you can run two queries at the same time, can't you, if you want more than one, if you want to meet more that one goal you can just link those two goals, you can just say this has got to be true and that has got to be true

Just a comma after the ...?

That's right

(completes the query to give person(X,female),parent(Z,X).)

Yes that's right, so now what would it return for X and what for Z?

For Z it will return all of those

All of those?

All of those who are female?

Not quite, which of those parents will it return?

Oh, those that have got a daughter, where X is female ...

That's right so it should return the name of parents with daughter for Z and for X?

It will return the names of the daughters

And it should go in pairs, right - just do it - so it says X is jenny so jenny is the daughter and annie is her mother, ok then you've got jenny and eric (etc)

So annie's a grandmother?

yes that's right

8. test rule

Now if there is a rule at the end of this database which defines what a father is. The rule says father(Person,Child):- parent(Person,Child), person(Person,Male). So that means a person is father to a child if the person s a parent to that child and the person is male. OK? So now if you wanted to test that rule and ask it to tell you all fathers and their children, could you type in a query for that?

Start off with father?

Yes

(types father( ) Two variables? (completes query)

So now so you get ...?

father

The father first for X and child.

9. placeholder

Now if you type in the same query but say I only want the name of the father I don't care what the names of the children are, just give me a list of all the fathers and don't tell me what the children are, how would you do that?

Small y and big Y?

No, because if you don't put in a variable you'd have to put in a proper object. You have to put something there, that's right because you have to match the structure of the rule that you are addressing because we've got two things in here, but how can you get it to return, if you just say I acknowledge that there is a second variable but I don't want to know what it is right now. any idea?

Put something like Person in there?

No, that would just be another variable. You an just hold the place by ...

Do you use a space?

An underscore it is, because you have to use the underscore to mark that space, so if you just try that

(types father(X,_).

[X=eric,X=eric,X=eric,X=martin etc]

10. Repetition

So it said eric three times, then martin twice, then norman three times then rupert once, so why does it do that?

That's because eric's got three kids

11. Analogous rule

If you go to the end of the file you can see that rule that we've just been using ... now could you write the rule for mother, model it on the father one

(types mother(Mother, Child):- person(Mother, female), parent(Mother, Child).)

12. New rule (TT)

Now could you attempt to write a new rule, a slightly different one that would define what brother is

(types brother(

it's got to be Brother hasn't it

Well does it matter what you call it? If you wrote the correct rule but instead of putting Brother with a capital B you put in Piglet or whatever and you ran the query

You'd have to run the query with Piglet not Brother

No, not really, no I mean if you called it piglet here then you queries would always have to match piglet but with variables it doesn't really matter, you could call them X, Y or A, B, Brother, Person - by the name it doesn't really matter. There is no connection as such between these two, so it's only for you to understand if you look at the rule again, and you look at the variable names and the variable is meaningful rather than X and Y but you know exactly what should be in the phrase, which variables should be, that if you get an object returned for a variable that you know what it actually mean

So could you go capital X there and comma ??

Yes and put a second variable, instead of Mother, Child you could put X,Y if you want, I don't know which you prefer, try it that way

(types brother(X,Y):-

If

(types person(X,male),

Now if you just say it in English, say he's got to be male, that's the first condition he's got to meet to be brother, what is the other condition? what makes

He's got to be a child

Yes, that's right, is that enough, you've got to be a child and?

Not an only child

But how would you get that? If you try, if you said, not an only child, if you try to, how else could you say that, to express it in a different way?

Brother or sister?

Yes you have a brother or sister, and what makes someone your brother or sister?

Same parents.

That's right, so, that is the way you have to write it ...

By parent?

You would somehow have to get the system to make sure that they have the same parents, you use the parent relationship, that's right

(types parent(

Do you have to do mother and father?

We'll say, we count half brothers as well so if they share one parent that is fine by us that makes them a brother, what do you put in there now?

Capital Y?

Well you've already used Y up there in the header, what does the Y there scan for? what does brother(X,Y) mean?

The X is brother and the Y is

What is Y?

Oh dear!

If you look at the mother/father rules, you've got two variables there as well so what does the second one stand for there?

It's a child but ???

Well the header of your mother rule says if you put say mother(X,Y) you would read that as

mother and her child

So X is mother of Y if?

So Y is a different brother or sister

That's right so that is the person they are brother to, now if we get back to the parent thing you can't really use Y because you use Y for the variable for the the person they are brother to so what do you do about the parent?

Another one -

Yes just give it another variable name, that's right

X,Y?

So that's, ok now we tell it go and search and look for parent of Y and make sure it is the parent of X

I see

So you need one more line in there, you've now told it the parent of Y

So you need the parent of X? (completes typing to produce as end result brother(X,Y):- person(X,male), parent(Z,Y), parent(Z,X).)

So that should do the trick, if you just insert one or two blank lines ... now save it and test the rule you've just written (saves it)

I see now, looking at it

You see what the system will be doing. ok fine, so if you just run a query now to test that particular rule, I don't know whether you want to pick a particular test or just get it to tell you all the brothers and person they are brother to

(types brother(X,harry).

Subject 3

1. person(annie, female).

If you type in person(annie,female). what should the answer be?

(types person(annie,female). If there is one it will just be yes. (RETURN)

[yes]

2. person(X,female).

If you type person(X,female), what do you think the answer should be?

a list of all the female people.

[list of all females]

3. parent(jenny, Z).

If we look at the second block of facts then, if we type in parent(jenny,Z), what should it tell you?

(types query) It will say who jenny's children are. RETURN

[harry]

RETURN

[yes]

You should have typed in semi colon to get the others ...

4. parent(carol, rosie).

If you type in parent(carol,rosie)., what should the answer be?

Yes - she has got a child called rosie (enters query)

5. parent(sophie, rupert).

If you type in parent(sophie, rupert).

(types query) It will say no because it is the other way round. RETURN

[no]

8. test rule

What we're going to do now is add a rule which says a person is a father of a child, if you tell me in normal English what are the conditions that have to be met so that a person is the father of a child

That it's male and it's got children.

So if we do that using the facts we've got in our knowledge base, if you say father(

(types father(name? does it have to be capitals?

Yes ...

(types Name, closes bracket)

You want to say a person is the father of another person

So you I need another person as well? (adds Child)

If - right what do you want to do first, the person or the male bit?

The male bit so name, can it go under name, or under father again?

where have we got the information about the sex of the person?

(types rule) father(Name,Child):- person(Name,male), parent(Name,Child).

11. Analogous rule

If you write the same rule for mother -

(types) mother(Name,Child):- person(Name,female), parent(Name,Child).

Now if we now save and try those out ... so if you say father(X,Y). What does that do now?

enters query

[X=eric, Y=jenny]

it's saying that eric is the father of jenny (tries a few more) and that's giving other fathers and their children

if you wanted to have the names of all the mothers?

That's the same - just the mothers' names? (enters query and gets those)

12. New rule (TT)

If you now try to write the rule that defines what a brother is. What conditions have to be met for someone's brother?

It has got to be male, and it's got to have a parent with more than one child ... I don't know how you do that it has got to have the same parents as some other people, otherwise it wouldn't help ...

How could we do that? We have to make do with the facts we've got in there ... We are happy with half brothers and sisters, so all they have to do is share one parent - start with the first bit

(types brother(Name, Do I want to know the brother and the other person as well?

You want to know whose brother they are as well ...

(adds Person), Do you have to have parent, X, Name then parent ...

just type in what you just said

(completes rule) brother(Name,Person):- person(Name,male), parent(X,Name), parent(X, Which variable name shall I use? Name again?

(explains what the rule so far does) So you want to say they should also be parent to - which variable name have you used?

person (adds Person).

Save it and try it out. Which query will you use to test it?

brother(Name, Person).

You can either ask it to list you all brothers or people they are brothers to, or you can ask it to list the brothers of a specific person, or you could ask to list the person that a specific person is brother to

If you wanted to find out a person's brother you'd put Name, and then the name of the person (types brother(Name,james).

What should the answer be?

harry, just harry

[harry --> james -->]

and it returns james, if you think about it logically because james shares the same parent with himself so if we don't, the program actually returns that as an answer

10. Repetition

So why does it do it twice? Because they've got got two parents?

Yes because they share two parents ... If we don't want it to return as an answer people themselves, we could do something to our rule to make it now do that, if you say it in English what would you have to tell them?

The person is not called james, the person we are looking for is not called the name

do you want to try it?

(edits and types by adding another line) Person \= Name.

(types query) brother(Name,james).

[harry twice]

harry twice, but doesn't return james any more

Subject 4

1. person(annie, female).

The first question, if you would ask person(annie,female).

(types person(annie,female).)

Ok what should the answer to that one be?

It's going to be yes, it's just asking if it's got a female person called annie. [correct]

2. person(X,female).

If you would ask it person(X,female).

(types person(X,female).)

All the people's names who are female. [correct]

3. parent(jenny, Z).

Now similarly if you would do that for the second block, let's say parent(jenny,Z)

parent's name of jenny which would be harry, james sorry, no

It's the other way round, it is the parent first and then the child so

Oh right, sorry, annie, no

No, if you substitute the second one and say parent(jenny, Z).

It would say jenny is the parent of someone else would it? harry james and kathy. [correct]

4. parent(carol, rosie).

That's right, it would list the kids, if you said parent(carol,rosie), what would the answer to that one be?

It would be yes. [correct]

5. parent(sophie, rupert).

And if you said parent(sophie,rupert)?

No

Why is that no?

Because that's saying that sophie is the parent of rupert, but rupert is the parent of sophie. [correct]

6. parent(rosie, X).

Right and the last one in that, if you said parent(rosie,Y).

That's wrong because that's asking it the name of rosie's children, and rosie hasn't got any.

7. all daughters (conj. - TT), 9. placeholder

Now from this database if we wanted to retrieve all the daughters how could we do that?

Do we put N as a variable for name inside the bracket

yes. You could obviously put a rule into the program that would define what a daughter is but we haven't got that there is no rule in there that tells you what a daughter is you have to just, but you could actually get it to list you all the daughters just by putting one query in, if you could find out what that one is. In terms of that database what conditions does one have to meet to be a daughter?

Female and be a child

That's right ...

Ah so you put in person(Name,female) semi-colon

Comma, if you want to connect it

comma ...

And then? ok you can start off with that type the first part in

(types person(Name,female),

Ok so that's a first condition and the second one is - you said they've got to be a child

Wouldn't work if you put parent ...?

Try it

parent(Name,-) because you want ...

parent(Name,-)?

Because you want that side of it [the relationship], so ...

So ... you're very close there

person maybe? person(- ... because I can't see how you can put in ...

You want to get at the last thing in the bracket don't you, that is really what we want, but you use that relationship that is right, it is just that you worry what to do with the first

Oh you've got parent outside

That's right

You put parent in front of the brackets, dash then Name?

Yes that's right, because if you do it the other way round you said parent(Name,-), that would actually get you mothers wouldn't it?

adds (_,Name).

[Name = jenny, jenny, zandra etc.]

Oh - two jennys ...

What are you wondering about?

10. Repetition

Why it has come out twice

Why has it come out twice that is a good question. Well here it is actually quite logical why it comes up with the name twice

... because there are two parents.

8. test rule

Ok, now I've put one rule into the database which defines what a father is. That rule says a person is the father of a child if that person is a parent to that child, using those facts, and if that person is a male person. So if you would ask it now to list you all fathers and their children, using this rule ...

So it says father ...

Father has got two variables in the header so ...

So it would be

You can call the variables whatever you like. It should return you if you put father, you've got two in there because I've written that so that is says a person is father to a child so it should be able to give you the name of the father and ...

So if you put father, name of the child and name of the father (types father(Name,Child). RETURN)

[Name=eric,Child=jenny,Name=eric,Child=martin etc.]

11. Analogous rule

OK if you edit the file now and you could write the same rule for defining what a mother is?

(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Could you write a rule that would define what a brother is?

I've got a brother myself? (types brother(Brother,

sister?

You have to put something there but sister would be because you can be brother to a male person as well. Call it something gender neutral

Can I put Brother and Sister?

Not really, because you want to write a different rule for Sister. If you put Sister here as a second variable, it is not really true because in the case of harry and james or whatever it would tell you that james is harry's sister and that would not be right would it? It would just be a very unwise variable name so call it something neutral ...

Just neutral?

Person or something like that

(types brother(Brother,Person):-

The next line is quite easy as well ...

(types person(Brother, male),

Now we come to the tricky bit what else do they have to do?

Have the same parents, same families ...

I was just going to say we can make it a little bit easier because we haven't got any half brothers or half sisters in here so if they share one parent that will do

So par nt outside the bracket then Brother?

Yes, Brother has got to go somewhere in there, that's right. Try to think what you are addressing, here you are addressing a person fact, earlier on in the program, here you are addressing a parent fact, it's just a matter of keeping in mind what stands where ...

So parent for Brother and the other will be the same variable - underscore, parent's name?

You have to put something in there because you want to link brother to person through the parent and the way to do that is to assign the same variable name to both the parents, to put one variable name in there and then brother and the system can link that to the person

Oh I see.

Yes, so you can do it in two lines really

What another line as well?

Because as I say you have to once link a parent here and then you have to link it to Person because they are children, as you rightly said they are second in the bracket so what you have to do now is assigning a variable to the person, to the parent ...

Just X or something?

that's right

(types parent(X,Brother), parent(X,Person).))

So that should work shouldn't it?

Right, do you understand that now, what you've written

Yes brother is brother to a person if the brother is male person and parent of the brother is X and parent of the person is X

Subject 5

1. person(annie, female).

OK, if you would ask it person(annie,female). what would the answer to that one be, you've got a print out

It would be either yes or no

You've got a print out of the program there ...

So you want me to type it in? (types person(annie,female). So it should be yes then. [correct]

2. person(X,female).

If you would ask it person(X,female).

It would give a list of all the females. [correct]

That's right

3. parent(jenny, Z).

And similarly if you would ask it parent(jenny,Z), what would the answer to that one be

You could answer yes female

If you said parent?

oh sorry, if you said parent, it's going to answer whoever jenny is a parent to, james, kathy ...

And harry

Is it, harry as well?

4. parent(carol, rosie).

That's OK. if you would ask it parent(carol,rosie).

Either yes or no - yes

5. parent(sophie, rupert).

And if you ask parent(sophie,rupert).?

It's going to say no because of the relation, rupert is the parent of sophie. [correct]

6. parent(rosie, X).

And if you asked parent(rosie,Y).

It would list all the children of rosie which would be ... oh she isn't a parent, so it would say no

7. all daughters (conj. - TT)

Ok if you would try to retrieve all the daughters we've got in that little knowledge base how would you do that

oh all the daughters it would be person(X,female), parent(Y,X), as long as the X is the same for both of them

Yes you have to use the same variable name - if you just try that one ...

person first?

yes

You want all the daughters so it's going to be (enters person(X,female),parent(Y,X).)

OK so what, it is returning now for X

... is telling us who is the daughter and Y is the parent of that daughter

8. test rule

OK, fine, what I've done is to put a rule at the end of that file to define what a father is, the rule says a person is father of a child if the person is a parent to that child and that person is a male person, so you could now ask it to give you a list of all fathers and their children using that rule -

Yes. father(X,Y) - shall I do that one?

Please

(enters father(X,Y).)

[list of fathers and children]

If you would say now I want a list of all fathers but don't want to know the brats' names, how would you do that?

9. Placeholder

You could put a small y?

You have to do something about the Y but

Oh underscore, if you just do a bar -

Yes that's right so if you just type it

(types father(X,_)

It's an underscore, that's right

[X = eric eric eric martin martin rupert]

10. Repetition

would you like to comment on that list?

It means that eric, martin and norman have more than one child and rupert only has one

Yes, because, what is happening -

It has filled in all the variables for the bar without giving them names

11. Analogous rule

... and look at the father rule I'm sure you could write the rule for mother now ...

Wonderful, so I've got to write it for mother now

Yes if you just try that

(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Yes, that looks good doesn't it. Now, could you write the rule that defines what a sister is

(types sister(Sister,female):- person(Sister

Oh what have I done here

I was going to ask you that -

She's got to be a child though hasn't she?

I mean if you look at that one that actually means mother is mother to a child if

So ...

what you want to put here in the second place is, well it is the same thing, it must be another sister to

That's right you have to put -

A child isn't it

Well you can call it, I don't know what seems reasonable to call it - you could call it sibling with a capital S

So distinguish between the mother/child relationship

That's right

But will child work there if you put it in?

Yes you could try it, if you just

Because child is like listing all those people

It won't really matter what you call the variable, you can call it banana and it will still work if you put the variable name in the right place

So not female ...

Not not female because that goes into the next line

So anything, well you said sibling so -

Well, at least when you look at it again you know what should be going in there if you use a meaningful variable name

(types sister(Sister,Sibling):- person(Sister,female),

Ok so that is the one condition they have to fulfil, they have to be female and what other conditions do you have to list?

Something to do with the sibling isn't it?

It has got something to do with the sibling, yes. What do you have to say, if you would say it in English now, what is the other condition that we have to -

Female and a relation

And what do we use to make that relationship, how could we explain that

In terms of finding a common parent -

Exactly

So, parent (types parent(The ones that's common, so second one's going to have to be sister, no ...

What does stand in the first place in the parent relationship?

It's either the mother or the father ...

Yes you can put that in, well there are really two ways you could do this, either you could go to the output from father or mother, now you could actually instead of saying parent you could have said father and then linked say the sibling and the sister to the father, or you can say parent because we know that what stands in the first part there is going to be parent as well ...

But you have to call it something different, because some might be listed under father and some ...

It doesn't really matter, you can do it this way it's just what you've got to think about now is which variables go where because what stands first in the parent relationship is always the parent

So you won't - could I just put mother in

I don't know we call it X or Parent with a capital P or whatever

(types parent(Parent,Sibling).)

Is that enough really, I think you need something else

So person's got to be

You've linked the sibling to the parent now but you still haven't linked the sister -

Right, so I've got to have parent again, sister

That's right

(adds parent(Parent,Sister).) I'm not all that sure what's going on

Well try to think about it, we are trying to define now

Well the first defined what the actual sister was ...

What it will do is, you've got the first line here and it starts, you say now sister(X,Y) you want to know who the sisters are, it goes to the person facts it gets the first female name and puts the name in there instead of sister so now that line reads person(annie,female), then it jumps down to the next line and this -

Yes I see now

And this line now reads parent(annie -

... you'll get a name in there

Now it goes and looks for a parent of annie and puts that name instead of parent and when it comes down to the next line now it gives parent that name and then it finds a sister and checks whether that is actually the same

yes I see that

Subject 6

1. person(annie, female).

The first question would be person(annie,female). So what should it answer to that one?

Must be yes, I would have thought. [correct]

2. person(X,female).

If you type in person(X,female). - what should the answer to that one be?

It will list all the names of the females. [correct]

3. parent(jenny, Z).

Now the next block of relationships is the parent relationships so if you put in parent(jenny,Z). what should the answer to that one be?

It will give the name of whichever parent it is - annie is it?

Yes - any more? it's (jenny, Z)

Oh, so harry james and kathy. She's the parent of them (tries it and it works)

4. parent(carol, rosie).

If you would say parent(carol,rosie). - what should the answer to that one be?

Yes (enters query)

[yes]

5. parent(sophie, rupert).

And to parent(sophie,rupert).?

No. [correct]

6. parent(rosie, Y).

And if you would ask parent(rosie,Y).

parent(rosie,Y)? No.

Why not?

Because she's not got any children down here.

7. all daughters (conj. - TT)

Ok, now slightly more tricky, if you wanted to try to retrieve all the daughter you've got in there how would you do that?

Daughters ... you'd have child, we can get an answer to that, and then whether that child is female

How exactly would you do that?

"child" outside the bracket and X comma Y inside the bracket and then ...

Ok, try it

(types child(X,Y)) It's all capitals - does it matter what letters are?

What variable names you use, no as long you know that if you mean the same variable you have to use the same one

and then (types :- at the end)

Ah - are you trying to write a rule?

Give me the child if that child is

OK, so you would actually put in a rule that would define what a daughter is, in which case you could write a rule which would define daughter, you would have called it [the predicate] "daughter", but what you're trying to do here is, you could write a rule and we'll actually do that later on but if you look at those relationships you've got there you can still without writing a rule retrieve all the daughters by just addressing the facts you've got there

Daughter - you do daughter, in this, so it where you put it in the bracket?

So what does that mean if it's in the bracket?

That's the children

That's right that means they're the child of someone -

... and females

You'd have to select females yes, could you do that, you can actually do that in one go can't you, you can actually ask the system to return only the female children.

So, you put child outside the bracket

Well you can't if you haven't got a child rule or any child facts you can't very well do that can you?

So this is all the information is ...

That's all you've got, but you can still get it return you, just by putting in a query now rather than by writing a new rule

There'd have to be a variable there of some sort ...

yes and what else

It's what's outside the bracket, that's the thing, if you can't use

Well the name of that relationship, if you address

Use daughter?

If you're addressing that relationship you have to use that relationship name -

So, parent?

yes

X, comma, daughter or?

With a capital letter or ...

Well can you use the word daughter then?

Yes you can, well it depends would you spell it with a big D or a small D

Big D

Yes, I mean if you use a capital letter you can use whatever variable you like

It would automatically know what the word daughter means?

No it wouldn't, but it would help you to remember what you were actually looking for. Ok if you start off with that, I mean if you decide you can call it X,Y or you can give it meaningful variable names but they are meaningful only to you they don't mean anything to the system.

(types parent(X,Daughter)

OK so you've defined that the person's got to be child of a parent and what else, what other condition has to be met?

Female.

Yes how do we say that then?

You couldn't, you just use the word female in that instead of daughter

Not really, where is the information about male and female, where is that actually encoded in our database?

that's in this part (points to person-relationships)

So you would have to address that particular relationship if you want to retrieve that information

So you mean when daughter is, I don't know how you would do it to get that really

It doesn't really matter, you could do it both ways round you could have said that the person's got to be female first or whatever but how do you get it to meet both of those conditions at the same time, any idea?

You could use person instead of daughter

Well if you want to retrieve any information from those person relationships you actually have ...

You actually have to use the word person but there's no really

Yes OK but you have to link those two don't you, those two goals that you're listing, how do you do that?

(types ,)

OK yes comma

do I need to go down [to the next line]

It doesn't matter, you can write it on the same line

person(X,female)

What would you get then - think about it

Well it wouldn't be X but it would ???

Because you've already used the variable X here. Let's see if becomes clearer (deletes the typing), let's see if you give them both meaningful variable names (types parent(Parent,Daughter),). OK?

(types person(You still have to have female in there

Yes

Would that be enough? or you'd have to have X, female, or whatever

Well somehow you have through the use of your variables to link those two, which variable name would you use?

Daughter

Yes. What you said before was when you had X, Daughter, and you said person(X - that would have given you the mothers ... because it would have retrieved the female, if you say X,Daughter, then X, female that will actually give you the mothers, X would have been mother then

So you still use X as a variable?

No you've decided to call that variable Daughter, so you have to call it the same, how else do you link the two enquiries

so female

Well which way round do they have to be?

Daughter, female

Yes because the name is first in the bracket and then the

(types end of query to give parent(Parent,Daughter),person(Daughter,female).

Why must it be lower case

Because you've already got the variable name haven't you

Yes and you don't want it to be a variable name there you actually want it to be female, you actually put the object in here because female is the condition we want to be met. Ok so if you run that one

OK so now it tells you Parent = norman, Daughter = kathy, Parent = jenny, Daughter = kathy, so it lists you all the parents with their daughters now so you see just by running in conjunction where you specify two goals which have to be met it sorts out only the ones that meet both those conditions.

8. test rule

If you go towards the end of that file now. You see you've got a rule there that defines what a father is, can you try to interpret that rule, what does this one actually say?

Is it to find all the male children?

What does it do, what does it say a father is

It's saying

Yes? According to that rule which conditions have to be met so that someone is a father?

Does it say that they have to have a child first of all, that child has to be male ...

Who's got to be male?

To be a father he has to have a child, that is one ...

What exactly, which line does state that? You've got to have a child to be a father? Which of those lines does say that in that rule?

The third line

Yes you have to have a child to be a father, what does the line above that say?

That Father has to be male

That's right, it's quite logical really isn't it. This rule just says I've given it meaningful variable names here, that someone is a father of a child if that someone is male and that someone is the parent of the child, Yes?

Yes

see those two variable names, so you can actually query it and it will return name for a father and name for a child, could you write, modelled on that now the rule for mother

11. Analogous rule

it will be almost the same but with different names (types mother(so it will be Mother ...

If you are consistent you can use X Y if you want to or Pineapple Banana or whatever, it doesn't really matter what you call the variable ... (laughs)

Well you have to say

If you don't believe me you can type in Mother, Child which is nice and easy because if you look at the rule you always know what you actually want to take this variable's place but it would work if you put in Eeyore and Piglet it would work just as well

So I just put X and capitals isn't it

Put X and Y and see.

(types mother(X, Y):-) So X is the mother of Y if, return, you can use the tab to indent it if, it has to be person (types person(X,female), parent(X,Y).)

Ok if you just add another blank line after this one and if you save the file so we can try it. Now if you ask it to give you the names of all mothers and their daughters as soon as it's finished

All mothers and their daughters?

No all mothers and their children - you don't have to narrow it down to daughters, just all mothers and their children

So it will be parent?

No you've just written a rule called mother so you can
So we use mother?
Yes you want to test whether this rule actually works, whether it actually returns the correct answers
So I can put mother? (types mother(X,Y).) RETURN
[X=annie, Y=jenny, X=annie, Y=martin etc.]
9. placeholder
Now one last thing if you wanted it to list mothers but not give you the names of the children what could you do?
parent(Mother
No you want to do exactly the same thing but you don't want to know what the names of the children are, how would you do that?
mother, just the mothers, mother(X
But you have to hold the place for the other variable
Underscore
Yes, so if you do that as the last thing
(types mother(X,_)
Yes, RETURN and if you keep pressing semi-colon
(gets annie 3 times, jenny 3 times zandra once, carol twice)
10. Repetition
Because of the number of children

Subject 7

1. person(annie, female).
If you type in person(annie,female). What should the answer be?
It will come out with yes. [correct]
2. person(X,female).
If you type in person(X,female)., what would the answer be?
It would come out with yes X = annie, followed by jenny, zandra
[correct]
3. parent(jenny, Z).
If you look at the parent relationships now if you type in parent(jenny,Z).
It will come out with yes Z = harry, james, kathy
[correct]
4. parent(carol, rosie).
OK, if you type in parent(carol,rosie). [correct]
5. parent(sophie, rupert).
And if you would type in parent(sophie,rupert).
No.
Why not?
Because there is a parent rupert,sophie not sophie,rupert
6. child(rosie, X).
And if you typed in parent(rosie,Y).
No it would say no because there is no rosie in the first position.
7. all daughters (conj. - TT)
Now slightly trickier, if you wanted to retrieve all the people from this database who are daughters how would you do that?
All the people who are daughters? You could put in person(X,female)
Yes ...
How are these parent relationships worked?
Parent comes first then child
I see so you, and are the ... yes ok, that's the only way
Well the beginning was obviously right so if you type in the first part that you just said
(types person(Z, female). RETURN)
[Z = annie, etc.]
That gives you all female, but what other condition do you have to fulfil to be a daughter
You have to have a parent
That's right, so try again, what do you do?
So it's going to have to be a conjunction between person and
(types person(Z,female),parent(Y,Z).)
What would it return now for Y and for Z?
It would return for Z all the children who are female i.e. daughters and for Y those respective parents, you could ignore if you were strictly answering the question you put a blank
A blank?
Because the question's asking you to extract the daughters not the parents of those daughters

Ok if you run those first because that is actually an interesting point
so it says parent jenny is the daughter of annie, and (etc)

9. placeholder

So if you typed it in as you just said without knowing the names of the parents -

Do you want me to actually do it?

yes please

(types person(Z,female),parent(_,Z). RETURN

[Z = jenny, Z = jenny , etc.]

10. Repetition

You see it said jenny, jenny, zandra, zandra, kathy, kathy, rosie, rosie, sophie and sophie, why do you think it returned every name twice?

Because each daughter has two parents and if the database is correct it answers each daughter twice

8. test rule

Ok there is a rule at the end of that database which defines what a father is, it looks like this father(person,X), so a person is a father to a child if that person is a parent to that child and that person is also male. Yes? so that defines what a father is, so if you want to use that rule now, if you want it to give you all fathers and their children or just give you all fathers, whichever way round you want to do it

(types father(Z,X).) that would give you the father and the child [correct]

11. Analogous rule

Now if you edit the program and actually write in another rule for what mother is

(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Right if you wanted to write a rule to define what a brother is, if you think about it, just say it in English, what conditions do you have to meet to be a brother?

Person is a brother if he is male, and a child, so he has to have a parent, are all the parents and all the children in this database? ... Right, so he's got to fulfil two conditions in that he has got to be male but a parent is also a brother, no hang on, are you assuming, you see you could argue that every parent if he is male is somebody's brother

Not necessarily

They could be a single child, ok so you want me to stick to the children in which case you would have to be male but also be somebody's child

But you could be an only child ...

So in that case he has to be somebody's child and his parent must have more than one child so if we find all the parents ...

Well what we said here is, if you look at the mother and father ones, person, variable, is mother to a child if so if you start of in the same way, saying somebody is a brother of a person if the brother is male and ... you're sort of putting up a relationship like saying a mother is mother to a child if, in the same way if you say brother is brother to a person if the brother is male and ? what else do they have to have in common?

Same father ...

... or mother, equals parent, they need to share at least one parent

Ah, could we use the existing rule that we have here, no -

You could actually but it is probably easier if you just use the parent fact

So somebody's got to be male

If you start writing the rule, the header and the male, just think about

(types brother(

If you say brother, comma, person or name of X or whatever it is

(continues typing brother(Brother,Person):-

now you said the brother's got to be male ...

(continues typing person(Brother,male),

... and those two have to have the same parents. How do you achieve that?

Both brother and person have to have the same parents.

By just using the same variables in the right place you could actually link those two to the same parent, you have to state that the brother is the person of that parent and the person is the ...

Got it, got it (types parent(the parent is the first in the bracket is that right?

you could call it Parent with a capital P if you want

(continues parent(Parent,Brother), parent(Parent,Person).

Subject 9

1. person(annie, female).

If you asked it person(annie,female). - what should the answer to that one be?

person, ??, sorry

If you would just type in this question what answer would the system give you? with the knowledge base you've got in there

annie? I don't see what I'm doing - I really don't understand

Well if you type in that as a question which would mean have we got a person who is female called annie
Yes.
what will it say
Yes. (enters query)
[Yes]
2. person(X,female).
Yes that's right, if you type in person(X,female).
annie,jenny,zandra,carol,kathy, sophie. (enters query, gets predicted result)
3. parent(jenny, Z).
Fine, now if we went to the second block, if you asked it parent(jenny,Z), what would happen there
harry james kathy [correct]
4. parent(carol, rosie).
And if you said parent(carol,rosie), what would the answer to that one be?
peter - is it parent ...
carol, rosie
Yes.
5. parent(sophie, rupert).
And if you ask parent(sophie,rupert)?
No.
Why is the answer no?
Well, sophie, it doesn't actually say who her parents are ... oh yes it does - parent(rupert,sophie) ... but it's that way round not the other way round
So it would say no
So it would say no because the relationships not right
6.parent(rosie, X).
Yes, so, if you would ask it parent(rosie,Y). - what would it say to that one?
No, because rosie is the parent. [correct]
7. all daughters (conj. - TT)
OK now the next thing, if you from this little knowledge base you've got there, if you wanted to extract all the daughters
All those ones (points to person-relationship).
Could you persuade the system somehow to give you a listing of all the daughters
person, no ... you'd have to substitute daughters for female ... with a letter
And then
And ... parent, no you can't do that
Try it, I'm sure you can do it
Are you asking a question?
Yes. You're not writing a rule here, you haven't got a rule in there that defines what a daughter is but nevertheless you could actually get
Because it hasn't got daughters, sons
But with the information that you've got there you could still retrieve, you could still sort the ones that are daughters from sons
Oh I know I think - is it person, this isn't easy you know ...
Well if you just say it in English, which two conditions does someone have to fulfil to be a daughter?
Got to have parents ...
Yes she's got to have parents, and
she has to be female ... so just parent female, parent X
Yes, you have to use both relationships in your question
I'm trying to find out whether the female ...
You can start with either of them - you can start by saying that person has got to be female first or that she's got to be a child first
but it hasn't got child
No but who are the children, where are they
In this lot [parent-relationships]
Yes, so they are second to the parent relationship aren't they,
So this is going to be, you've got to have, do you need parent in there at all?
Yes you do, because otherwise you don't get at the child relation. In terms of our database she has got to be a female person and has got to be -
parent(X,female), no because that's ...
No that's coming from somewhere else - but you can combine those two can't you? in your question, what do we call that?
Conjunction.

Yes that's right, so if you just run a conjunction in your question. All you have to do is put the variables in the right place. Start one of them, person or parent, whichever you find easier ...

oh I think I know (types person(you don't have to have two [objects/variables] in there do you

You do because you've got two objects in those relationships, so -

person OK (types person(X,female),

So that should show they're female and

(types parent(Y, Is it female again?

No, what do you put in there now, because that thingy that goes in there now has also got to be the female thing, you've got to make sure that the variable links them. You've correctly said parent is Y because that's not the person we're looking for, we're looking for the child, so?

Daughter, female?

No she's X, because you make sure that X is female and now you want to make sure that she's a child

Yes, sorry, I just realised - stupid me, I didn't realise they're the same people. (types parent(Y,X).)

Now what should it return for X and Y?

X is those people there, the female and Y is the parent of -

X, yes that's right, so if you could just run that one

(enters query) so jenny annie jenny

So jenny is the daughter and annie's the mother, that's right so if you carry on

[jenny, eric,: zandra, annie, etc.]

8. test rule

Now what I've done at the bottom of this little knowledge base, I've put in a rule that defines what a father is, I've said a person is a father of a child if that person is parent to that child and that person is a male person. So you could ask it now by using that rule to list you all fathers and their children

(types father(X,Y).

[X = eric, Y = jenny]

9. placeholder

Yes, eric and jenny, where eric is the father and jenny the child etc . Ok, if you would ask it now, if you said I want a list of all fathers but I don't want to know the names of their children, how could you do that?

(enters father(X,_).

[X = eric,eric,eric,martin,martin,norman,norman,norman etc.]

10. Repetition

Would you like to comment on that

Well it's listed how many children they have ...

11. Analogous rule

If you edit that file can you write the mother rule now based on the information you've got, if you just look at it ...

(types mother(Mother,Child):- person(Mother,

so it's, yeah

(carries on ...female). person(Mother,Child).

It should have had a comma at the end of that line, I think ...

Oh yes (changes . to , after female)

... and I think you've made a slight mistake on the next line you've used the wrong predicate

(changes person(... to parent(Mother,Child).)

12. New rule (TT)

Now to be a bit more creative, if you write a rule now that would define what a brother is, would you try to do that, if you want, we could discuss in English first what it actually is, what you have to do

It's a child of the father and mother

Yes, actually, I will let you off with just one of them

OK child of the father then (types person(Brother,male),)

What do you do about a sister relationship?

Well what you would do is define brother and sister separately because they're two different things. What you have to do though, is you have to say, in analogy to here, if you say mother is mother to a child if, so we have to say brother is a brother to, I don't know what we want to call it

parent?

well you're not brother to a parent, to a - let's call it sibling for instance, with a capital S, we could say brother is brother to a sibling if and then you've said Ok the brother's got to be male and then we've got to indicate what, father, you said saying father, so we've got to twist that as well, so we have to indicate they have the same father. I think it's easiest if you just start off with the header and then the male one -

(types brother(Brother, Siblings?

Well it would seem a reasonable variable name to me - you can call it what you want or an X or Y or whatever

(types brother(Brother,X):- person(Brother,male), Is that brother again now or is that -

There are two ways you could do it, either you use the parent relationship again to indicate that the brother is a child of someone or you can of course use the output from the father rule

parent wouldn't go outside the brackets would it, parent would be inside the bracket?

No - you still have to match the parent facts if you would use the parent, if you decide to go for father or mother you must use that to

mother or father?

Then you would have to match the header of the rule so you could say now father

(types father

lower case now because you should have the proper definition of what it is. OK

So that would be

Well who's the child,

the child?

In which position does he go if you look at the header of the father rule?

second one

That's right, so you'd have to put something else to substitute for the father in here -

Y?

Yes that's right

(types father(Y,

Is it child ,yes it's child isn't it

No, it's Brother because we're, because it's got to match that one because we're trying to define someone who can fill this place, you've got to be consistent with the variable because we've said brother here and you've also got to use the same variable name for the same person

(types father(Y,Brother).

But this still doesn't, now you've said that brother's father is Y but you still haven't ensured that X's father is Y as well and you want to do that because that is the link

So it's just the same, is it father(X,Brother). as well

No - X is the sibling not the father, the sibling is a child as well isn't it?

Yes so father, this is father X then

father yes - but X again like brother is a child so it goes

in the second

(types father(

X?

No, Y because Y is the father, you see father always comes first

Oh Y X

Yes, because X is the child and Y is the father

(types father(Y,X).

And you have to put a comma in there instead of a full stop (after line 3)

(corrects it)

Subject 10

1. person(annie, female).

The first question would be if you asked it person(annie,female). what would it say?

Just annie - no?

What does that question actually mean person(annie,female).

There is a female, annie ...

Well we haven't got, it is just a relationship and two objects if you put them in as a question, what it really means is "Have you got a person called annie which is female?"

So the answer is yes.

That's right, yes, if you try that ...

(enters person(annie,female).)

[yes]

2. person(X,female).

And if you would ask it person(X,female).

It should give you the list of females - annie, jenny ... [correct]

3. parent(jenny, Z).

OK, so that's that, so if you would say parent(jenny, Z). what would the answer to that be?

It should give you jenny's children ... (enters parent(jenny,X).)

[X = harry,james,kathy]

4. parent(carol, rosie).

What would the answer to parent(carol,rosie) be.?

Yes.

5. parent(sophie, rupert).

And to parent(sophie,rupert).?

No.

Why is it no

Because he is a parent of sophie

6. parent(rosie, X).

And parent(rosie,Y)?

should also be no because there is no parent called rosie.

7. all daughters (conj. - TT)

Now if from this database we've got there we wanted to retrieve all daughters that we've got in there,is there a way that we can do that?

(thinks) You have to use a conjunction? (thinks) So ... something like parent(Name1,Name2), person(Name2,female)

Yes OK

(types parent(Name1,Name):-

You're not writing a rule, though, are you, just a question. To get a conjunction

(subject deletes second bracket)

No it's all correct except for you link those two parts of it, you're not writing a rule, just putting in a question ...

Oh and

Yes just a comma, that's right

(enters parent(Name1,Name2),person(Name2,female).)

[Name1=norman,Name2=kathy]

So it gives you for Name1

norman, kathy

So for Name1 it now returns what

The parent

Yes and for Name2 the daughter, OK (tries a few more)

8. test rule

OK I've actually put in a rule at the end of the database which defines what a father is, yes based on those facts, it says a person is father to a child if the parent of the person is a parent to that child and that person is male, yes? So you could actually use that rule now to get a list of fathers and their children, would you try to do that

(types father(P (hesitates)

Capital P, capital C would probably do, it doesn't matter what ...

(finishes to give father(P,C)

[list of fathers and their children]

9. placeholder

Now you've actually got them out in pairs yes? The name of the father first and then the child, if you would say OK I want a list of all fathers I don't care what the children's names are what would you do?

Using the same rule? (types father(P,_).)

So what should that do now?

It should give you a list of all the fathers ignoring their children.

Yes it shouldn't return anything for their children, OK

[gets list of fathers - eric 3 times, martin twice etc.]

10. Repetition

Do you find that peculiar, or ...

Only if you didn't know what was in there, in the program, you can see there are three parents called eric or martin ...

But why do you get eric 3 times, martin twice, norman

Because they're in there for each of the children so it will come up as many times as they've got children.

11. Analogous rule

Now if you edit that file you could perhaps write the rule for mother modelled on the father rule

(edits file and types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Yes that's right, could you also write a rule that would define what a sister is?

(types sister(Sister,Daughter

Why are you calling that second variable Daughter?

I don't know.

Well, what I did when I wrote this rule was said a father, this variable, is relationship to a child - you wouldn't say a sister is sister to a daughter would you?

A sister to a child I suppose, or brother or sister ...

Well it is brother or sister but because you can be sister to female so I think it should be neutral.

I'll just put Child.

OK.

(types sister(Sister,Child):- person(Sister,female),

I don't understand what I have to do - the sister is female, so ...

Just try to formulate it in English - now what conditions does someone have to meet to be a sister?

Be a sister and she must have the same parents as well.

Now this is the difficult bit, how would you get the system to check whether two people have got the same parents? Because you want really Sister and Child to have the same parents so it instantiates a name to the variable Sister and Child, then goes off and checks whether these two names have got the same parents, so could you get it to, any idea?

parent(Sister,Child)

The problem is that in the parent-relationship in the first place what is there in the parent relationship

It would just give parents and children wouldn't it?

That's right - so you've got the parent in the first place then the child but these two are both ?

Children. So it would have to be Child

Well, you can get it to match it up, if you say parent, you put in a variable here Sister then write another line with parent, same variable here, then Child, that would make sure that when it fills in any name for Sister and Child that it goes and checks whether these two have got the same parents here in the bracket

Sorry what was that

You're referring to the parent relationship -

Yes, I know (types parent(just a variable P, so it would have to be, just Child).

No you've got to make sure that the sister gets the same parent, that only goes and finds the parent of that Child - Sister has got to be a child of that parent as well, so ...

So now I have to write another one as well

(finishes typing to give sister(Sister,Child):- person(Sister,female), parent(P, Child), parent(P, Sister).)

Ok would you like to go and try that one out now

(enters sister(S,C).

[S=jenny, C=jenny, S=jenny, C=martin etc.]

(looks puzzled)

You're about to say something

How can zandra be zandra's sister?

That's a good question

Because it's just gone back and gone through the families and paired them up

and that's fair enough really isn't it. Another question, it doesn't disturb you that you get zandra jenny and then zandra jenny again? It does every combination twice, can you find an explanation for that?

Is it something to do with the second line wrote in about the person being female? No?

No, it has got something to do with the parent ...

It has zandra as parent and so is jenny

No, but we've defined they have to have the same parents and both of them have got two parents, all of them have got two parents haven't they?

Oh yes of course they have yes, mother and father, so they'll give you both the father and the mother

Subject 11

1. person(annie, female).

Ok so first question would be person(annie,female), what should the answer to that one be

Yes. [correct]

So if you just try it -

It would just print out yes (enters query)

[yes]

2. person(X,female).

That's right and if you would ask it person(X,female). what should the answer to that one be?

It will give you the list of all the girls - annie, jenny, zandra and so on. [correct]

3. parent(jenny, Z).

Now the second block of facts concerns the parents so if you would ask it say parent(jenny, Z). - what would the answer to that one be?

james and kathy

And?

Oh harry, james and kathy. [correct]

4. parent(carol, rosie).

If you would ask it parent(carol,rosie). what would the answer to that one be?

Yes. [correct]

5. parent(sophie, rupert).

And if you asked it parent(sophie,rupert).?

No.

Why would the answer be no?

Because rupert is the parent, not the child.

6. parent(rosie, X).

And if we put in parent(rosie,Y). what would the answer to that one be?

No

Because?

Because rosie isn't the parent.

7. all daughters (conj. - TT)

Yes that's right, now, slightly more complicated, if you wanted to retrieve all the daughters that they've got in there have you got any idea how you could do that?

You have to do a conjunction so parent(X, Y) and then is it comma for and, and then person(Y, female).

Exactly, so if you just try that one out so what will it now return for X and Y?

X will be the parents, and Y will be all the female children

Yes so if you give it a try

(enters query)

[X=norman, Y=kathy; X=jenny, Y=kathy, X=martin, Y=rosie; etc.]

you see, which order does it actually take?

The order that they come down here

so it picks the girls one after another, from the first parent down to the last one. Yes very good.

8. test rule

Now I've put a rule at the end of this knowledge base which defines what a father is. It says a person is father to a child if that person is parent to that child and if that person is a male person. So I've listed 2 different goals, a) that the person has got to be a parent to that child and that this person has got to be male. Ok. Now if you were trying to use this rule to give you all the fathers and their children, if you want to test whether this rule actually works, what would the query be? ... It is quite easy

father(X,

If you actually want to use a rule you have to see that you match the header for it so since we've got two variables here in the header

9. placeholder

father(X, and then underscore.

OK fine you can try that

(types father(X, _).

OK what will the answer to that be, what will it actually say now when you

X will give you the names of all the fathers, that's all it will give I think. [correct]

So is it going to give eric three times

Why do you think, do you think it might give you eric three times for each child, try it see what happens?

(gets eric three times)

So what do you think the next one will be?

martin

[martin twice, then norman]

10. Repetition

So that's wrong then, you don't want it come out three times ...

11. Analogous rule

well it is not necessarily wrong, it is just important to be aware of the fact that if you write it like that. You can, there are actually things we can do about it if we want to, but this is basically how it works the rule out. If you could edit the program now and write the mother rule based on the model ...

(types mother(Mother, Child):- person(Mother, female), parent(Mother, Child).

12. New rule (TT)

Yes that's fine, now we extend our big family program here and try to define what a brother is -

(types brother(

If you just said it in English how would you explain to someone in English what a brother is.

A person who's parent is also so and so's parent and the parent is the common thing,

And?

And is male

Yes that's exactly right. Now in analogy to those first two rules where we say somebody is a mother of a child if so with a brother you say somebody is a brother of a person if

(types brother(Brother,Person):- Is it alright to use person again but with a little letter?

(types person(Brother,male),

Yes that's the first condition ...

Must it still only have 2 parts to it?

Can you explain that a bit further?

Well inside the brackets just two ...

Two?

Conditions ... or ...

We're trying to say, you said that before, that we have to tell it that they have to have the same parents, who has to have the same parents - now if we look at the beginning of our rule

The Person and the Brother

That's right, so we somehow have to link them to the same parent

So you put parent outside the bracket and then you put Brother and Person in the same bracket?

Well the thing is they're both children aren't they? It is right that we use the parent relationship but since our parent relationship has got two objects in the bracket, the first is the parent and the second is the child we can't really say parent(Brother, Person) because you put the Brother in the place where the parent stands in that relationship and that can't be right can it?

parent ... and underscore? No ...

No - we need, you have to write two further lines, you can't do it in one. All you say is that you make sure the brother is the child of one parent and that the person is the child of that same parent and again like you did in your queries before you have to link those by using the variable and that variable is?

X?

X is fine, whatever

So parent(X,Brother)

(types parent(X,Brother), parent(X,Person).

Now we'll go and try this rule out -

So if I put in brother and then X and then say kathy it should give me harry and james

Yes try that

(types brother(X, Kathy).

I think you have made a slight mistake there, what will happen if you do that

Oh I need to be put Brother in capital letters instead of X do I

No but kathy is not a variable that is a constant, if you put in 2 variables, if you type X,Kathy or X,Y it doesn't matter, it will just give you a list of all brothers and the person they are brother to, if you only want kathy's brother, that's an object not a variable

So how do I do that

You shouldn't have put it with an upper case letter

(corrects it to read brother(X,kathy).)

[X = harry, harry, james, james]

Why does it list harry and james twice

Because it does it for the father and the mother

Subject 12

1. person(annie, female).

The first question is person(annie,female). - what should the answer to that one be?

Yes. [correct]

person(X,female)

If you type in person(X,female). what should that do?

(subject types person(X,female).)

Give out all the people who are female, jenny, etc. [correct]

3. parent(jenny, Z).

Now if you look at the second set of relationships there if you would ask say parent(jenny,Z). say what should that give you?

Who jenny is the parent of ... (enters query)

[X = harry, james,kathy, no]

4. parent(carol, rosie).

If you would ask it say parent(carol,rosie). - what would the answer to that one be?

Pardon?

parent(carol,rosie).

Who is the parent of carol, no oh - yes, sorry

Right what does it actually mean?

Is carol the parent of rosie.

That's right.

5. parent(sophie, rupert).

If you would ask it parent(sophie,rupert). - what should the answer to that one be

Sophie? No - because sophie's the daughter of rupert

That's right.

6. parent(rosie, X).

And if you asked parent(rosie,Y)?

No - because rosie's someone's daughter

7. all daughters (conj. - TT)

Now if we actually wanted to retrieve all the daughter we've got in there is there a way that you could do that?

Yes probably, something like, parent, all the daughters, would you have to use this as a rule, and a conjunction

Yes - if we do it now without - obviously you could write a rule which would define what a daughter is but we haven't got that rule in at the moment but you still could retrieve it just by asking the right question couldn't you?

Yes, sorry what was the question again

Whether you could get it to list you all the daughters

So you start with parent

It doesn't matter which one you start with.

(types person(X,female),

Yes, and?

I could just leave it at that couldn't I?

What would that give you?

All the daughters from here [person-relationships]

Would it?

Oh no, these aren't daughters at all (types pa No.

Why do you say not parents?

'cos I want the daughters

Yes

Could I do parent(X,X)? No, that would give me too much, it's just I want to get to here but I don't want to do it like this, parents ...

Well, it is right, you've got to use that relationship, there's two things you could do, either you could just get it to list you the name of the parent as well as giving you the name of the daughter or you could say well I know they've got a parent but I don't want to know what their name is ...

(types parent(Z,X).

Yes, that should give you what for X and what for Z now?

X will be the daughters and Z will be the parents ...

[X=jenny,Y=annie,X=jenny,Y=eric,X=zandra,Y=annie]

Oh dear I've got eric ...

eric is the parent

9. placeholder

So, right if you now say, what we just talked about, you don't want to have the name of the parent you just want the name of the daughter, what could you do?

Dash?

That's right, underscore you mean?

Yes. (types person(X,female),parent(_,X).

[X = jenny, jenny, zandra, zandra, etc.]

10. Repetition

Why do you think it gives you each of the daughters' names twice?

Because the X is there twice, don't know, it's taken jenny as a parent and a person, a female?

Yes, not really. If you just type in your previous query again where you didn't put the underscore and look what happens

(types person(X,female),parent(Z,X).

[X=jenny, Z=annie, X=jenny, Y=eric)

It gives the relationship for mothers and fathers, relationships for both, it has given jenny for both father and mother ...

8. test rule

I've got a rule in there at the end of the database that defines what a father is. It says a person is father of a child if the person is parent to that child and if that person is a male person, so if you now just get it to give you all fathers and their children

(types person(Should I start with person? Can I try, and if it's wrong ...

Yes you can, but if you wanted to test that rule, let's see if it actually correctly gives you the fathers and their children

father needs to be outside (types father(person,X).)

Why did you put person,X?

Because that's how it is there [seems to be referring to the first condition in the father-rule]

Yes but that's, the first thing it should return is the father and the second variable should return the child, the person they are father to, so if we wanted to have a list of all fathers and their children ...

It should have a capital as well, but I can still leave it as person?

Yes as long as you know what they have instead of Person, you could say Father with a capital F, and child with a capital C, then it would say Father =, Child =

(types father(Person,C).) Do you want me to tell you what I'm expecting?

Yes

I'm expecting under Person for the father to come up and then under C for the child to come up [correct]

11. Analogous rule

there you've got the father rule that you've just used, can you write the rule for mother now for that one

(types mother(Mother,Child):person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Do you think you could write a rule which defines what a brother is or could you just try to say what that rule would say. What would you actually have to say?

I'd have to think about it

If you just say it in English, what conditions does someone have to fulfil to be a brother?

Someone is your brother if they have the same parents as you.

That's right, so the first line would be modelled on this one, but how would you actually say they have the same parents?

You have to use parent1 and parent2 wouldn't you

We're not fussy here we haven't got any half brothers or half sisters here so we could actually say just if they share one parent

I don't think I could say how you could do it, I'd need to think about it for hours

Subject 13

Can I just ask a question - for norman, how come he's got, is that person and that's the parent

No.

That's the parent and that's the person

That's the parent and that's the child, so he's got 3 -

Three children

OK, so if we just leave the editor ... also you've got a printout there ...

1. person(annie, female).

Ok if you would ask person(annie,female)

Yes.

OK so if you try that -

Does it have a capital letter, yes, doesn't it because it ...

It's not a variable

So it doesn't ... (types person(annie,female). answer is yes)

2. person(X,female).

OK, if you ask it person(X,female). - what would the answer to that one be?

It would give you all the girls names down the thing

OK so if you try that -

(enters person(X,female).

[list of females]

3. parent(jenny, Z).

Similarly, if you would ask it parent(jenny,Z), what would the answer to that one be?

harry,james,kathy [correct]

(tries it)

4. parent(carol, rosie).

Ok that's fine, now if you would ask it parent(carol,rosie). - what would the answer to that one be?

Yes.

5. parent(sophie, rupert).

It's OK, if you say parent(sophie,rupert). what would the answer to that one be

No, because rupert is sophie's father.

6. parent(rosie, Y).

And if you said parent(rosie,Y).

It would tell you no because rosie is a parent not a child.

7. all daughters (conj. - TT)

Yes that's right. Now if we wanted to retrieve all the people in our database who are daughters how could we do that?

Do you want me to write a rule for it?

That one be one way to do it, yes, we could write a rule for it but you don't have to, you could just get it, retrieve them all by asking the right question

You couldn't ask it parent(X,female). , could you?

No

No it wouldn't do that would it ...

No but that is essentially the information that you want, it is, they have to have a parent and they have to be female, but how can you do that?

Could you find out all the females?

Yes?

What's the next bit? I don't know, if you asked it, if you found out all the females, would that help, and then parent I think

Yes that's right and you don't have to do it in two separate, you can do it in one question by using what, you can put both statements, it's just you have to put a comma between both parts of your question and then that's what we call a conjunction so by running a conjunction on your question we could do it, so the first part would be yes to find out who are female, so,

Is it person or ...

Yes -

And then it's next parent, big X (types person(X,female Close brackets now (types), do I put comma now?

Yes, that's right, which is the second one we want?

parent?

yes, that's right

(types parent( ) Is it then another letter (types D), then female again?

What have you got in the second place in the parent relationship?

child

Yes

So it's the same letter variable isn't it?

Yes, exactly

(types X).)

Now what will it return for X, you see for X it now returns the name of the daughter and for D?

Parent

D for parent, that's right.

[list of daughters and parents]

Oh, you find out who her mother and father are

8. test rule

Yes, that's right, OK, I've actually written the rule in there, at the end of the database that defines what a father is, it says a person is father to a child if that person is parent to that child and if the person is male. Now if you wanted it to give you all fathers and their children using that rule what would you do?

You'd type father to start with wouldn't you

Yes, so do you want to try it

(types father( ) And do you use variables for the thing?

Does that matter?

No, I could just type in two things? (types father(T,J).

[eric jenny,eric martin,eric zandra etc]

9. placeholder

OK if you wanted to ask it now give me the names of all the fathers but I don't want to know the brats names, what could you do about that?

You type father and then just put the first variable in.

Yes, and?

Oh then put a thingy in ...

Yes, so if you try that now -

(enters query father(N,_).

[eric 3 times, martin twice, norman three times etc.]

10. Repetition

Why does it give you eric three times and ...

Because he's in there three times as the father of different children

That's right, yes, so even though it doesn't return the name of the children it returns eric

11. Analogous rule

If you edit that file now and if you could write the rule for mother

So I can make an exact copy of this [father-rule]?

To some extent you can, yes - so if you just write the mother rule now based on that

So it's mother isn't it, is the first line the same? (types mother(Mother,Child):- Can you use the same bit as there or not? (adds person(Mother,female), parent(Mother,Child). So I've got to out to query it haven't I

12. New rule (TT)

Yes - but before you do that could you write another rule, can you define what a sister is

Sister is somebody who shares the same parent and is female ...

Yes that's right

So it's sister (types sister() The parent's not a variable is, they've got to have the same parents ... I don't know how to do that.

Well you can start with he easier bit, the female bit

Parent, Child?

Yes, you can do it that way

(types sister(Pa

No you want it so the header states, that one says a person is mother to a child if

Sister if it's got the same parent, sibling isn't it?

That would be a reasonable variable name to use wouldn't it, I would have thought, I mean you could just say

(types sister(sybli

You've got to use, the name that you want when you query it, first the name of the sister then the name of the person they are sister to

Name, Sibling?

Or sister, sibling

(types sister(sister,sybling):-) And then you've got to put something in..., but I don't know if that comes now

You could do the female bit first

So it's sister, female?

Yes, but you've got to address which relationship. Which relationship contains the male and female information

Name?

No, person

Yes, person, sorry - so if I type, if it's person person(name, sister?

You've already called it sister, but up here these are variables, not objects

Oh, so they've got to have capitals haven't they and this is a variable isn't it?

Yes that's right

(types person(Sister,) female's not a variable (types female)

OK, so now we've defined that sister is female and now we come to the bit you said they have to share the same parent, so exactly who, if we don't have a rule now, who has got to have the same parent

The Sibling ...

... and the Sister - yes they have to have the same parent, now how could you actually engineer it so they get assigned the same parent

Couldn't be sister sibling parents, could it?

Not really, because the first object in the parent relationship is always the parent, and the child is in the second and both sister ...

parent, you could do parent, variable for the sister, then parent, variable for sibling?

That's right, that's the way to do it

(types parent ( ) Now that's a variable isn't it (types X,Sister)), that's a variable isn't it?

Yes, we're still defining what it is so we have to make sure that always the same name is assigned to those (types),)

Right, that's one (types parent(X, Do I use the same variable?

Yes, because you want to make sure that you're using the same variable

(types Sybling to give a full rule of

sister(Sister,Sybling):- person(Sister,female), parent(X,Sister), parent(X,Sybling).)

you have to have a blank line before we save it because otherwise it won't do the last line ... Ok so if you save it and try that one out now

Subject 14

1. person(annie, female).

If you would ask it person(annie,female). what would the answer to that one be?

It would give you a list of all the females.

Ff you ask person(annie,female). - not any, you know a lower case annie, the name

Oh annie, sorry, it would just give you this thing [prompt] back.

Would it? Try, just type it in

(types person(annie,female).) Or - yes, would it be?

That's right, because you are asking have you got a female person called annie-

(RETURN)

[Yes]

2. person(X,female).

Now if you would ask person(X,female). - what would the answer to that one be

It would give you a list of all the females

Yes so if you try that one

(types person(X,female). Capital X? RETURN.

[X = annie]

RETURN

[Yes]

You should have pressed semi-colon, if you try again, just type the same query in again

(does)

[list of females]

3. parent(jenny, Z).

OK, if you would ask it parent(jenny,Z). what would the answer to that one be?

harry and james

And?

james ...

And?

Kathy

Yes that's right - Ok if you try that one -

(enters query)

[Z = harry]

RETURN

[yes]

It would have said james and kathy.

4. parent(carol, rosie).

OK if you would ask parent(carol,rosie). - what would the answer to that one be?

Yes. [correct]

5. parent(sophie, rupert).

And if you ask parent(sophie,rupert).?

No.

Why is the answer no?

Because there isn't such an entry in that [programme listing]

6. parent(rosie, Y).

and if you ask parent(rosie,Y).

No again

Because?

rosie isn't down as a parent.

7. all daughters (conj. - TT)

Now if you wanted to retrieve all the daughters from this little knowledge base, how could you do that?

You'd have to put person(X,female) - if using the colon and dash, parent(Name, just capital ...

What you want to do now is you want to put a question to the system, you don't want to write a rule, so we are not using if -

So you just use a comma

That's right, you use the comma, so you put in a conjunction, if you try that one -

(types person(X,female),parent(N Oh would you just use a capital letter there?

Yes that's fine

(types closing bracket and full stop i.e. parent(N).

If you think about it - if you look at the parent relationships how many objects has the parent relationship got?

Two.

Yes, so if you're actually addressing that fact you have to match the structure of it so you have to have two objects as well, so? You put in N for the parent, what do you put in for the child?

That should be X then ...

Yes, because you want to match that with the female, yes, so now it should return N for the parent and X for the daughter

(completes and enters query)

[X=jenny, N=annie]

8. test rule

I've put a rule in at the end of that database which defines what a father is, that rule says a person is father to a child if that person is a parent to the child and if that person is male person, so knowing that this rule is in there now, if you wanted a list of all fathers and their children what would you do?

(types parent

You want to test this rule ...

So father?

Yes.

(types father(Would you use two variables?

Yes.

(types father(F,C),

That's it really because you have to match the header of the rule so it should actually work now -

(completes and enters query)

[F = eric, C = jenny]

RETURN

If you'd pressed semi-colon it would have worked, if you do it again and see whether it does -

(enters query again)

9. placeholder

Yes, OK, now if you wanted, if you say now what I want is a list of all fathers but I don't want the names of their brats, so how could you do that?

(types father(F,_).)

Yes that's right -

(enters query)

[eric 3 times, martin twice, etc.]

10. Repetition

why does it give you eric three times, martin twice, norman three times?

Because they've got three children or two.

That's right so even if you don't ask for the names of the children it still returns it because for each child that rule becomes true.

11. Analogous rule

Fine, if you edit that file now you could probably write the rule for mother

(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Yes, OK - if you, could you also write a rule that defines what a sister is.

(types sister(Sister,

Just Person? (types sister(Sister,Person):- person(Sister,female), I don't need another rule, do I?

Well, what are the conditions for someone so that you could say that they are a sister of someone else?

That the person's female and if there's another child ...

Is that enough - what other child?

The child of the parent ...

That's right, yes, you've got to somehow engineer it so that the sister and the other child, which variable have you given it here, you've already assigned the variable name to that other child -

Person?

Yes that's right so they have the same parents

(types parent(Sister,Person)

No, if you look at the parent relationship who is first in that?

The name of the parent ...

Yes, and sister can't be a parent can she?

No ...

So, sister is a child isn't she -

Just use parent, Person,

What do you want to put in as the first variable now?

parent of the different one, then comma, Person

(types parent(Parent,Person).)

So that's made the person a child of the parent, but not the sister -

So you have to have another one?

You have to have another one, that's right

So you need a different variable for that then?

Well, you want to have the same parent now as for Person but the sister's got to be a child as well, so, you've got to make, it's very easy now

Is it?

Yes, because I've just said the sister's got to be a child of that parent as well, you've got to instantiate, you've got to connect the variable sister with the same parent as the person has got so -

So just put parent sister ... (types parent(Parent,Sister).)

OK do you want to save it and try your rule out now

(types mother(

Try sister out -

(types sister(S,P).

[jenny twice]

Is that alright?

You can still see the rule, well you said the sister's got to be female and what you've said here is that she's got to share a parent with someone and that is true, you know, so according to that rule you are a sister to yourself

right

Subject 15

1. person(annie, female).

If you would ask it person(annie,female). - what would the answer to that one be

Shall I type it in?

Yes, but if you would tell me what the answer should be -

What, what I should type in?

Well type the question in, but before you actually send it off -

(types person(annie,female).

Can you actually answer

Should it be capital?

Well this way if you actually put the objects in you are actually asking it if there is a person called annie -

Oh it would just say yes then. [correct]

Right, try that

2. person(X,female).

Now if you said person(X,female).

You'd just get lots of female names, wouldn't you? [correct]

3. parent(jenny, Z).

OK. similarly now if you would say parent(jenny,Z), what would happen then -

... you'd get harry and james and kathy [correct]

4. parent(carol, rosie).

That's right, OK, now if you would say parent(carol,rosie). - what would the answer to that one be?

Yes. [correct]

5. parent(sophie, rupert).

And if you said parent(sophie,rupert).

No.

why?

Because it's the other way round

6. parent(rosie, Y).

And if you said parent(rosie,Y).?

capital Y?

Yes, what would the answer to that be

No.

7. all daughters (conj. - TT)

Now if you wanted to persuade it to give you a list of all the daughters you've got in there what would you do about that?

Write a rule?

That's one way to do it, to write a rule to define what a daughter is, we'll come to that later but you could even at this stage, not having any rules in there just persuade it to give you a list of all the daughters by asking the right questions

You just want all the females don't you?

But not all the females are daughters ...

Ah, some females are the parents, no ...

Well if you think about in plain English for a while which conditions does someone have to fulfil to be a daughter -

... be female ...

... and?

... and have a parent

That's right, now if you think about these two bits of information, female and they have to have a parent, I mean you've got that in there haven't you?

what?

You've got those two pieces of information in there, yes? Because you've got female information and you've got -

Oh yes you can put person then the female, then the next one parent, yes? Because the comma counts as "and", doesn't it

Yes a conjunction, that's what we call that. OK try that now

We just want a variable so (types person(Z, female), parent Just two variables then

Yes there are two variables -

(types parent(Z,X).)

That that will give you mothers -

(types parent(Y,X.)

Hm ...

I should put the real things in should I

It doesn't matter

No, but it would help to remember what I'd actually put in wouldn't it?

That's right, but you've got a problem, if you think that the persons we're looking for have got to be female and a child -

Oh yes

You're not quite linking those two things, you said person(Z, female), then parent(Y,X). - but you want to link between

So we want Z at the end don't we?

That's right

Of course (retypes giving an end product of person(Z,female),parent(Y,Z).

So that should now give you, Z is what?

Z is jenny

Z is the daughter and Y is then the parent

8. test rule

Right I've actually put one rule in there that defines what a father is, saying a person is the father of a child if his is parent to that child and he's a male person so if you wanted to have a list of all fathers and their children now how would you retrieve that?

Can you put father

You are trying to match the header of the rule, so you've got two objects in there -

Two variables

So you put two variables in there, that's right, OK

(types father(Z,X).)

So Z will give you father and X is the child?

Yes.

9. placeholder

Now if you want to say I want a list of all father but don't tell me the brats names

You just want the names of the fathers?

Yes, how could you do that?

So I want, if you put it in lower case will they come up?

It's not lower case, you've got to acknowledge that there is something there even if you don't want to know, if we do something with a capital in it will always come up with the children's names, but how can you acknowledge that there is something but just say I don't want to know -

You're trying to find the fathers' names?

Yes, you still want something returned for X but not for Y

Don't know

What do you do to just hold the place for that? for an object, if you don't want to , you say I know it's there but I'll ignore it now because it's not important

Put one variable

No, can you remember underscore

Oh the line, yes

Try that one, see what happens

(types father(Z,_).

[eric,eric,eric, martin,martin, etc]

10. Repetition

Would you like to comment on that list you've got there?

Three fathers called eric

Why is that

Because he's got three children isn't it?

11. Analogous rule

Now if you edit that file you can probably write the rule for mother based on the father rule

You want mother (types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).

12. New rule (TT)

Right, could you try to write a rule which says what a sister is

I could try (types sistor(

As long as you spell it consistently it doesn't matter

So a sister is, a sister of a child isn't it

Yes or if you want to, yes I mean you could use child as the second variable or sibling if you wanted to, or you could just say sister is the sister of sibling, or person or child, whatever you want to use

(types sistor(Sistor,Child):- person(Sistor,female),

now, she's not a parent

No, she's not a parent ...

She's a person, we've said that ...

What else is she?

She's a sister ...

But we're just in the process of defining what a sister is ...

Right ...

What is she?

She's a daughter

Well if you think about it what do we have to say about sister and child - you say the sister's got to be female, but about the relationship between sister and child

The same parent

Got to have the same parent, yes ...

So put a variable

Yes indeed

(types parent(S, Still a child though isn't she?

Yes, if you put the sister in there as a child now because the second position in the parent relationship is reserved for the child, so if you put the variable sister in there that automatically makes her a child

Sister as a variable?

Now you've got a variable now for the parent to hold the parent's place, we've got to make the sister a child and you make her a child by putting her in the child's place here

So in upper case?

Upper case, yes

Just child

Child, yes

(types to produce parent(S,Child),)

I wondered what you were trying to do, but it is still not finished now, that makes the child a child but you've got to make the sister a child as well of the same parents, do you see what I mean, how would you do that now, you've got that line down

So now person, no?

You have to make the sister a child as well, that's ok. Well you want really to link those two through the same parent to make sure -

so it's got to be the same parent so you've just got to stick an S and something else

Yes, it's parent, that's right

(types parent(S,Sistor).)

You see because now you've said the sister has got to be female then you go and find a parent for the child, you find the parent for the sister who is the same OK?

OK now if you wanted to try the rule out

Subject 16

1. person(annie, female).

If you ask it person(annie,female). what would the answer to that one be?

Would it just come up yes?

Just try it

(types person(annie,female).

[yes]

2. person(X,female).

If you asked it person(X,female). - what would the answer to that one be?

It would just list all the female ones. [correct]

3. parent(jenny, Z).

Now if we look at the next set of facts where we've got the parent facts. If you say parent(jenny,Z), what would the answer to that one be

All the things that are paired with jenny - all the names. enters query (enters parent(jenny,Z).

[X = harry, james, kathy]

4. parent(carol, rosie).

What would the answer to parent(carol,rosie). be?

Is it if there's a relation in there like that it would come up yes?

Is there?

Yes there is. [correct]

5. parent(sophie, rupert).

OK and to parent(sophie,rupert). - what would the answer to that one be?

No - because it's the wrong order.

6. parent(rosie, Y).

Yes, and if you said parent(rosie,Y).

rosie, no, she's not there - so no

7. all daughters (conj. - TT)

Now if we wanted to retrieve all the daughters we've got in this little knowledge base, how could we do that?

Daughters? I don't know what does it mean by daughters

Well we haven't got a rule or anything like that in there called daughter but you could nevertheless by asking the right question get a list of all the daughters.

Are all the daughters just female names?

Yes ...

I don't really understand

Well you'd have to do, you can't -

What I'm really trying to say is I don't understand what that sentence means

That means norman is the parent of harry

OK, so we're looking for female ones there. So what would I do, is that what you're saying?

Yes

Could you not just do parent(... - is it a conjunction or something like that?

That's right

Something like if X is female ...

Is that a conjunction, what is a conjunction

Comma.

That's right.

Could I do the same thing and X is female, shall I do that

Yes, please.

(types parent Is that right?

Yes

What do I put in if I haven't got a particular name?

Well, you could just use a variable

A different variable? (types parent(X,Y), Can you do equals [=], or?

No you just string the different things together, which facts are you addressing now

Oh yes

So you just have to say which relationship you are addressing now

person(X,female) - eh, person (Y,female)

Yes, because X female would give you the mothers

I'll have a go then (types ...person(Y,female).

[X = norman, kathy, jenny, kathy etc]

So what does it return for X and Y now?

The parent is norman and the daughter's kathy.

So it returns the parent -

... for X

... and Y for the daughter, that's fine

9. placeholder

Is there a way you can just get the daughter?

That is an interesting question, I would have asked you that with the next one but we can do it now. What would you do if you said give me all the names of the daughter but I don't want to know what their parents names are. Just terminate that one. Yes you could do that you only have to change one thing about the query you have been running. Which is the crucial thing that we obviously have to change something about?

X

That's right

You don't put in the name do you - do you just put in another word without the capital letter?

No you can hold that - it would be

Oh an underscore

Yes an underscore, so if you try -

(enters parent(_,Y),person(Y,female).

[X = kathy, kathy, rosie, rosie etc.)

10. Repetition

You've got every name listed twice now. Have you any idea why that is?

No not really

If you compare it to the query you ran before and the answers you got then ...

(enters parent(X,Y),person(Y,female).

[X= norman, Y = kathy etc)

Yes, so why does it give you the name twice? If you look at the answers you've got now, jenny as a daughter here say and here

Oh it's for both parents

Yes because with that query it lists both parents actually

As separate people

8. test rule

I've put a rule in at the end of that knowledge base that defines what a father is, it says a person is father of a child if that person is a parent to that child and if that person is a male person, now you could use that rule to get a list of all fathers and their children for instance

Right.

So this is the header of the rule, how do you actually test whether it works?

How do I test it

If you just want to see if it works how do you get it to give you the fathers and their children

Could I just do something like father(norman,X)?

Yes, and then see whether the answer is true. OK try it.

(types father(norman,X).

[X = harry, james, kathy)

11. Analogous rule

Now if you edit that file could you write a rule that defines what a mother is based on this one?

Mother person child, person child and person female

Yes if you just go and do it

(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Yes it looks fine. Now slightly more difficult, could you also write a rule that defines what a brother is?

With what we've got already or just

No you'd have to write a new rule. Sorry perhaps I didn't quite understand you, what did you mean with what we've got already?

Well there's been no mention of brother or sister has there? I don't know where to begin, brother is a child, would that fit, as opposed to parent ...

You mean the first one. How would you start?

brother ...

And then what comes after the bracket?

Don't know

Well this one says a person, somebody, well whether I put Mother here or X then X will it doesn't matter, so X is mother to a child if, and the same you would have to say brother is somebody's brother

Is child right

Yes or whatever you call it, you can use X and Y if you find that easier ...

brother(X,Child) if, I don't know, you use mother and father do you?

Yes you can use the output from those rules, we're not going to be fussy, we say if one of them we'll be happy

Don't know, I'll have to think about it, if, do you say if they are child of the mother and child of the father, the same one?

Who's got to be child of what?

Children of the same parent, how about X child if person, male, and has same parent ...

Just start off say, there are two conditions somebody has to meet in order to be a brother, the first thing is?

Male

Yes he's got to be male, and?

Got to have the same parent

Same parent as who

as his brother - or sibling

yes so perhaps you find it easier if you don't say child but say Sibling instead so we're sure what the variables are standing for

Right ...

So you could say for instance brother(Brother,Sibling), yes perhaps you would find it clearer if you kept in mind exactly what they stand

If brother person whatever it was

person brother, male, yes take it as far as that perhaps you'll see, if you type those first two lines in, and then we'll think about the rest

(types brother(Brother,Sibling):- What was it Sibling, brother, male, now what did you say?

brother's got to be male

brother's got to be male

So, just the same as mother's got to be female

person?

Yes, because that's what we've got in the first one, we've got the gender information

(types person(Brother,male) parent(mother,Brother)

Yes that's right that is the next line

(types parent(Brother,

No - the other way round because the parent always stands in the first place, the brother is a child isn't he

So it could be either Mother or Father (types parent(Mother,Brother).

Ah that's not quite all -

(subject reads rule aloud) I don't know

Well they're still not sharing the parent, you've got to make clear that the Sibling has got to be a child of the Mother as well

Oh so Sibling, and parent(Mother,Sibling)

That's right, yes

(types ..., parent(Mother,Sibling).)

Yes that should work shouldn't it

(types brother(harry,X).)

OK, what should the answer to that one now be?

james
And?
I think that's all (RETURN)
[X = harry]
Oh I see
[james and kathy, then harry, james, kathy again]
Why does kathy come up?
well kathy should give us the least headache because she is actually his sister, so she is a sibling to him, he is brother to her
Oh right yes, I was thinking the other way round

Subject 17

1. person(annie, female).
OK so if we would ask it person(annie,female)
(types person(annie,female).)
What will it answer to that one?
It will just say yes. [correct]
2. person(X,female).
If you said person(X,female).
(types person(X,female).)
It will list all the names of females. [correct]
3. parent(jenny, Z).
Similarly, if you said parent(jenny,Z).
(types parent(jenny,Z).) It would give harry, james and kathy. [correct]
4. parent(carol, rosie).
If you said parent(carol,rosie). - what would the answer to that one be?
Yes. [correct]
5. parent(sophie, rupert).
And to parent(sophie,rupert)?
No.
Why would the answer be no?
Because they're the other way round.
6. parent(rosie, X).
And if you said parent(rosie,Y).
No, because she's not in there
She's not ...
In the first position
7. all daughters (conj. - TT)
OK, now, if we wanted to retrieve all the persons in our database that are daughters how could we do that?
Do you type person(X,female),?
and
parent(
You're on the right way, if you think about it for a moment ...
You don't need to know the name of the parent?
I don't mind, honestly you could do it, if it easier, with getting the parent, do that first.
Do you want me to do it? (types person(X,female),parent(Y,X).)
So what will that give us or what will that return for X and for Y
It should go through it and find all the ones that are female and then all the ones that appear in the parent as a daughter
Yes, as a child, and for Y it will give
The parent
yes, it goes, that's right, OK, right
[list of parents and daughters]
9. placeholder
OK that's fine, now if as you just said, you didn't want the name of the parent listed, what would you do about that?
Can you just put it in with a small letter
No, not a small letter but you've got to hold the place somehow, if you don't want the name of the parent -
Can you just put an underscore in?
That's right, that's the way you would do it, so if you just try that
(types person(X,female),parent(_,X).
[X = list of daughters]
10. Repetition
Why is it giving you all of them twice?

Because they're down twice with two different parents

8. test rule

What I did at the end of the database, I actually put in a rule that defines what a father is and I said a person is a father of a child if that person is the parent of the child and that person is also male yes? Now if you wanted a list of all the fathers and their children, according to the way that rule is written, what would you type in?

(types father(X,S).

[X = eric , S = jenny)

Mmmmm

Why are you saying mm

Because I asked it to give the child as well and you only wanted

no that doesn't matter

11. Analogous rule

Now if you edit the file could you write the rule for what a mother is modelled on the father rule

(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Yes that's right, now could you also work out the rule that would define what a sister is

(types sister(Sister,

What are you going to call it?

What do you want me to call it?

Well, what do you think you might call it?

Does it matter?

No I just wondered - it only matters in the sense that if you write, yes that would be sensible, sibling, wouldn't it, you can call it whatever you want it's only so it makes sense so when you look at it you know what it means ...

(continues typing sister(Sister,Sibling):person(Sister,female),

Are you saying that the sister's got to be female? Now what is the other condition that she's got to -

... have the same parent

As what exactly? If you look at the beginning of what you've written -

... as the Sibling

As the sibling, that's right, so how do you do that, how can you make it realise that you want it to have the same parent?

If you put the same variable in twice, will it look at the same thing?

I would think so, do you mean for the parent?

Yes

Yes, that's the way to do it. Now you've solved the difficult bit ...

(types parent(X,Sister), parent(X,Sibling).)

Yes that's fine, give it a blank line and if you save it now and try it out

Subject 19

1. person(annie, female).

now if you asked the program this first question here, to the query you asked person, annie, female, what do you think that will return? What will the system tell you?

that she has 3 children ... would it?

try it, see what is says

(enters query)

[yes]

so all it has given you is the answer yes, can you see why that is? if you look at the program again ...

all it's answering is yes, there is someone called annie and she is a person

2. person(X,female).

ok, so if we put in a query person, open brackets, big X, comma, female, what will the system then tell us?

well it could tell us all the people who are female but that's only if it knows what X is (starts entering query)

right shall we try it? What do you mean, if it knows what X is

Well I mean if it doesn't have any, if it can't relate X to anything, then surely like it will just say hang on here ... what are you up to? It will rebel. (types "person(x,)"

but if you put big x in

You said earlier you think this will come back and say, it will give us all the people who are

yes, I don't know, or it could rebel, I don't know (enters query)

[X = annie -->]

How come it comes up with annie?

That's what I want you to tell me, why do you think it's going to miss annie? ... Or more importantly when you typed in the small x, and I said go back and give it a big X what difference should it make?

I don't know, obviously that refers to something different than a little x would

Could you type it in again (types query in again), well in fact what that has done because it is a valid capital letter, it tells it this is a variable, so it will look in the knowledge base to find out what X could be to make that true ...

why does it necessarily pick annie?

Well what else could it pick?

it could pick anything couldn't it jenny or -

well why do you think it's picked annie then?

because it's the first one?

so how do we get the others, jenny or whatever, see if you pressed return here you'd actually get annie

(presses RETURN)

[[X = annie -->]

How would you get jenny?

mm, I don't know, x plus 1?

If you press the semi-colon, right,

(does)

So what do you think it will give us next?

zandra, carol, if I do the same thing (does)

and then if you come down to

cathy, then there's rosie and sophie

right what do you think it will do afterwards? after sophie

oh it might go back to the beginning (continues)

[no]

no ... oh, it's rebelled

3. parent(jenny, X).

So if you look at the other one now, we've done this person and we look at parent, jenny, comma, big X

It will probably have harry

harry? right, any others

well if you do that semi-colon it will probably have james, then cathy

ok, we'll do that then

(enters query)

[harry, james, kathy]

and now what will it do?

say no

[no]

4. parent(carol, rosie).

so if you put in parent, forget about the variables now and put in parent, carol, rosie, what will that say?

it will say yes

is it, it's in the knowledge base?

yes

ok

5. parent(sophie, rupert).

How about parent, sophie, rupert?

It will say no.

Shall we try that?

(does, predicted result)

8. Test rule

So if we now asked father, X, Y, what do you think is the first answer we will get?

norman and harry?

right ok

(enters query)

[X = norman, Y = harry]

norman and harry, ok, who will be the next one we find?

norman, james (correct) norman, kathy (correct)

And the one after that? then what would be next?

martin, peter (correct)

11. Analogous rule

martin, peter, ok, that works, so could you write the rule for mother

(edit files) So you want me to do mother ...

(types mother(Mother,Child):- parent(Mother, Child), parent(Mother, female).)

So what this rule is saying is that someone is the mother of a child if they are parent of that child -

... and female (corrects second line to read person)

12. New rule (TT)

Ok could you write the rule for, from that knowledge base, who is someone's brother, just call it brother

(types brother(Brother, - hesitates)

Any word would do as long as it begins with a capital letter -

(brother(Brother,Brat):-)

So someone is someone else's brother if -

First if they are male, and then if they've got the same parents. I want to say if person, Brat, male, then I'd have to say I could say person(Brat, male) (types that, thinks) ...

And they share the same parents

parent, Brother, Brat? No, Brother ....

You are trying to say parent of the brother is something, and something of the Brat and those two are the same thing

Sorry what did you say?

Parent of the brother something, and parent of the brat is something, and those 2 somethings must be the same

I don't know

(types end of rule to produce brother(Brother, Brat):- person(Brat,male). parent(Brother,Someone),

Can you write the next line?

parent(Brat,Someone) (types)

So if we go back and try a query on this ... now look at the knowledge base and working out who's got a brother, how would you ask who has a brother?

(thinks) ok, harry has a brother so

How would you find out?

brother, brackets, harry (types)

You will need another -

ok X what will the answer be

(enters)

[no]

harry doesn't have a brother

he does have a brother

He should have a brother (explains that he got variables confused).

Subject 20

1. person(annie, female).

First question would be if you type in person(annie,female) what should the program answer?

It would answer yes.

2. person(X,female).

If you typed in person(X, female) what would the answer to that one be?

annie

Just annie?

person, capital X, female? Yes. Oh no it would be all of the females.

Ok so if you try that

(enters query and gets predicted result.)

3. parent(jenny, Z).

Now if we look at the next set of relationships, the parent relationships, we've got the parent first and then the name of the parent and then the name of the child. So if you type in parent(jenny,Z) - what should the answer to that be?

harry,james, and kathy (enters query and gets predicted result.)

4. parent(carol, rosie).

If you type parent(carol,rosie). what would the answer to that one be?

yes

5. parent(sophie, rupert).

And if you type in parent(sophie, rupert).

No.

Why

Because sophie is, what did you say? parent (sophie, rupert). It is the other way round, sophie is rupert's child.

6. child(rosie, X).

If you typed in parent(rosie,Y).

It would be no, because rosie is the child not the parent. [correct]

7. all daughters (conj. - TT)

If you wanted your program to retrieve all the people who are daughters, how could you do that?

Just the daughters? Do these link up at all, these two sets?

Yes they're in the same program.

Well person(X,female) then - hang on I'll start with that shall I? (types person(X,female) - I'm deciding whether to put person or parent next, what was the question again - all the daughters that are female?

You want to retrieve all people who are daughters, so you've stated that.

I've stated that person ...

... that the daughter has to be female, so what is the second condition they have to meet in order that ...

So you put parent(X,female) yes?

Not really, what have you got in those parent relationships?

You've got - oh so you can just put X,Y, no?

X Y, you put in 2 variables, that is correct

Tow capitals ...

Yes you put in capitals, but who has got to be female? the daughter or the parent?

The daughter

So, where does the daughter stand in the parent relationship? Where is the child

second, oh X (adds to query to give: person(X,female), person(Y,X), RETURN

[no]

You had a slight problem, you typed in the wrong relationship name in the second

(enters person(X,female),parent(Y,X).

[X=jenny, Y=annie]

So that gives what now?

X is the female daughter and Y is the parent

That's right so that says jenny is the daughter of annie and if you go on you'll get a few more combinations, yes jenny is the daughter of eric (etc)

9. placeholder

If you were going to run the same query now but you were going to say I only want to know the people who are daughters, I don't mind who their parent, what the name of the parent is, could you do that

Yes, start off the same way (types person(X,female), parent(You don't mind who the parent is?

No you've got to refer to the parent relationship in order to establish they are a parent, but if you don't want the system to return their names - you just want the names of the daughters.

Well it doesn't matter if it returns their names

But if you didn't want to, what would you have to do, can you remember?

Just put a dash or something

Underscore, so if you do that

(enters: person(X,female),parent(_,X).)

[X = jenny, X = jenny, X = zandra, X = zandra, etc.]

10. Repetition

Have you got any idea, you know it says X jenny,zandra,kathy, why does it always say the name twice?

Because there's two statements

Which two statements, why is it? Why do they get returned twice

I was expecting it really, but as you're asking for who is female, I don't know

It's because ...

... there are two lines

No it's got something to do with the content of the database

Oh yes, each has got both the parents, each child has two parents

That's right and that's why it returns them twice, because they are daughter to like, jenny is daughter to two people, she is daughter to annie and to eric and so on ...

8. test rule

There is a rule towards the end of that file which defines what a father is, the rule says father(person,child) if - can you interpret that rule

If, let's have a look, child, you're trying to find person, if the person is the child of the parent and the person is male

Yes so you've got the first variable here says

The child is, the person is the child of the father if ...

No that actually says a person or a person X or whatever is a father to a child if ... if that person is the parent of the child and the person is male

Yes that's right, ok so this rule is already in that program, so if you wanted it to give you a list of all fathers and their children, what would you do?

(types father(P,C).

[list of fathers and their children]

11. Analogous rule

Yes, so it returns all those, that's fine, if you edit the program now and put in a similar rule to define what a mother is.

(types mother(Mother,Child):- person(Mother,female), parent(Mother,Child).)

12. New rule (TT)

Right so you are now saying a person, anyone in our database is the mother of a child, if this person is female and is a parent of the child, OK now if you would say in normal English if someone is a brother of somebody else, what conditions have to me if someone is a brother of somebody else?

they have to be male and they have to be a sister ??

No you can also be a brother to a male sibling can't you?

Yes, sorry, and they have to be, no they wouldn't necessarily, they have to be male, they have to be a son, they have to be a child and, you need something else do you because they have to be a

There has to be another person, yes but what about the brother and that other person

They also must be a child

Yes, of what, crucial point

The parent.

What parent, what is it about the parent

They have to have two ...

They've got to share at least one parent haven't they, I mean the brother, the person they are brother to

So if you would try to write that rule now .. give it a blank line first

(starts to type brother(brother so we're trying to find out who all the brothers are?)

You write a rule that defines who a brother is, you tell the system now what a brother is, if you don't give it a rule, it won't know, you're saying, I don't mind which variable names you use but

Oh I forgot about the capitals (types brother(Brother, Person):-

Ok first thing the brother's got to be male

(changes header to person(Brother, Male)

No - I think the variable name you had before was better.

Person? (changes it back)

Ok now the first condition is the brother's got to be male ...

(types person(Brother, male) I don't know ...

Well you've got facts about parents in there haven't you?

(types parent(

So who's first in the bracket?

The parent and then the ... the child, so (types parent(Parent,Brother),

and, the last line?

(types parent(Parent,Person).) [correct]

MacWrite Study

Subject 1

The file trial click on it and then choose open from the file menu.
(Moves cursor over trial icon.)
We have to click on it.
(Does.)
And now to file [the menu file].
Where?
It's at the top, there's a menu bar.
(Pops up menu.) And now to open? (Selects open.)
[Starts loading the file.]
Ah. . . . [File displayed].
I go to edit I suppose. (Moves pointer over Edit, reads edit menu), can't undo can't paste . . . (starts reading instructions).

1. Save file

(Moves pointer to File), and save. . . . Selects save.

2. Change margins

The left one to 1.5, the right one to 6.5. . . .
Must be in the menus, (and starts looking in the manual).
Must be style, (moves pointer, reads menu) No. Format (moves pointer, reads menu). Align left? (Highlights, selects.)
[Screen redrawn.]
Go back up.
(Pops up the Format menu again, but doesn't select. Reads instructions again.)
(Reads manual.)
Might be under Edit, (looks at Edit, the Format, then File menus.)
It's in Format.
Display headers.
No, it's on top of the file, you have to see the ruler.
(Scrolls text to display ruler. Points at the spacing icons.) That one?
No, those? (Points to them in the manual.) There's one on the right and one on the left. The little black one. (looks in the manual again) That's the left margin marker, that's the right margin marker. They want moving.
(Clicks on and starts dragging the indent marker.)
To 1.5.
(Drags to 1.5 and lets go.) 6.5? (Grabs the right margin marker and drags it to 6.5.)
[Doesn't seem to notice the difference between indent and margin marker.]
[Text indented at 1.5, right margin at 6.5.]
That seems to have worked.
[Doesn't notice that the left margin is still at zero.]

3. Insert word

(Moves pointer to insertion point. Clicks to position cursor. Inserts word.)

4. Delete characters

(Moves pointer. Clicks, to position cursor, and deletes: moves pointer to next word, presses delete.)
[Thereby deleting character in previous word.]
Oops!
You have to click it.

5. Delete words

(Positions cursor at end of word. Deletes by back-spacing.) This is like on an electric typewriter, you have to hold it down.

6. Delete line

There must be a quicker way to delete a whole line. (Looks in the Edit menus, then Search menu.)
(Looks in the manual.)
(Starts looking over co-experimenter' shoulder.) It's not under how to select some text is it?
Maybe (Reads.) It says you can click it at one end, hold it down, and drag it across.
(He tries. Wavers a bit, but manages to highlight the line in the first attempt.) I've blocked it, and now?
(Reads.) Highlight, then choose cut from the Edit menu.
(Does, line deleted.) Ah!

7. Double spacing

I think that is at the top again.

(Scrolls up and inspects the ruler. Points at the 6 lines/inch.) Presumably this is an instruction here about the spacing.
[6 lines/inch as a textual message, connection to the spacing icons is not noticed. Mixed representation, differences cannot be represented.]
No, it's the boxes.
(Moves it into the 6 lines/inch box.)
No, the other boxes.
(Inspects the boxes and selects double spacing.)
[The text is displayed as double-spaced.]

8. Single spacing

(Moves to the ruler, points at the 1.5 spacing box.) Is it that one.
(Looks in the manual.) No, the left one.
(Selects.)

9. Centre paragraph

Do I have to change the margins again?
No. Centre it.
(Points to the centre box.) Is it this one? Is that centralised text?
(Checks in the manual.) Yes. But it's only for a . . . piece of text.
So we have to underline it first. [Means highlight.] (Moves to paragraph. Highlight it.) That was easy. (Returns to ruler, and scrolls upwards, and selects Centre icon.) [Entire document is now centred.] Oh! (Looks confused. Scrolls down, selected paragraph is still highlighted.) It's not like you have to click the centralised first, and then have to say what you want to centre? [Cannot work out what to do.]
(experimenter points them to instruction, which says that a new ruler has to be inserted.)
(Tries to undo the centring first, selects single-spacing icon instead of the left-align icon.)
No, it's that one. [Left-align icon.]
(Selects return to paragraph to be centred. Selects insert ruler from the Format menu.) [Ruler inserted] Oh! I see. (Selects centring icon.) [Text below ruler is centred, but highlighted paragraph has disappeared.] (Selects hide rulers from the Format menu. The ruler disappears but the text doesn't reappear.) We've lost it.

10. Underline word, embolden word

(Points to the Style menu.) Do you think that's in Style then? [Is about to select underline.]
But we haven't actually told it what to underline yet.
Well the last time we did that we lost it. (Highlights word, selects boldface. Highlights another word and underlines it.

11. Cut and paste

(Reads instructions.) Cutting and pasting is it? (Clicks on Edit menu. Cut is greyed. Tries to select Cut.) How do you get that?
(Reads manual.) As with most editing you have to select the piece of text before you can cut it.
(Marks paragraph.) So cut. (Selects Cut from Edit menu. Moves pointer to the beginning of the text and clicks.)
And paste it now.
(Selects Paste and the paragraph is inserted.) It works!

12. Print

(Points at the File menu.) Ah! There it is. (Selects Print. Reads the print options.) Lets have best. (Tries to select best.)
It's on that already.
Oh! I see. Do I just click OK. (Clicks on OK and the document is printed.) It works!

13. Quit document

(Click at the File menu. Tries to select New, but New and Open are both greyed. Nothing happens.) No, that didn't work. I thought it would come up with the other one first, or do you have to quit this one? (Isn't sure whether to choose Quit or Close. Selects Quit. Reads dialogue box.) Do you we want to save the changes.
No.

14. Create a document

MacWrite options? Empty folder? (Clicks on the empty folder. Selects File menu and Open from the File menu. The folder window is displayed.) Oh no! That is wrong. I want a new document. (Closes the folder. Selects MacWrite and opened from the File menu. A new file is displayed.) This could be it. (Starts typing text.)

15. Save a new document

(Looks at the File menu and highlights Save.)
No. Must be Save As because we haven't given it a name.
(Selects Save As. Types the document name, hesitates, clicks on Save. The document is saved.)

Subject 2

1. Save file

(Goes straight to the File menu and selects Save.)

2. Change margins

Format. (Clicks on Format and reads the menu.) Set page? Insert ruler?

(Looking through the manual.) Yes, why not?

(Inserts a ruler where the cursor was.)

Can you use that to set that margins? Maybe we should go back to the top.

(Clicks on Format. Selects Insert Ruler and inserts a second ruler.) I've got another one. (Selects Hide Rulers. Can't work out how to scroll the text to see the top of the document again. Selects Insert Ruler again. A third ruler is inserted.)

How do you get rid of them?

(Clicks on a ruler and highlights it. Clicks several times. Goes to Format and selects Hide Rulers again.)

We should move the text up again because we can't see what we're supposed to do.

(Goes back to Format again.) Is that in there? (Reads Format menu.) Set page? (Starts leafing through the other menus, and can't work out how to return to the top.)

What about the scroll bars? (Points to the screen.) Okay so the left one to 1.5 and the right one to 6.5. (Reads the manual.) You need to get the ruler back to do that.

(Clicks Format menu again and selects Show Ruler.) 1.5 and 6.5? (Looks at the ruler but cannot work it out.)

(Reads the manual again.) You have to drag those things there across.

What, grab and drag it? (Moves the paragraph indent marker to 1.5.) What, do we drag it to 6.5 and then come back here? (Lets the button go, and the paragraph indent is set to 1.5.)

Why has it done half of it? [Only the first line of each paragraph.]

Selects Hide Rulers and then Show Rulers again. (Grabs the right margin marker and moves it to 6.5. Fiddles about but cannot find it.)

(Points to the left margin marker which is still at 0.) How about this one here?

(Grabs the left margin marker and drags it to 1.4.) What did I do? (Starts fiddling with the margin markers and sets it back to 8. Also, moves the window to the right by mistake.)

Where has the scroll bar gone?

(Looks around the menus.)

You have to move it [the window] back again.

Set page? (Selects Set Page from the Format menu. A dialogue box appears and he realises that it is the wrong command. (Clicks around the ruler and selects 6 lines per inch.)

[They can't work out to move the window and so the experimenter re-positions the window so that the scroll bar is visible.]

3. Insert word

(Tries to position the cursor by dragging the pointer [and thereby highlighting].)

Well you have to click it there.

(Clicks the cursor and types in the missing word.)

4. Delete characters

Is that in spelling? (Clicks on the spelling menu.) Checks spelling?

Don't think so. (Starts reading the manual.)

(Fiddles around, then presses the delete key.) Ah! That worked. (Tries to position the cursor by dragging again. Highlights several words and presses delete, thereby deleting several words.)

What happened?

I don't know. I'll put them back in.

[Struggles to position cursor.]

5. Delete words

Maybe we should use the Cut command from the Edit menu.

(Brings up the Edit menu, but Cut is greyed.)

You have to select the text first. If you come down and select the text. . . . You have to drag the black box over these words.

(Marks a block of text and selects Cut.)

6. Delete line

(Marks line and selects Cut.)

7. Double spacing

What does double spacing mean.

Well it means you have a blank line between every line of text.

Must be in Format musn't it? (Reads the menu.)

(Reads the manual.)

Do we have to put another ruler in?

Where was the cursor before you did it last time?

Do we have to take it to the beginning and insert it there.

Do you want the double spacing for all of it or just that? (Points at the paragraph. Decides for the whole thing. In which case we should take it to the top again.)

(Takes the cursor back to the top. Looks at the ruler. Looks at the manual.) Double space box? (Points at the double space icon and selects it.)

8. Single spacing

(Returns to the top of the page and selects single-space icon.)

9. Centre paragraph

(Points at ruler in paragraph which he has previously inserted.) What is that ruler doing there? (Selects Hide Rulers.) Where should we put the cursor in to put the ruler? (Highlights the paragraph to be centred.)

I'm not sure what happened to those rulers that were around before and whether it matters. We've got all different margins. Was that all the ones [rulers] we put in.

Yes, inadvertently

Maybe we get a problem now if we try and centre it. Try it anyway.

Shall I leave it highlighted like that? (Selects Insert Ruler.) [The paragraph which he had highlighted has gone.] Here you go, that has solved that problem didn't it?

10. Underline word, embolden word

(Clicks on the Style menu.) Bold? (Selects Bold, but since no text was highlighted nothing happens.)

You have to mark it first.

Yes, but last time we did that it deleted it. It ate it [laughs]. (Marks paragraph and selects Bold. Marks a word and underlines it.)

11. Cut and paste

(Marks paragraph.) If I cut it . . . (Selects Cut. Positions cursor. Pastes.)

12. Print

(File menu, selects Print.) Quality best yes. (Tries to select.)

The ones that have got the dot in are already selected.

(Selects OK, and the document is printed.)

13. Quit document

(Selects Quit from menu.)

14. Create a document

(Selects File menu and New Folder. Can't work out the problem.)

[Experimenter tells him to highlight MacWrite and select Open from the File menu.]

(Click around with the pointer. Highlights the ruler.) What have I done? I did that last time.

Experimenter explains that he has selected the ruler]

(Sets the left margin to 20 and the right margin to 60. Selects Hide Ruler. Types some text in.)

15. Save a new document

(Selects Save from the File menu.) Save current document as? (Types file name and selects Save.)

Subject 3

1. Save file

(Clicks on File and selects Save.)

2. Change margins

Change the left margin to 1.5. We have to look in the book to find out how to do that one.

(Reads the manual.)

Is that the ruler?

Must be at the top of the page. You have to move up a bit.

How do I get there?

There is this scroll bar on the side.

Where is it? Do you go to File?

On the right there is a scroll bar. Just click on that.

(Points to the page symbol on the scroll bar.) This one? (Clicks.) That didn't work. (Clicks again and drags the page upwards a little. The bottom of the ruler appears.) Oh! I see. (Drags the page symbol to the top.) Oh! I see. What do I have to do now? Change the left margin to 1.5?

And the right one to 6.5.

(Studies the symbols on the ruler.) Well, it hasn't written out . . . 6 lines to an inch? What does that mean? 2 inches and 3 bits of an inch. Does it say where, which bit to change it?

(Reads the manual.) No it doesn't. It just says ruler for margins, line spacing, and text alignment.

So I push on the tab do I? (Clicks on the ruler which becomes highlighted.)

Click again.

[Ruler stays highlighted.]

Move it.

Where? (She's trying to drag the left margin marker.) Does it really have adjustable settings for margins?

Yes, you've got to move one of them to 1.5 and the other one to 6.5.

Yes, but I don't know where to put the cursor.

On the tab-margin marker

(She points to the paragraph indent marker and starts dragging it.) That one?

No. There's another one.

(She drags the paragraph indent marker off.)

There.

That doesn't do anything. [Because the ruler is highlighted.]

[Experimenter intervenes and tells her to remove highlighting.]

That one there? (Tries to drag margin marker, and selects the ruler again. De-selects, the same problem again.)

Hold it down as you drag it. Click and hold it down while you move.

Up or down?

Across you've got to drag it to 1.5.

(Drags the paragraph indent marker, first line of every paragraph is indented.)

Do the same to the other one on the right hand side.

(Drags the right hand margin marker to 6.5.)

Yippee.

No problem. I ought to move the margin up a bit. [She means she ought to move the text up.]

3. Insert word

(Moves the pointer to the insertion point.) What happens if I push this?

Okay.

(Clicks to insert the cursor at the insertion point.) Oh yes. That means I can insert a cursor. (Types word.) How do I get rid of this cursor?

Click somewhere else I suppose.

(Does.)

4. Delete characters

What do you have to do now?

Put the cursor there again . . . (Presses DELETE to delete a character. Positions cursor in front of the next character to be deleted.) That's not quite the right place is it? (Positions the cursor behind the letter. Pushes DELETE.

5. Delete words

It says you can mark the words with the mouse and delete them.

Mark it with mouse . . . Shall I put one [marker] at the beginning and one [marker] at the end? (Positions the cursor at the beginning of the word. Moves the pointer to the end of the word. Then realises that clicking will move the cursor to the end of the word.) I don't know how . . . How do you mark it?

(Reads the manual.) [Reads] "Position the cursor at the beginning of the text, drag across to the end, then release the mouse button."

(Carefully marks one word.) Wow. [Wonderment.] If I press the BACKSPACE it will it just go away? (Pushes DELETE.) Oh, that's good. (Marks other superfluous words and deletes them.)

6. Delete line

(Marks line and pushes DELETE.)

7. Double spacing

Double spacing, oh dear! (Looks expectantly at the co-experimenter.)

That's some more do do with formatting.

So do we change the format at the top. (Moves the pointer to Format.) Where's the format, in here? (Reads the menu.)

It's not there.

Style? (Reads the Style menu.) No. I don't know what Font means. (Reads the Font menu. Looks at the Edit menu.)

(Reads the manual.) No, it's the ruler.

(Reads over his shoulder.) Double space bar, it's the third one [of the icons]. Shall I get this thingy down again?

You have to go to the top again. It's the scroll bar.

Shall I push the 1 again [page icon on the scroll bar].

Just use the arrow.

(Does.) Right. (Looks at the ruler.) Double space bar is the right one. (Hovers with the pointer over the icon.)

Just see what happens.

(Selects, and the text is double spaced.)

8. Single spacing

(Returns to the top.) Which one is single-spacing? Is it the 6 lines per inch?

No.

Ah, it's that one. (Clicks the single space icon.)

9. Centre paragraph

(Clicks on the Format menu.) Insert ruler. (Highlights Insert ruler.)

Wait, how does it know where to insert it? (Reads the manual.) What do you think?

Um, I have to move the cursor down there. (Still holding the menu.) But, I can't do that at the same time. I have to click that because I can't move the mouse.

You can move off and let it go.

(Does.) So we put the cursor down here. (Clicks at the beginning of the paragraph.) Do I highlight this to the end?

Don't think so. You want to insert the ruler above the paragraph, so you just have to put the cursor above.

Where?

Between that and the paragraph above.

(Does. Selects Format.) We'll see what it does. (Selects Insert ruler.) What do we do now?

(Reads the manual.) Well there is alignment. It is one of those little . . . [alignment icons].

(Looks at the ruler.) Which one is it the second one here? (Clicks on centre icon.) It's done the whole lot. [Text below ruler.] So I have to put that back again, have I?

You have got to put the rest back.

Do I move the cursor somewhere down here? (Positions the cursor below the first centred paragraph.) Align left, that's what it was before wasn't it? (Selects align left icon.) [Everything is left aligned now.] I've done the lot. I have to put this one [paragraph] back to centre. Where do I put the cursor? (Puts the cursor below the ruler.) [Doesn't have to position the cursor at all.] (Selects centre icon, the text is centred.) So I want to go back to Format again do I? Oh no . . .

You have to move the cursor down first.

(Positions cursor.) So to get rid of it I have to insert a new ruler. (Selects Insert ruler from the Format menu, selects left align icon.) That's all right, how to I get rid of those [rulers] now? Hide them (laughs). (Moves the text up.) Could you delete them?

[Experimenter tells her there is a Hide rulers command on the Format menu.]

Hide rulers . . . (is about to select it). Do I have to put the cursor first?

10. Underline word, embolden word

(Clicks on the Style menu.) There's the Underline and Bold. I have to put the cursor first. (Highlights a word.) Now I go to Style. (Selects Bold.) That didn't do anything. [Can't see the difference because the text is still highlighted.]

It's done it if you click somewhere else . . .

(Does.) Oh, I see. Now to underline. (Clicks the cursor in front of a word and selects Underline.)

That didn't do anything.

Oh, I didn't drag it did I? (Highlights a word and selects Underline.)

11. Cut and paste

So that is edit is it?

Have a look.

(Reads the Edit menu.) There's Cut, and Paste. (Tries to highlight paragraph.) It didn't have Cut in there did it? [Cut was greyed.]

Oh, it did.

(Highlights paragraph.)

What do you do now?

I want to cut it. (Selects Cut from the Edit menu.) Now I want to put it somewhere.

Yes, on top of the page.

(Moves to the beginning of the document.) Will it insert, or will it write over everything?

Presumably it will insert if you paste it in.

Don't you have to insert a new line or something? (Positions the cursor and selects Paste.) Oh well, that has worked.

12. Print

How do I print this? File, or Edit, or Search. (Looks at the File menu.) Oh yes, it's down there. (Selects Print. Reads the dialogue box.) Shouldn't I put the cursor at the beginning?

Well it says there the number of pages you want to print.

I don't know how many I've done.

It's currently on all.

So I don't have to do anything? So OK, yes?

Yes.

Pushes OK. [Printing status box appears.] Do I push Continue [Which is greyed]?

I think you just leave it.

[Document printed.]

13. Quit document

Now I want to leave it. (Clicks at the Edit menu.) I don't want to save it so I just close it. Save changes? No.

14. Create a document

(Selects Open document, a list of files is displayed.) I want a new one. (Chooses a file in the listing which has New in its name.)

You've highlighted a current file name. You have to click somewhere else or you'll open it.

(Hesitates, hovers with the pointer over the list.) How about "Sample Memo". (Opens.) That's not really what I wanted is it. (Selects Quit.) I can't see a space for me opening a file on that list. Do I want MacWrite.

(Highlights MacWrite.) Was it under File. (Reads the menu, selects Open, and gets an untitled document. Types some text.

15. Save a new document

(Gets the File menu and highlights Save.) What's "a s"? Oh, Save as. Do I do that or just save it? Do I have to give it a name? Presumably it wants a title. (Selects Save. The save dialogue box appears.) I'll call it "Fiona's comments". Return? (The document is saved.) That's it is it? (Selects Quit from the File menu.)

Subject 4

1. Save file

(Selects Save from the File menu.)

2. Change margins

I suppose that is format is it? (Displays the Format menu.) Align left?

No, I think that is different from changing margins. (Reads the manual.) You have to move the markers on the ruler.

Where is it [the ruler]?

You have to go to the top of the page. The margin markers are there and there (points to the ruler in the manual).

(Clicks on the paragraph indent marker.)

You have to move it to 1.5. Drag the marker.

(Grabs the paragraph indent marker, and drags it to 1.5. Moves the right hand margin marker to 6.5.) [Does not notice only the first line of every paragraph set to 1.5.]

3. Insert word

(Moves the pointer to the text insertion point.) And now you just . . .

Click it.

Ah. (Enters text.) Just click it off?

4. Delete characters

Now you have to delete a few letters. What do you think you have to do?

Position the cursor and press delete I suppose. (Positions the cursor in front of the character to be deleted and presses DELETE.) Type it in again. (Does. Positions cursor at the end of word and deletes other characters.)

5. Delete words

(Tries to mark word by clicking cursor at beginning and end of word.) That doesn't work.

(Reads the manual.) You can drag the mouse or use the SHIFT and ARROW keys together to mark a word.

(Marks words with the mouse and presses DELETE.)

6. Delete line

(Marks the line with the mouse and presses DELETE.)

7. Double spacing

What do you think?

What does double spacing mean?

Well you have a blank line between each line of text.

Oh, Format I suppose. (Clicks on Format and reads the menu.) No. I would have thought you could do it with the mouse. Perhaps there are other commands at the top. (Moves up to display the ruler. Points at the spacing and alignment icons.) Perhaps one of these.

One of them is double-spacing.

(Points at the double-space icon.) That one there.

Yes.

(Selects it.)

8. Single spacing

(Returns to ruler.) Is it this one [double-spacing icon]? Do you just press it again?

No, the left one is single and the middle one for one and a half.

Oh, I see. (Clicks on the single-spacing.)

9. Centre paragraph

(Reads the instruction.) So we have to return to the ruler. (Starts moving up.)

Wait.

Oh, of course. It's here at the top. (Points to Format. Displays the menu.) Insert ruler . . . (highlights).

Ah, but where will it insert it.

(Thinks.) Do you put a new line in? (Selects Insert ruler anyway. A ruler is inserted one paragraph above where it should be.)

No, we're doing this paragraph. (Points to the paragraph below.)

So we have to try and get rid of this then. (Look at the Format menu.) Oh, hide it. (Selects Hide rulers from the Format menu.)

So, where will it [the new ruler] go?

Where the cursor is. (Tries to drag the cursor with the pointer to where the ruler should be inserted.) I can't get rid of the cursor here. (Tries to drag it and starts highlighting.) No.

Just go where you want the cursor and click.

(Does.) Oh, right. (Selects Insert ruler from the Format menu.) [Both the rulers are displayed. The subject can't understand this, so the experimenter explains the difference between hiding and deleting the rulers. The subject deletes the superfluous ruler.]

Now what do we have to do . . . centre the text.

(Look at the menu names and looks at the ruler.) Which one is it?

It's the second one on the left.

(Clicks on it. The text below the ruler is centred.) That's centred now. Do we get rid of the ruler now?

You are only supposed to centre this one paragraph. It's centred everything below the ruler.

We can move the ruler to that paragraph and change it back.

[Can't work out how to do it. Experimenter explains that he must use highlighting plus menu option or two rulers.]

(Inserts ruler below the paragraph. Tries to get rid of the one on top.)

No, I think you just align it now.

(Points to the align left icon.) Ah, that one now. (Clicks it. Then, marks and deletes the rulers, so, everything is left aligned. He doesn't notice this.)

10. Underline word, embolden word

(Click on Style.) So, do we want something underlined then? (Highlights Underline.)

But which one do you want to underline?

(Marks word and selects Underline, marks another word and selects Bold.)

11. Cut and paste

(Looks at Style, Format, Font, Spelling.) Edit. (Looks at Edit menu.)

Ah, there's Cut, Copy and Paste.

I suppose we mark this paragraph then. (Does. Selects Cut.)

Now we have to put it at the top of the page.

So we are going to have to go to the top. (Does.) And then press Edit. (Displays the menu and is about to select Paste.)

But, where will it go?

Ah, (Clicks cursor then selects Paste).

12. Print

So, print it now? (Looks at Edit menu first then at the File menu. Selects Print from the File menu. Looks at the dialogue box.)

These are the options I suppose. Maybe we can leave it.

Yes (clicks OK).

[Printer status box appears.] (clicks on the Continue option, which is greyed.)

[Document printed.]

13. Quit document

(Looks at the Edit menu.) Quit I suppose. (Selects Quit.)

14. Create a document

(Clicks on the MacWrite icon.) Will this open this one do you think? (Points to the icon of the previous document.) Just press "Trial".

No, that will bring the old document back. How about File.

(Looks at the File menu.) Yes. (Selects Open.) Does this open . . . (Gets an untitled document.) Where do I start? So I just start typing. (Does.)

15. Save a new document

(Looks at the File menu and selects save, a dialogue box pops up. He hesitates.)

We have to give it a name.

(Enters a name for the document and presses return.)

Subject 5

1. Save file

(Clicks on File menu, reads options.) So it's Save. (Selects Save.)

2. Change margins

Cursor, that's that. (Moves the pointer about. Reads the instructions to change the left margin to 1.5.) Edit . . . or Format? (Points at the menu titles.)

It's more likely to be Format

Yes. (Pops up the Format menu. Reads the options.) Align left. (Highlights Align left.) Yes?

Could well be . . . (starts reading the manual).

(Selects Align left. Nothing happens.) Try again!

(Reads the manual.) Changing margins you use the ruler.

How do you do that?

You press down hold and drag the marker.

Alright, press and drag. (Grabs the indent marker and pulls it to 1.5.) [The first line of every paragraph is set to 1.5.] And change the right margin to 6.5?

It hasn't done all of it has it?

I'm not sure.

Try the other marker there [left margin marker].

(Tries to click on it and selects the ruler.) I shouldn't have let go.

See that [paragraph indent marker], if you move that, it sets these [first lines of every paragraph], but the others [other lines] are still at zero as is this marker.

Well I've done it but it's only gone as far as that [because the first two paragraphs consisted of one line each, they seem to have the left margin set to 1.5]. Isn't there something on the menu to make it [the rest of the text] adopt the format of these paragraphs.

If you change it at the top it should go all the way through.

Okay. (Grabs the right margin marker and drags it to 6.5.)

See, that has worked. Try moving that one [left margin marker].

(Grabs it and drags it to 1.5, and the text is aligned to 1.5.)

3. Insert word

How do I do that? Is that Edit? (Looks at the Edit menu.)

(Reads the manual.) Inserting text . . . try just moving the cursor and just type it in.

With this (moves the pointer about)? (Positions it at text insertion point.) Push that and it will explode? Ah, the cursor is there as well. (Types in the word.)

4. Delete characters

Why don't you do the same thing, but push DELETE rather than inserting letters.

(Positions cursor.) Could you just push the BACKSPACE key now? (Does.)

5. Delete words

It says you can select the text and cut it instead of backspacing.

So, you use Cut from the Edit menu? (Pops up the Edit menu.)

Yes, but you highlight the text and then cut it. (Points to the menu.) See, you can't actually use it [Cut] at the moment, because it is grey.

What, so you just highlight it presumably. (Clicks the cursor at the beginning of the text to be deleted, then at end.)

I think you have to move it before you let go.

(Highlights several words up to the end of line, then moves to the next line and starts highlighting words there. So, the previous highlighting is removed.) Through to there and then cut. (Selects Cut. The highlighted text is removed.) Ah! Ahah! (Highlights the remaining bit of text and deletes it as well.)

6. Delete line

(Highlights the line and selects Cut.) Bye-bye.

7. Double spacing

Is there anything there in the menus for that?

Format (looks at the Format menu, but can't find anything) style (looks at the Style menu, then at the Font menu).

(Looks at the manual.) Ah, you use the ruler.

That's at the top isn't it? (Inspects the spacing icons, points at the single-spacing icon which is highlighted.) So, if I click on 6 lines to an inch it will change? So, which one of them? (Points at the justify icon.) That one?

(Points at the double-spacing icon.) That one.

(Selects it.) Oh, we've done it.

8. Single spacing

This (points at the single-spacing icon) and selects it.

9. Centre paragraph

But only for this paragraph. . . . (Goes to Format and selects Insert ruler, the ruler is inserted at the cursor position. Inspects the icons on the ruler.) Is it that one (points at the centre icon)?

It might be.

(Selects it. The text below the ruler is centred.)

I think that we've done the wrong paragraph. We're supposed to do this paragraph (points to the paragraph below).

(Reads the instructions again.) Only in this paragraph. (Changes the whole lot back to align left by clicking on the left align icon.

We've inserted the ruler at the wrong point above the wrong paragraph.

Go away ruler!

[Experimenter tells him that he can delete it by selecting it and cutting it]

Okay, so how do we do this right? Will the ruler go where it's marker?

Yes, must be.

(Positions the cursor and inserts the ruler.) Hooray! (Selects centring.) Now put the ruler underneath it and turn it back to what it was. (Highlights the ruler and wants to cut it.)

[Experimenter explains that this will undo the centring.]

So insert a ruler here . . . (positions the cursor below the paragraph and inserts a ruler. Clicks on the align left icon.)

10. Underline word, embolden word

(Clicks on the Style menu and selects Underline.) No. (Positions the cursor behind the word and selects Underline again. Nothing happens. Highlights the word and selects Underline.) Hooray. (Marks the word and selects Bold.)

11. Cut and paste

So this means we have to cut it. (Highlights paragraph, hesitates . . .)

Select Cut from the Edit menu.

(Does.)

There's Cut and there's Paste, but not cutting in pasting in one go. Well, I presume you cut it first.

Well, if I cut it it'll go bye-bye.

(Reads the manual.) There is something called the clipboard. So, I presume that it keeps track of what it has done. (Reads the manual.) Right, so when you cut it it goes to a clipboard, and when you paste it it will retrieve it from that.

(Selects Cut.) So, now it's on the clipboard. (Highlights the Edit menu.) And so now we paste. Oh no. We have to tell it where to go first. (Positions the cursor and selects Paste.) Did it.

12. Print

Edit. (Looks at the menu.) No. (Looks at the File menu and selects Print. The dialogue box pops up and tries to select best, tries to select all, then selects OK. Starts to print.) Ooh!

13. Quit document

(Pops up the File menu and selects Quit.)

14. Create a document

(Clicks at File.) New folder . . . Open do you reckon?

How would it know what to open?

And what is MacWrite? (Highlights MacWrite and selects Open.) So we're going to write a letter. (Starts typing.)

15. Save a new document

(Picks on File and selects Save. Reads "Save current document as . . .".)

You have to give it a name.

(Types in a file name.) And now what . . . (clicks on OK). Why is it untitled? (At the end of the saving process it changes to the file name.) Ah, that's saved now is it?

Subject 6

1. Save file

It's in there isn't it? (Points in the File menu.)

It gives you different options.

(Pops up the File menu and selects Save.) That's that then.

2. Change margins

(Points at 1.5 on the ruler and clicks.)

It is almost certainly on the ruler.

Format? (Pops up the Format menu.) Align left? (Highlights Align left.)

No, I think that's something different.

Set page? (Highlights Set page.)

Why don't you try to do something with the ruler.

Insert ruler (highlights Insert ruler on the menu).

Well you've got one already.

(It's too late and the subject selects a ruler anyway. It is inserted at the current cursor position.)

I think you want to go back to the top of the document.

(Returns to the top of the page and looks at the ruler again. Looks at the ruler.) Change the left margin to 1.5. I thought that would be Format though.

There could be something there [to change the margins]. How about those markers they seem to be aligned up to the text.

These? (Points to the right hand margin marker. Points at the left hand margin marker, clicks at it and nothing happens. Then tries to drag it. Drags the paragraph indent marker.) No . . .

Well, something's moving.

(Drags the paragraph indent marker to 1.5.)

Well, that's not quite it but it's moved some of them.

(Moves to the right hand margin marker.) To 6.5. (Grabs it and moves it to 6.5.)

Well if that triangle moved that margin then it must be the other triangle.

(Grabs the left hand margin marker and drags it to 1.5.) Is that that?

Yes, you've done it.

3. Insert word

(Hesitates.)

Well, I suppose you have to type a word in there.
(Move the pointer to the text insertion point.) Enter I suppose? We have to put something up here again (points to the menu bar), or is it going to be simpler again like it was last time?
Well you just type it in again using the keyboard.
(Starts typing and a character is inserted at the current cursor position.) Oh see, it's gone in there.
What happened there? That's strange, what did you press "e"?
Well, I thought it would be in Format. [Doesn't notice the cursor flashing behind the character that he's just inserted.] (Moves the pointer back to the text insertion point.)
Well if you put the cursor where it's meant to go.
Well, that's what I did last time. (Types another letter which is inserted at the cursor position.)
That's strange. (Tells the subject to hide the rulers.)
(Pops up the Format menu.) What does that mean, the squiggly bits [the keyboard accelerators].
Maybe it's something on the keyboard you can use instead if you haven't got a mouse.
(Selects Hide rulers.)
Let's go back to the [the place where the word is to be inserted.]
I still don't think it's anything to do with the ruler. (Types a third letter and it's inserted at the cursor position.) I think it will be Format I would have thought.
[The experimenter explains how the cursor works.]
(Finally inserts the word in the correct position.)

4. Delete characters

Let's think. (Positions the cursor behind the character to be deleted and presses BACKSPACE. Proceeds to delete the other characters in the same way.)

5. Delete words

Well, that's what we did just now I presume . . . I presume you have to mark a whole block. Format again I suppose?
No, try it with the cursor.
(Clicks the cursor at the beginning of the piece of text to be deleted, then clicks at the end of the word but slips with the mouse and highlights one letter.) Well, if you covered a whole block like that . . .
Try dragging it.
(Marks two words.) What now.
Same as you did before.
Isn't there another command?
Try it.
(Presses BACKSPACE and the text is deleted.) I wouldn't have thought BACKSPACE is . . . would remove a block.

6. Delete line

(Marks the line and presses BACKSPACE.)

7. Double spacing

Double space, do that mean a gap between each line? Form the start or just from here on downwards [seems to think a blank line should be inserted in between each line].
From the start I guess.
(Returns to the beginning of the document. Hesitates.)
Where do you think that might be, the instruction that does that?
[Because Hide rulers has been selected there is no ruler at the top.]
Edit? (Looks at Edit.) Format. (Looks at the Format menu, then looks at the Style menu.)
It must be something in Format. Let's have a look.
(Pops up the Format menu. Looks at it.) Insert rulers?
Well, we've already got rulers. So, all we have to do is show them.
(Selects Show rulers. Looks at the ruler.)
The black ones [icons] are the ones which are currently selected the options.
(Looks at the icons and points to the double-spacing icon.) Yes, it's that there? The lines are more spaced out on there. The black ones are the ones we've got now? (Points to the one and a half line spacing icon.) I wonder if the lines are more spaced out on that one.
Try it.
(Selects one and a half line spacing.) [The subject is satisfied that the text is double-spaced.]

8. Single spacing

(Returns to the ruler and selects the single-spacing icon.)

9. Centre paragraph

Centre text, does that mean both (indicates centring with hands)?
Yes, so that it's spread out according of the notional page.
There was something on that thing on the top of the page.
I don't think you have to use the one at the top. We can insert another one.
(Pops up the Format menu.) Insert ruler? (Hesitates.)

Why not?

(Does.) [The ruler is inserted at the current cursor position which is one paragraph above where it should be.] (Looks at the rulers.) Change the width of the page presumably.

My guess would be it's one of . . . If you look at the icons on the right hand side of the line-spacing ones.

(Points to the alignment icons.) These ones? (Points to the justify icon [in black]). That one, that's the one we've got now. (Points to the centring icon.) That?

Yes, that's shaped like centred text is.

We have to mark which bit we want don't we. But only that paragraph.

I think the rulers do the marking. Try selecting and see what happens. Since that's what we did with the spacing . . . see what happens.

(Selects centring.) [The text between the ruler and the third ruler which was previously entered by mistake is centred.]

That's done everything. I think it's the ruler that makes the difference.

(Clicks on the align justify icon.)

Let's have a look above the ruler and see if that's changed.

(Selects centring again. Scrolls up in the text.)

See, that's still different it's just below the ruler. So, we have to insert another ruler to stop it.

Two rulers.

Yes, let's try that.

So back to that (selects align justify). (Points at the paragraph below.) That should not be centred. So now if we hide the rulers first (selects Hide rulers). And if we move it up because the ruler came in under there (points to the cursor.) (Positions the cursor at the top of the paragraph to be centred and selects Insert ruler.) Oh, there's another one there [seemed to think that Hide rulers would delete the previous one].

Well, you can just set it wherever you want so it doesn't matter where the rulers are.

(Selects Hide rulers.)

If you do that it'll hide all of them.

Yes, but it didn't come in there anyway.

Oh it was. There was one underneath. It was there.

(Selects Insert ruler.) [There are now two rulers on top of the paragraph to be centred now.]

(Explains the difference between hide and delete rulers and instructs the subject to delete some of the rulers.)

(Deletes the extra rulers and is left with one ruler above the paragraph to be centred.) So we need another one underneath?

I would expect so.

(Positions the cursor below the paragraph and selects Insert ruler.) Ahah! (Clicks the centring icon on the ruler above the paragraph.) [The paragraph is now centred.] So it only affects the text underneath the ruler. Now we want to get rid of them again don't we? (Highlights the second ruler and is about to press BACKSPACE.)

Hang on before you do that, don't you just want to hide them? If you delete them you'll undo the formatting as well.

We don't need two do we?

If you just have the top one it will just centre all the way down the page.

But we've changed it now.

Try it.

(Deleted the ruler.) [The text underneath is centred.] You were right. Let's put another one in there again. (Inserts a ruler back again and selects justify.)

(Explains that he should just hide the rulers if he finds them disturbing.)

10. Underline word, embolden word

Underline (clicks on the Style menu). Underline (highlights Underline), ah, hang on. We have to mark something before we start.

Yes.

(Marks a word and selects Underline. Marks another word and selects Bold.)

11. Cut and paste

To the beginning . . . probably will be at the top will it? (Points to the menu bar.) It doesn't say that. (Pops up the Format menu and shakes his head.)

No, it's not in there.

Won't be Style will it. (Pops up the Edit menu and tries to select Cut.)

I think you have to mark it first because it doesn't give you the option [Cut is greyed].

(Starts marking the whole paragraph.) What, cut the whole lot?

We might as well try it and see what happens.

(Goes to the Edit menu.) Cut.

Ah, there it is you can select it now.

Ah, Cut it? (So cutting will take it out and pasting where you put it I suppose. Selects Cut.) Um!

Fine, it's Cut it. Are you worried that it has disappeared?

Well, I would have thought it wouldn't do one [Cut] without the other [Paste]. We'll see what happens. I don't think this is going to work. (Goes to the top of the text, positions the cursor and selects Paste.) [The text is inserted correctly.]

Well, there you are. You were wrong. It did it.

12. Print

(Pops up the File menu and is about to select Save.)

Print it first.

Ah, yes. (Selects Print.) [The printer dialogue box appears.] (Looks at the From where the cursor is flashing.) Where's that then? Can't we print the whole thing [document].

We're getting options there. I suppose the highlighted ones are the ones that have already been selected.

So it will print the whole thing I presume. But if it will print the whole thing why does it say from to?

Well, that's if you've got a 1000 pages and you only want to print a few.

Yes, it's either all or from to. So, what do we do go to OK?

Why not.

(Does.) [The printer progress box appears.] Is it Continue? [The printer starts printing.]

13. Quit document

(Pops up the File menu.)

Why don't you just Quit. I think we've lost a word here. You're supposed to leave without saving the changes.

(Does.)

14. Create a document

MacWrite? (Highlights MacWrite.)

And now you want to Open a file.

(Does. Types a document.)

15. Save a new document

(Selects Save from the File menu.) [The Save dialogue box pops up.] (Types in a file name.) Then Save, just that one there?

Yes.

(Does.) [The document is saved.]

Subject 7

1. Save file

(Moves the pointer about the File menu title.)

What are you doing.

I'm trying to get into File. (Clicks briefly, and the menu appears.) Ah, that's better. How do you get to the options?

Try holding it down and moving the mouse.

(Tries.) Ah, got it. (Selects Save.)

2. Change margins

(Not sure what to do. Points to the manual.) Can you . . .

Yes, okay. How about looking at some of the menus.

(Looks at Edit and File.) Page setup? (Looks at the Format menu.)

(Reads.) Change margins, you use the ruler.

(Looks at the ruler.) I suppose that those lines indicate the margin. But how do you . . . (clicks on the right hand margin marker).

Try moving it.

(Starts dragging it.) Ah, brilliant. (Moves it to 6.5.) Now the left to 1.5. (Grabs the paragraph indent marker and moves it to 1.5. Then, grabs the margin marker and moves it to 1.5 as well.)

3. Insert word

So we put it in there . . . (moves the pointer to the text insertion point and starts typing.)

[Hadn't positioned the cursor in the correct place so the characters are inserted at the current cursor position rather than at the intended point.]

We're now at the end. Maybe if you click.

(Returns to the text insertion point. Positions the cursor and starts typing.) Ah, that's interesting.

4. Delete characters

(Positions the cursor behind the character to be deleted.) Ah, right. (Presses the BACKSPACE to delete character.) So, I get rid of that t. Deletes the other character by positioning the cursor behind them and backspacing.

5. Delete words

I bet there is a word delete function. Have you got any delete sections in there (pointing at the manual)?

(Reads manual.) There's nothing in the menus is there?

That's a good point. (Looks at the Edit menu. Reads the options.) Paste, select, undo no.

Cut, how about Cut? [Currently greyed.]

Oh yes. (Tries to select it. Nothing happens.)

Well you block it [text to be deleted] like you did before.
(Tries.) Yes, dragging it. (Manages to highlight the text after a few attempts.) It was in Edit . . . (selects Cut).
6. Delete line
(Quickly and without problems highlights the line and selects Cut.)
7. Double spacing
Well, you better look that up.
(Reads the manual.) That's the ruler again.
What does it say [the manual]?
That box (points to the double-spacing box). Just click on it.
(Does.) That does it.
8. Single spacing
(Tries to click on the double space box again, nothing happens.) What does it [the manual] say?
I assume you choose the one the other side.
This one (points to the single-spacing box)?
Yes.
9. Centre paragraph
Is it in Format? (Looks at the Format menu, select Insert ruler. A ruler is inserted at the current cursor position.) Oh.
Oh. It's put the ruler in where you had the cursor.
Oh, I see. (Looks at the Format menu again. Reads the options.) Hide ruler (selects Hide ruler).
It seems to put it where you put the cursor.
So, if we put it there [on top of the paragraph to be centred] . . . And now we've got to go back to the top and . . . Oh no. I can get it from there [the menu bar] can't I. (Selects Insert ruler from the Format menu. The ruler is inserted.) Right.
There must be some box on there I'm sure.
Yes. (Points to the Format menu.) Align centre?
Could be, but that's got nothing to do with the ruler.
Oops! (Selected Insert ruler by mistake thus inserting another ruler. Selects Hide rulers and they're both gone.) Right (selects Insert ruler again, now there are three). Hide rulers.
What are you trying to do?
I'm trying to delete two of them . . . I don't know.
I think that you have to delete them. If you hide them they'll all go.
How do you do that?
I don't know, try clicking on them.
(Highlights a ruler.) Ah, very good. And how do we delete it? (Tries to highlight the second superfluous ruler.) Did you see what I did to get that [highlighting]?
Try to delete one first.
That was in Edit wasn't it. (Goes into Edit and selects Cut. The ruler disappears.) Oh, we can only do one at a time. (Tries to highlight the second ruler.)
Click anywhere.
(Clicks around on the ruler and hits the 6 lines per inch box.) A-am bad news. (Moves to the right hand side.) I'm sure that I clicked somewhere here and it went black . . . (Tries again and the ruler highlighted. Selects Cut from the Edit menu.) Right! Perhaps we could centre the text. There was something in that menu (goes into the Format menu and points at Align Centre). Isn't that what we want to do?
That may be a different way of doing it. But, we wouldn't need the ruler for that. (Looks at the ruler and points out the centre box.)
If we want to do that paragraph, we do that (highlights the paragraph). (Clicks the centre box.) Ah!
But, it's done it all [all of the text below].
Oh dear! We are going to have to . . . For some reason it's affected everything under the cursor [he means ruler].
Everything under the ruler.
Oh, I see. Does that mean that I have to put two rulers in? (Points to the Format menu.)
Hang on, where is your cursor?
Yes, you're right. Where do I want the ruler. (Positions the cursor underneath the paragraph. Selects Insert ruler.) And then we want this lot to be that one (points to left align icon and selects it.) Okay. Shall we get rid of the rulers?
What are you trying to do?
I'd like to get them blacked out and remove them . . .
We could just hide them.
True. (Selects Hide rulers from the Format menu.)
10. Underline word, embolden word
(Click on the Style menu, is about to select Underline.) Ah, I presume we have to block [highlight] a word before we can underline it. (Marks several words and underlines them.) Very good! (Marks several words and emboldens them.)

11. Cut and paste

(Marks the paragraph, flicks through the File, Edit, and Search menus.) Have I missed it?

Well I presume that you use the cutting and pasting from the Edit menu and that you cut it first.

Oh, right. (Selects Cut.) And then presumably if we move the cursor to the top and paste it . . . (does).

12. Print

Print . . . (looks at the File menu) . . . there it is. (Selects Print. Reads the print dialogue box.) Yes, yes, yes . . . (Clicks on OK. The document is printed.)

13. Quit document

Now, if we've got to leave without saving quit presumably? (Selects Quit.)

14. Create a document

I suppose it's going to be MacWrite . . . (clicks on MacWrite icon).

How about the menus.

(Points at File.) New folder.

No Open.

(Selects Open. Starts typing.)

15. Save a new document

(Points to File.) Is it that one? (Selects Save.) I suppose it want a name. (Types in file name and presses CARRIAGE RETURN.) And now do you want me to quit?

Subject 8

1. Save file

So you've got to choose something from the top have you?

[Struggles to work out how to use the menus. Co-experimenter instructs her on how how to use the mouse and the menus. Eventually she gets the File menu up. The co-experimenter tells her to select Save.]

2. Change margins

Change the left margin to 1.5. (Clicks on the Format menu and reads it.)

It's on the ruler. You have to move those things and the text will line up with it.

So it's not in Format? (Clicks on the margin marker.) Don't you have a command to move it.

If you point at it . . . try to move it across while you keep the button pressed down.

[Subjects struggles considerable to control the margin marker. Eventually with a lot of help from the co-experimenter she manages to put the left margin marker at 1.5. Step-by-step instruction to set right margin.]

3. Insert word

You want to insert a word in between "and" and "the" don't you, to make it a proper sentence.

(Moves the pointer to the insertion point.) Do I just type a word out?

You have to tell it where to insert it first.

I want insert it there. (Points with finger on screen to where the pointer is.)

How does it know?

That's the menu. So surely if you want to do anything you have to go to the menu (points to the menu bar).

Just click the mouse, just click the button. That positions the cursor. That flashing line, that tells you the cursor is there.

Right. (Types in a word.)

4. Delete characters

(Positions cursor behind the characters to be deleted and backspaces.)

5. Delete words

How about marking the wrong words with the mouse and deleting them.

Positions the cursor at the end of a word and backspaces.

You can actually mark the words with the mouse and delete the whole lot in one go.

I'm trying to think if you position the cursor just before the word would that do it.

How would it know how much to delete? If you click at the end, hold the button down, and move it.

That's like the other one where you highlight it. (Presses BACKSPACE. Marks two more words and deletes them by backspacing.) Actually I could have done two of them couldn't I?

6. Delete line

(Marks the line and presses the BACKSPACE key.)

7. Double spacing

Can I use the menu?

(Reads the manual.) If you back up to the top of the document.

(Points at the menu bar.) Can't you use Format? (Clicks ad reads the menu.)

If you go back to the top on the ruler there are bits on that.

(Looks at the ruler, points to the double space icon.) Is that for double-spacing? (Clicks on it.)

8. Single spacing

(Returns to the ruler, selects one and a half line spacing.)

I think that is one and a half.

You can't see on a diagram what sort of spacing it's supposed to be. (Looks at the menu again.)

(Points to the single-space icon.) Maybe that's it.

(Clicks on the single-space icon.)

9. Centre paragraph

Don't you have to highlight this text [paragraph] then, if you're centring this bit and nothing else [correct].

Yes you can do it that way, but you can also do it by using the rulers. But, you want a new ruler rather than using the top again.

So what, do you have to go to the menu? (Clicks on Format and selects Insert ruler. A ruler appears one paragraph above where it should be.) Is that supposed to be there.

No, you actually want it down here don't you? So why has it come in there?

Because my mouse presumably [cursor] was there. How do I delete . . . (Tries to highlight the ruler, but moves to far to the right and hits the scroll bar by mistake. The text is scrolled.) What's happened?

(Explains.)

(Returns to the ruler.)

How can you get rid of it?

Same as with the words. (Finally manages to highlight the ruler.) It actually highlights all of it without going back to front.

It will treat it as one, you can't delete just half of it.

(Presses the DELETE key and deletes the ruler.) So I have to create another one. (Points to the Format menu.)

Well, what was wrong with the last one . . . it was in the wrong place wasn't it?

So I have to go back. (Positions the cursor and selects Insert ruler.)

Now you have to try and centre the text.

(Points at the Format menu.)

Using the ruler.

(Points at the boxes.) What do these stand for I wonder.

You want to sort of centre the text which means put that bit in the middle. So it's probably this (points to the centring icon.)

(Selects the centring icon and the text below the ruler is centred.) Now how do I get rid of that [the ruler] delete it?

If you delete it you also undo the centring. At the moment you've centred everything below the ruler. How would you get the rest of the text back to normal.

(Points to the ruler.) Put it back to normal.

But, you want to keep this one paragraph centred.

How about highlighting the rest of the text and selecting the normal [left align] style again.

I don't think that will work. I think that you have to insert another ruler below the paragraph.

(Selects Insert ruler from the Format menu. Want to click on double-spacing.)

That's double-spacing.

(Clicks on single-spacing. Nothing happens.)

That's single-spacing. You see that it is highlighting the ones that it is currently on. Single-spacing is okay. You've got to un-centre it.

(Selects the justified text icon.)

10. Underline word, embolden word

(Clicks on Style and highlights Bold.)

How does it know what you want to embolden.

Oh, do you have to mark what you want to underline? (Looks at the paragraph.) Do I want to underline this then, or the rest of the text?

Well probably just one word.

(Moves back to the Style menu and select Bold. Nothing happens.) It should actually do it shouldn't it?

You actually have to mark it, you have to block what you want to underline.

(Marks the whole paragraph and select Bold.)

And underline it as well.

(Selects Underline as well.)

11. Cut and paste

I have to highlight it don't I? (Highlights the paragraph.) And what now?

You move it by cutting and pasting.

Format? (Looks at the Format and Style menus.)

Probably Edit because it means that you are editing the text.

(Clicks on Edit, looks at the menu.) How do you do this?

First cut, then paste, because it says in the instruction that you cut and paste it.

(Selects Cut.)

And now you paste it back in again.

(Clicks on the Edit menu.)

But you're supposed to paste it in at the beginning of the text.

So I have to go back to the beginning then. (Positions the cursor at the beginning of the text and selects Paste.)

12. Print
[Can't work out how to print so the experimenter explains how to print using the File menu.]
How do you tell it to send the file to the printer?
[Experimenter explains how to fill in the print dialogue box.]
(Clicks OK and produces a print.)
13. Quit document
(Selects Quit from the File menu.)
14. Create a document
[Subject did not wish to proceed further. Found the use of the mouse too difficult.]
15. Save a new document

Subject 9

1. Save file
(Clicks on the File menu and select Save.)
2. Change margins
That's Edit then is it or Format . . .
Shall I have a look (reads the manual).
(Clicks on Format.) No.
(Reading the manual.) It says you change the format using the ruler on top of the page.
(Looks at the ruler.) Change the left margin to 1.5, oh my god.
(Puts the pointer to 1.5. Clicks, and highlights the ruler.) Oh, how do I get rid of that? How do I get out of that then?
Click somewhere below somewhere in the text.
(Points at the margin/indent marker.) Ah, there's the marker. (Tries to click at it.)
(Reads the manual.) You click on it and then you drag the margin marker to . . . you have to hold it down.
(Goes to the right margin marker and tries to move it.)
Yes, that's it, just move it to 6.5 now.
(Does. Then drags the indent marker to 1.5.) That isn't the whole thing there. How come that isn't all the way.
[Experimenter explains that the paragraph indent marker and the left margin marker have to be positioned together.]
(Needs several attempts to grab the left margin marker and move it to 1.5.
3. Insert word
(Positions the cursor at the text insertion point.) So what's that flashing line?
That's the cursor.
(Tries to create a gap between two words before inserting. Types in the word.) What about the flashing line, how can I get rid of that?
(Explains that it is the cursor and will go wherever he clicks.)
4. Delete characters
How do you do that?
Must be (points up to the menu bar). What about a DELETE key on here (points to the keyboard). (Moves the pointer to a character, presses DELETE, and deletes a letter at the cursor position.) Ah hell, that was still up there. (Re-enters the letter.) Right we'll bring that [cursor] down. (Tries to move the cursor by dragging it.)
Put it where you want it to go and now click.
Ah, I see. (Positions the cursor behind a character and presses BACKSPACE.)
5. Delete words
(Deletes a word by backspacing.)
You shouldn't have to do that by backspacing all the way. See, it says you can mark words with a mouse and delete them.
How do I delete them easily.
By dragging the mouse from the beginning to the end by holding the button down.
(Marks the words to delete.) BACKSPACE or what? (Presses the BACKSPACE key and the words are deleted.)
6. Delete line
(Marks the line and presses the BACKSPACE key.)
7. Double spacing
Ah, that's Format again isn't it, but we haven't used any of these commands.
(Reads the manual.)
(Looks at the Format menu.) No. Style perhaps (looks at the Style menu). No. Edit? No.
It has something to do with ruler. If you go back to the top . . .
(Returns to the top.) Right here we go, 6 lines per inch. Ah, (points at the spacing icons) these are different types of lines. (Points at the double-spacing icon.) That's it isn't it?
Yes.
(Clicks on it. Moves down the text.) Ah, that's done the whole text now.
8. Single spacing
(Points at the single-spacing icon.) That's single-spacing there isn't it? (Clicks on it.)

9. Centre paragraph

(Clicks at the Format menu.) What sort of ruler do we want? (Highlights Insert ruler.)

But where will it be inserted?

We'll insert a ruler and see what happens. (Does it.) Ah, that's the ruler is it?

It's in the wrong place, so you want to get rid of it.

(Tries to move the ruler by dragging it into the correct position. Looks at the Format menu.)

[Experimenter asks if he wants to delete it.]

No, I want to put it back at the top again.

[Obviously he thinks that he's moved the ruler which was at the top i.e. he believes that it was insert the ruler rather than insert a ruler.]

(Looks at the menu again.)

I think that [ruler] will be a different one. Why don't you look again at the top.

Ah, that's a different one is it? (Returns to the top, sees the other ruler.) Oh, far enough. There must be something easy . . . File, Edit. What's Fonts then?

(Explains.) You can delete this one similar to a piece of text.

What, backspace it?

You have to mark it first.

(Highlights the ruler and deletes it.)

You want to put the ruler down there, so you have to position the cursor before you insert it?

How do I do that then? [Tries to position the cursor by dragging it with the pointer again.]

No, you have to click it.

(Positions the cursor and scrolls up to the top to the ruler. Clicks on Format and selects Insert ruler.) [He seems to think that he needs to be at the top to insert a ruler.]

See that box there, you can use that to centre text.

(Points at the paragraph.) Is that marked properly? I thought that if I wanted to centre that (points at the paragraph) I'd have to highlight it. [Tries to mark the paragraph, but has problems working out how to do it.] (Highlights the paragraph eventually, points at the centre icon.) That one?

Yes.

(Selects it.)

That's all [all text below the ruler] centred.

How come, because I had that [paragraph] marked?

It's done everything that is below the ruler.

Is there any way to avoid that? That's not very good, you mark it and . . .

(Explains how to do it and that another ruler must be inserted.)

(Inserts another ruler.) So do we go to Format again. (Wants to select Align left from the Format menu.)

No, you want to use the box here.

(Points to Align left box.) What, this one here? (Clicks it.)

10. Underline word, embolden word

(Clicks on the Style menu.)

What do you think you are doing?

Oh, I have to mark it first don't I. (Positions the cursor at the beginning of a word.) How do I tell it where to stop, will it underline the rest of the paragraph from here? [He still has difficulties in marking text.]

(Explains how to mark the text.)

(Marks a word, selects Underline. Marks a word and selects Bold.)

11. Cut and paste

That's definitely editing isn't it? (Looks at the Edit menu.) There you go cut and paste. Let's select Cut (does). Why can't I select it? Why has it got it there when I can't select it?

How can the program know what to cut?

(Marks the paragraph.) Okay, that is what is going to be cut. (Looks at the Edit menu.) Ahah, (Cut is displayed in black) we shall cut it, but where is it going to cut it to? Shall I move the cursor back up to the top them? It might cut that all completely. Or, do I say paste and paste it up to somewhere else? [The experimenter explains about the clipboard.] (Selects Cut, moves to the top, and positions the cursor and pastes.)

12. Print

[Not done.]

13. Quit document

(Looks at the File menu for Quit.) So, it's either Close or Quit . . . Quit.

Why?

14. Create a document

(After some dithering.) Oh, MacWrite, that's the program isn't it? (Clicks on the MacWrite icon.) How do I get out of here [window]. Where is the menu? (Clicks File menu.) New folder or Open? (Looks at View, then Special menus.) I haven't got a clue how I get out of here. [Is told to open a file.] (Does. Tries to position the cursor on the empty page.) Oh, I've got to write something now (starts typing).

15. Save a new document
(Selects Save from the File menu, and enters a name for the file.)
Return.
(Presses RETURN, and then selects Quit.)

Subject 10

1. Save file
2. Change margins
3. Insert word
4. Delete characters
(Uses cursor keys to position the cursor behind the character and backspaces.)
5. Delete words
Could you use the mouse to move the cursor.
Yes. See [the manual], it says you can mark the words with the mouse and delete them.
Can I just mark each of them? (Moves the cursor the end of the piece of text to be deleted.)
That just moves the cursor. (Reads manual.) You can mark a piece of text by dragging it across and then release the mouse button.
(Marks one word, then moves to the next line and tries to mark to another word, thereby de-selecting the previous marking.)
What do you want to do?
I want to delete the whole lot in one go. (Can't work out how to mark across the end of a line. Presses DELETE to delete one part, then marks the rest and deletes it by pressing DELETE.)
6. Delete line
Do we do that the same way? (Marks the line and presses DELETE.)
7. Double spacing
(Reads the manual.)
Is that going to be in Format? (Looks in the Format menu.)
Then where else could it be?
Top of the page . . . (goes to the top of the page). (Looks at the ruler.) Is it this one here . . . (points at the single-spacing icon). Oh no, that's single. (Points to the one and a half line spacing.)
That's one and a half.
(Points at the double-spacing icon and selects it.)
8. Single spacing
(Returns to the top of the page. Goes to the ruler and selects the single-spacing icon.)
9. Centre paragraph
(Looks at the Format menu.) Insert ruler, that's this one. (Highlights Insert ruler.)
But where? That's put it in the wrong place.
Where do I need it? (Points at the paragraph.) I need it down here don't I? How do I delete the ruler? (Looks at the Format menu. Points at the ruler and marks it. Presses the DELETE key.)
Where shall we put it now?
Above here. (Positions the cursor above the paragraph. Selects Insert ruler from the Format menu.)
And now to centre the text.
Will that centre everything or just one?
I think so.
(Points below the paragraph.) So, do I need another ruler. (Positions the cursor and inserts a ruler below the paragraph.)
You still have to centre this one.
(Looks at the icon and hesitates.)
(Looks at the manual.) Those boxes are for left, centre, and right justify.
Which one is the centre this one? (Points at the centring icon. Looks at the ruler.) So when these boxes are dark that means it's selected. (Selects the left align icon. Tries to select the ruler.)
What do you want to do?
How do I get rid of them?
I'm not sure you want to delete them, or what you've just done will go away to. But, you can hide them if you want.
Where do I get that from?
Format.
Oh yes, of course. (Selects Hide rulers from the Format menu.)
10. Underline word, embolden word
(Looks at the Style menu.)
So these are in here, but I have to tell it what to underline so we need the cursor. (Positions the cursor in front of one word and selects Underline nothing happens. Marks a word and selects Underline done. Highlights another word and selects Bold.)

11. Cut and paste

Is this a similar thing? (Tries to highlight paragraph, but has difficulty controlling the mouse.)

(Reads the manual.) It says here you use Cut from the Edit menu.

(Pops up the Edit menu, and tries to select Cut.)

You should mark some text probably so that it knows what to cut.

So I have to highlight . . . (tries to mark the paragraph again).

That's alright, just move down now.

(Does.) Ah, and marks the paragraph. [Couldn't work out until now how to mark beyond the end of a line.] (Selects Cut from the Edit menu. Returns to the beginning of the text.)

What do you think you should do now?

Position the cursor and get back into Edit. (Does. Looks at the Edit menu, hesitates, tries to select Copy which is greyed.)

Paste.

(Selects Paste.) Oh!

12. Print

What do you think you should do to print it now? (Reads the manual.)

(Looks at the File menu. Is about to select Print from the File menu . . .)

It says here you should use Print from the File menu.

(Does. The dialogue box pops up. Looks at the options.)

(Explains the options.)

So I just click on OK? (Does. The printer status box appears.) Do I have to press Continue [which is greyed] now? [The printer starts printing.]

13. Quit document

(Clicks at the File menu and looks at it. Is about to select Save . . .)

No, you should quit without saving.

(Selects Quit.)

14. Create a document

What do I do here go to File and New?

You have to select the program we were using.

(Highlights MacWrite.)

And open.

Is that in File. (Goes to File menu and selects Open. Starts typing.)

15. Save a new document

(Goes to the File menu and selects Save.) [The dialogue box pops up.] (Tries to select Save which is greyed.)

You have to give it a name.

Oh, right. (Types in a name and presses RETURN.)

Subject 12

1. Save file

(Looks through all of the menus.)

Why don't you have a look at the File menu.

(Does, looks at all the options, goes to Save and selects it.)

2. Change margins

Change the left margin to 1.5. Is this your turn to have a go?

(Reads the manual.) It's on the ruler. We have to find the right margin marker. That's the black one over there.

This one (points to it).

So you want to change the left margin to 1.5. Press and hold the mouse button and drag the marker.

(Grabs the paragraph indent marker and moves it to 1.5. Moves the right margin marker to 6.5.) [Experimenter points out that she has only moves the paragraph indent marker and not the left margin marker.] (Moves the left margin marker to 1.5.)

3. Insert word

Obviously you have to insert something to get the sentence to make sense.

(Moves the pointer to the text insertion point.)

I assume that if you position the cursor you can type text.

(Positions the cursor.) And just put it in. (Types the missing word.)

4. Delete characters

(positions the cursor with the mouse behind the character to be deleted and deletes by pressing BACKSPACE.) Is that the right way to do it?

I assume so.

(Moves the pointer to the next character and presses BACKSPACE thereby deleting the character at the cursor position.) Oh, I didn't click the cursor. (Deletes the rest of the characters in the same way.)

5. Delete words

(Positions the cursor behind the first word to be deleted.)

I wonder if there's a quicker way of doing that? (Starts reading the manual.) Once you've marked a piece of text you can use Cut on the Edit menu. To select it you want to go to the piece of text. I think that you want to get to the start of the piece of text that you want to remove. Click at the start and drag over it.

(Has difficulties to highlight the text and finally manages to do it.)

Now you go to the Edit menu and use Cut.

(Does.) Oh, I see. (Repeats the procedure for the remaining word.)

6. Delete line

(Marks the line and selects Cut.)

7. Double spacing

How do I get back to see . . . [the ruler]. I was just trying to get the double-spacing. [Had accidentally clicked on the double-spacing box at the very beginning of the session.]

Maybe if you use Format.

(Looks at Style, then at the ruler and points at the double-spacing box.) It's this one, is that double? (Moves to the one and a half line spacing and selects.) Yes, that's it. [Difficult to see the difference between one and a half line spacing and double-spacing.]

8. Single spacing

(Return to the ruler and selects the single-spacing icon.)

9. Centre paragraph

(Goes to Format and looks at the menu.) Do we have to mark it to do just that? To put it on centre. (Looks at Format, Font, and Style.)

(Reads the manual.) If you only want to change a few lines you use the align commands. If you use the align command from the menu you don't have to highlight the whole text, you just have to click an insertion point into the paragraph.

Do I just click in the centre of this? (Clicks the cursor in the paragraph.)

Yes. Well it could be anywhere.

(Goes to Format and highlights Align centre.) This one? That will centre the text I suppose. [The paragraph is centred.]

10. Underline word, embolden word

(Clicks on Style.) So, don't I have to . . . (positions the cursor within the paragraph).

Yes, you have to select again.

How about this one? [Cursor is at the beginning of a word.]

Well . . .

(Marks the word and selects Underline.) [The word is underlined.] Right. (Clicks the cursor in the middle of the word underlined.) Shall we do that in bold face.

Well . . .

(Marks the word and selects Bold.) Right.

11. Cut and paste

Right, move a piece of text. (positions the cursor at the beginning of the paragraph.)

With cutting you have to mark the paragraph.

(Marks the paragraph. Looks at the Edit menus.) Cut and Paste it is. (Highlights Cut.)

Right, you want to cut it.

(Selects Cut.)

Now if you look at the clipboard there it is. Hide it again [the clipboard. Now you want to go to the position where you want to insert it.

(Positions the cursor at the beginning of the text.)

Now paste it.

(Selects Paste from the Edit menu.) Right.

12. Print

Print. (Goes to the File menu.)

(Reads the manual.)

Is it in File?

Yes.

(Selects it. Looks at the dialogue box.)

[Can't work it out. The experimenter eventually explains what to do. The document is printed.]

13. Quit document

How do I get out of it?

That would be in the File menu.

Quit? (Selects Quit.)

14. Create a document

(Goes to the File menu.) New?

Maybe Open will do it.

(Does.) [Nothing happens. Can't work it out and the experimenter has to explain how to do it.]

15. Save a new document

(Starts typing. Goes to the File menu and selects Save.) Do you want me to give it a name? (Types a name and clicks on Save.) [The file is saved.]

Subject 13

1. Save file

(Goes to the File menu and selects Save.)

2. Change margins

That will be Format won't it? So, do I go to Format?

No, you change the margins here on the ruler. (Reads the manual.) Right, the left margin marker is the black triangle. (Points to it.) That one.

Is it that one or that one? [Paragraph indent or left margin marker.] (Tries to drag it. Starts dragging it.)

Yes, that's right. Drag it to 1.5, and now if you release it. [The first lines of each paragraph haven't been done.]

(Notices.) Is that because the cursor wasn't at the beginning? The cursor is down here at he moment you see. (Positions the cursor at the beginning.) No, that didn't do anything. Shall I change the right one?

The right margin marker is the other black triangle.

(Points at the right margin marker and clicks at it. Nothing happens.) So, I clicked.

Well, you have to hold it down and drag it.

(Does.) Don't know why it didn't do the first three lines . . .

I think that you have to try and drag the indentation marker as well. See the black one there [paragraph indent marker] which is still on 1.

(Tries to grab and drag it thereby selecting the ruler.) Why has it [the ruler] changed colour? (Actually drags the paragraph indent marker to 1.5.) So that's done it now.

3. Insert word

(Moves the cursor to the text insertion point.)

What you need to do is to try and put a word in here that makes sense.

So what I've got to do first of all is put some spaces in isn't it?

Why do you want to put some spaces in?

To put the word in. What, can I just type it and it'll go in?

Yes, as long as the cursor is there.

(Moves the pointer slightly.) Well it is there isn't it.

Not yet. You have to click.

(Does.) Oh yes, that's the cursor. If I type it now will it shove the rest [text] along? (Types he word in.) There you are.

4. Delete characters

(Moves the pointer down then returns it to the cursor.) Do I click it to take the cursor down? [Tries to drag the cursor to move it.]

As long as you position the marker [pointer] somewhere else and click it, that will move the cursor.

(Positions the cursor behind the first character to be deleted.) Backspace is it? (Deletes by backspacing. Continues for the rest of the characters to be deleted.)

5. Delete words

Is there a special function for taking out a whole word? Look in where Edit?

(Reads the manual.) The first thing you want to do is to mark what you want to delete. Click at the beginning, keep it pressed, and move it to the position at the end and let go.

[Struggles a bit, but manages to highlight the text.]

Now, if you look in the Edit menu.

(Does.) It's Cut isn't it? (Selects Cut.) The words are deleted.

6. Delete line

Delete line, so I can mark this. (Does.) And then I want to get to Edit again don't I? (Selects Cut from the Edit menu.)

7. Double spacing

Is Format how you do the double-spacing.

(Reads the manual.) I think if you go back to the top.

Of the document?

There are all the different spaces.

(Returns to the top of the document and looks at the ruler and points at the spacing icons.) So that's double and that's one and a half. So do I just select that one? (Selects double line spacing.)

8. Single spacing

(Returns to the ruler and selects single-spacing.)

9. Centre paragraph

Right, centring. Do I have to mark this paragraph if it's the only one I want to centre?

Yes.

And Format tells me how to centre?

(Reads the manual.) It's says that if you only want to do it for a few lines you mark it and select the align command from the format menu. If you do it for a larger piece of text or the whole document you can use the ruler, but they work a little differently from the align commands. You don't have to select the whole paragraph, just mark a piece of text within the paragraph and choose the align command. I think that it's enough if you put the cursor in the middle of the paragraph.

(Marks a piece of text within the paragraph.) And now to Format? Can I go there direct from here? [Without scrolling to the top of the document there is a confusion between use of menus and rulers.]

Yes, just click on it.

(Selects Align centre from the Format menu.)

10. Underline word, embolden word

So it's Style?

Yes, I think you want to mark . . .

. . . the word which I want to underline. (Marks a word and selects Underline. Selects another word and italicises it.)

11. Cut and paste

Is that in Format or in Edit.

You want mark it [the paragraph].

(Marks the paragraph.) And now I want to edit. (Goes up to the Edit menu and selects Paste which pastes some text over the marked paragraph.)

(Explains that she should have done Cut before Paste.)

(Removes the pasted text.) But what happened to the paragraph? Oh dear.

(Explains that the paragraph has been deleted.)

(Cuts and pastes another paragraph.)

12. Print

Try and get it printed, which is a File menu option.

(Goes to the File menu and selects Print.)

You just click on OK.

(Does.) [The printer status box appears.] What do I do with that? [The printer starts printing.]

13. Quit document

So for the quit do I go to File? (Selects Quit.)

14. Create a document

So I want to do what MacWrite? (Highlights MacWrite.)

And then open the file.

(Clicks on the File menu.) I want a new file.

No, Open.

(Does. Wants to change margins in the new document. Keeps selecting the ruler. Gives up.) I'll just start here instead.) (Types text.)

15. Save a new document

File . . . (selects Save). (Types a file name.) Just press that [RETURN]. (Does.)

Subject 14

1. Save file

(Clicks on the File menu and selects Save.)

2. Change margins

Would we have to highlight Edit.

(Looks at the manual.)

(Looks at the Edit menu.) Format, that sounds more like it. (Looks at the Format menu. Points to the align command at the bottom of the Format menu.) That bit there? (Looks at the Font and Style menus.)

It says in here [the manual] that it has got something to do with the ruler. (Points to it.) This bit. What about those little markers? (Points to the right hand margin marker.) What are they?

Do I push it [the right hand margin marker]? (Tries to move it.)

If you try to hold the button down while you push it.

(Eventually grabs the right hand margin marker and sets it to 6.5. Tries to move the left hand margin marker and selects the ruler. Grabs the paragraph indent marker and moves it. Grabs the left hand margin marker and moves it to 1.5. Eventually works out that the paragraph indent marker needs to be moved as well.)

3. Insert word

(Moves the pointer to the text insertion point.)

There's no cursor there, just the mouse thing [pointer] to move the cursor there.

(Jiggles the pointer.) Is that not the cursor there.

Well, the cursor does flash doesn't it?

(Looks at several of the menus.) How do you insert words into it.

(Reads the manual.) Put the cursor there with mouse.

(Moves the pointer to the text insertion point and clicks.) Oh right. Just type it in? (Types in the word.)

4. Delete characters

[Still has problems how to move the cursor.]

Presumably you do the same thing move the pointer to there and click it.

(Struggles, then manages to position the cursor behind the first character to be deleted. Presses BACKSPACE. Proceeds to delete the remaining characters in the same way.)

5. Delete words

(Positions the cursor at the end of a word and proceeds to delete it by backspacing. Deletes the remaining words in the same way.)

6. Delete line

(Moves the cursor to the end of the line.) There's probably a way to delete the whole line.

(Reads the manual.) I noticed before that sometimes when you dragged the cursor you can actually mark bits of text.

Um! (Clicks around with the cursor.) I don't know how that works. (Deletes the line by repeatedly backspacing.)

7. Double spacing

(Looks at the Format menu, then at Style.) Could you insert lines?

Yes, you could do that but it's very tedious. There must be an easier way. What else is there on that ruler at the top. Maybe we should go back and have a look at that.

(Does.) Maybe that one there (points at the double-spacing icon). (Selects it.)

Is that double or triple spaced.

I think that's triple. (Selects one and a half line spacing.)

8. Single spacing

(Clicks on the single-spacing icon.)

9. Centre paragraph

(Clicks on the Format menu.) Highlight Insert ruler.

Yes, see what happens.

(Does.) [A ruler is inserted at the current cursor position.]

Now that is interesting. It has put the ruler at the position of the cursor hasn't it?

Do I have to get that [the ruler] down on top of that [paragraph] do you think?

Probably, otherwise it's going to centre that paragraph as well.

(Tries to drag the ruler. Positions the cursor above the paragraph to be centred. Points at the centring icon on the ruler.) Is it this one?

Yes, it looks like it.

(Does.)

Well, that's centred it.

But it's done the lot.

But it's not done the previous bit has it?

No, it's just the bit below the ruler.

So presumably we want to put the ruler down there.

So do I go back to Format? Or shall I put this one back first? (Selects justify icon. Looks at the Format menu.)

Presumably you want to put another ruler in don't you.

(Looks at Format.) What would Hide rulers be? [Still thinking about how to get rid of the first one.]

Well, if it would actually destroy the ruler it would probably say remove or something like that. Presumably we want to insert another ruler I suppose.

(Selects Insert ruler which is inserted above the paragraph to be centred.) Oh god! [Is upset at having so many rulers in the document.]

Well it's in the right place now so we can centre it.

Would it centre the rest of it then?

Yes, that's true. (Reads the manual.)

Put the cursor below it maybe?

Yes, maybe.

(Positions the cursor below the paragraph to be centred and selects the centre icon.)

Well, that's done the one paragraph but again it's done the lot [the remaining text below the ruler]. What do we do?

Put another ruler in below the paragraph and change it back. (Does.) I'd love to get rid of those rulers.

I suppose you could hide them

(Goes to the Format menu and selects Hide rulers) Great!

10. Underline word, embolden word

(Looks at the Style menu.) Ahah. So we want to underline underline. I have to put the cursor down here. (Puts the pointer at the end of the word underline.)

I don't know.

Oh, let's try it that way. (selects Underline, but nothing happens.)

No.

I need to be in the word?

Try it.

(Positions the cursor in the word and selects Underline but again nothing happens.)

Lets think about this.

Try it to the right. (Positions the cursor at the beginning of the word accidentally highlighting the first letter.)

That's interesting it's gone black there hasn't it?

Yes. (Selects Underline and the letter is underlined.)

Gosh.

(Struggles.)

Maybe if you try . . .

Make the whole word black.

When you position the cursor try holding the cursor button down and moving the mouse.

(Does, and selects Underline) How do I get rid of the black? (Highlights another word and clicks on Bold.)

11. Cut and paste

(Clicks on Edit and looks at the menu.) Do I want to cut and copy it.

I think that we have to cut it to start off with don't we?

So I need to highlight it. (Tries to mark it by positioning the cursor first at the beginning then at the end of the paragraph.) Can you drag it across the whole lot? (Manages to highlight the first line, tries to highlight the second line and the highlighting on the first line goes away. Struggles, but eventually manages to highlight the paragraph.)

Now what?

(Goes to Edit and selects Cut.)

Where did it say it should go?

To the beginning. (Scrolls to the beginning of the text. Positions the cursor and looks at the Edit menu.) We've got to really insert. Paste? (Selects Paste from the Edit menu.)

12. Print

(Looks at the Edit menu and then at File, selects Print. Looks at the printer dialogue box. Selects File and gets a beep.)

I think that we've got to print it first.

Do we have to fill something in? (Wants to put 1.5 to 6.5 in the page range boxes.)

(Explains the choices.) So maybe it wants us to change something or just carry on.

So do we just click OK then? (Does.) [The printer starts printing.]

13. Quit document

(Looks at the File menu and selects Quit.)

14. Create a document

[Runs out of time.]

15. Save a new document

Subject 15

1. Save file

(Goes to the File menu and selects Save.)

2. Change margins

(Looks around the menus. Looks in Format for the change margin commands.)

Is there anything in the menus?

No. (Goes to the Edit menu.) Page setup?

(Explains that it is not in the menus.) If you look at this one here (points to the ruler).

Oh, you mean the ruler. Perhaps that's where it is then. (Inspects the ruler but cannot find out what to do.)

(Points out the margin markers.)

(Grabs the left margin marker and drags it to 1.5.)

So if it's that triangle for the left margin presumably it's that triangle for the right (points).

(Tries to grab the right margin marker and highlights the ruler. Eventually manages to drag it to 6.5.)

(Points out that the first line of each paragraph is incorrectly indented.)

(Grabs the paragraph indent marker and moves it to 1.5 as well.)

3. Insert word

(Moves the pointer to the text insertion point.) You just type it in . . . (clicks to insert cursor) and types in the word.

4. Delete characters

(Positions the cursor behind the first character to be deleted and presses BACKSPACE. Proceeds to delete the other characters in the same way. Starts to use the arrow keys to position the cursor.)

5. Delete words

There must be an easier way to delete whole words. Are you going to tell me how?

(Explains how to mark a piece of text.)

(Marks a word and deletes by backspacing. Marks the rest and deletes by backspacing.)

6. Delete line
(Marks the line and deletes with the BACKSPACE key.)
7. Double spacing
Double-spacing. What does double-spacing mean?
(Explains.) You already done some formatting before.
Oh, with the ruler. (Returns to the top of the text and looks at the ruler.) 6 lines per inch?
No.
(Points at the double-spacing box.) That one?
Yes
(Selects the double-spacing icon.)
8. Single spacing
(Returns to the top and selects single-spacing.)
9. Centre paragraph
Format (looks at the Format menu). Insert ruler (selects Insert ruler). [A ruler is inserted at the cursor position.] I see, that's where it is.
Where was it inserted?
Were that thing [cursor] is.
(Explains how to delete a ruler.)
(Returns to the paragraph to be centred and wants to position the cursor.) Does it matter where?
The best thing might be to put the cursor in the line above the paragraph.
(Positions the cursor and selects Insert ruler.) Centre (looks at the ruler). Which one is for centre?
Can't you work that out from the pictures?
That one (points at the centre icon).
(Explains that it has centred the entire text below the ruler.) You only want this paragraph.
So you put it here below the paragraph and put it back to where it was before. (Positions the cursor below the ruler and selects Insert ruler. Selects one and a half spacing then single-spacing.) That one?
(Explains that they are spacing icons.)
Of course. (Selects the align justified icon icon.) I can do away with those now I suppose. (Highlights the first ruler and wants to delete it.)
But what would happen to the text if you deleted the ruler? (Explains that the text is always formatted according to the nearest ruler above it.)
So if I delete this ruler now it would go back to the formatting that the ruler at the top has.
(Explains that Hide rulers can be used.)
(Selects Hide rulers.)
10. Underline word, embolden word
(Looks at the Style menu.) How will it know what to do? Will it do all of the text? (Selects an option from the Style menu and nothing happens. Marks the paragraph and selects an option from the Style menu. Highlights another paragraph and selects another option from the Style menu.)
11. Cut and paste
(Looks at the Format menu.) Do you black it out [mark it].
Yes.
(Marks the paragraph.)
Well you can cut it first and then paste it back somewhere else.
(Looks at the menus and arrives at Edit.) Cut (selects Cut). (Wants to immediately select Paste.)
You're supposed to put it somewhere else.
Alright. (Scrolls to the top of the text, positions the cursor, and selects Paste.) Wow!
12. Print
Ah, you can print this stuff can you? How? (Looks at the File menu and selects Print.) [The printer dialogue box pops up.] From . . . to . . . [page range the flashing cursor makes him think that he has to fill something in even though "all" is the current selection].
(Explains the options.)
(Clicks on OK and the document is printed.)
13. Quit document
(Looks at the File menu.) Quit. (Selects Quit.)
14. Create a document
MacWrite perhaps (highlights MacWrite and selects Open from the File menu) or New folder perhaps?
(Explains that the correct choice has been made.)
(Starts typing.)
15. Save a new document
(Selects Save from the Format menu, the save file dialogue box pops up, he tries to select Save but it is greyed.) Oh, I have to give it a name as well. (Types in a file name and selects Save.)

Subject 17

1. Save file

(Clicks on the File menu and selects Save.)

2. Change margins

Change the left margin to 1.5, change the right margin to 6.5, that must be in Format. Clicks on Format and looks at the menu.

(Reads the manual.) I don't think it has anything to do with that menu. It's got something to do with the ruler underneath. And it's the markings on the ruler. You've got to drag it. It's the black triangles. There's one at 1 and one at 6.

(Grabs the paragraph indent marker. Positions the paragraph indent marker at 1.5.) [The first line of every paragraph is set to 1.5.]

That's not quite right is it? I think that's the indentation. The triangle is the actual marker, so you want to move that as well.

(Drags the left margin marker to 1.5.) Ah! (Goes to the right and drags the right margin marker to 6.5.)

3. Insert word

(Moves the pointer to the text insertion point.) So do I just type? (Types the first character.) Ah, it [the cursor] is still up there. (Moves to the text insertion and clicks the cursor, then types the word in.)

4. Delete characters

(Positions the cursor behind the first character to be deleted and types BACKSPACE. Proceeds to delete the remaining characters in the same way.)

5. Delete words

(Positions the cursor at the end of the first word to be deleted.)

There must be an easier way to delete whole words. There's three of them. So, let's have a look. (Reads the manual.) So you want to drag the cursor across the text that you want to remove.

(Tries to mark all three words [struggles].)

(Explains how to highlight across more than one line.)

(Struggle initially, but eventually manages to highlight the words to be deleted.)

It says you use Cut from the Edit menu then.

(Looks at the Edit menu and selects Cut.)

6. Delete line

I suppose you do it the same way.

(Highlights the line and selects Cut.)

7. Double spacing

Does it tell you how to do that?

(Reads the manual.)

That would be in Format wouldn't it?

You have to scroll right up to the top. I think that it's on the . . .

(Points to the ruler.) On there. (Points to the double-spacing icon.) That one?

Yes, that's it.

(Selects it.)

8. Single spacing

(Returns to the ruler and selects the one and a half line spacing.)

9. Centre paragraph

You don't want to centre the entire text, only that paragraph.

(Looks at the Format menu.) Is it Align centre.

(Looks at the manual.) I suppose that you have to mark it first, then you can align it. (Reads from the manual) . . . if you want to change the formatting for only a few lines within the document use the align commands. That overrides the formatting on the ruler. You have to make a selection apparently you click anywhere in the paragraph.

Anywhere . . . (clicks the cursor in the paragraph.)

Go to Format?

Yes. (Does. Selects Align centre.)

10. Underline word, embolden word

(Looks at the Style menu and highlights Underline.) Do I have to select what I want to underline?

I would think so.

(Positions the cursor at the beginning of a word and selects Underline. Nothing happens. Positions the cursor in the middle of a word and selects Underline. Again, nothing happens.)

Try again.

(Does. Nothing happens. Selects Bold, and nothing happens. Positions the cursor in the middle of another word and selects Bold. Nothing happens..)

That's strange. (Reads the manual.) Select a piece of word and select the command from the menu.

(Clicks at the beginning of a word and selects Bold. Nothing happens.)

(Explains that the word has to be highlighted.)

(Marks a word and underlines it. Highlights another word and selects Bold.) Hooray!.

11. Cut and paste

(Highlights the paragraph and selects Cut from the Edit menu.) Do I go up.

Yes.

(Moves to the beginning of the text, goes to the Edit menu, and highlights Paste.)

How does it know where to paste it?

(Positions the cursor and selects Paste.)

12. Print

Must be in Edit I think. (Looks at the Edit menu.) No Print there. (Looks at the File menu and selects Print. The printer dialogue box appears.) Um!

What do you reckon?

(Points on OK.) Probably here.

Yes, click on OK.

(Does. During the delay she points to Continue on the printer status box but the printer then starts printing.)

13. Quit document

How do I leave? (Looks at the File menu.) Close?

How about Quit.

(Selects Quit.)

14. Create a document

Now you want to open your own document.

(Goes to the File menu and highlight Open.) Is it New or just Open.

I don't know, try.

(Does, and nothing happens.) How does it know what to open.

I think that you choose the option on the display.

(Looks around and is not sure what do do.)

(Explains that she has to open MacWrite.)

(Does.)

And then Open.

(Does. Starts typing a document.)

15. Save a new document

(Goes to the File menu and selects Save as.)

Why did you select Save as rather than Save.

(Looks at the dialogue box.) Does that means give it a name?

Yes.

(Types in a file name, hesitates, then presses RETURN.) And leave it? (Selects Quit.)

Subject 19

1. Save file

(Goes to the File menu and selects Save.)

2. Change margins

Then we want to change the left margin to 1.5. (Looks at the Format menu and selects Align left.) Let's try that.

I think we have to look it up. (Reads the manual.)

(Looks at the ruler. Points at the ruler.) I presume these are the markings up here. Have you found anything yet?

It says these triangles are tabs.

(Drags the tab marker.)

That's the tab and not the margin.

These might be the margins then.

They're the black ones.

(Tries to click at the right margin marker and marks the ruler.)

Try and move the black triangles.

(Eventually drags the margin markers to 1.5 and 6.5.)

We've still got a problem at the beginning of the paragraphs. You see that those lines still haven't moved. It looks like they are aligned with that other marker [the paragraph indent marker].

(Grabs the paragraph indent marker and moves it to 1.5 as well.)

3. Insert word

(Moves the pointer and clicks the cursor. Types the word in.)

4. Delete characters

(Positions the cursor in front of the letter to be deleted.) That will delete it. (Presses BACKSPACE deleting the wrong letter. Corrects the mistake. Proceeds to delete the other characters by placing the cursor behind each letter and pressing BACKSPACE.)

5. Delete words

(Positions the cursor at the end of the last word and backspaces.)

6. Delete line
(Marks the line with the mouse and presses BACKSPACE.)
7. Double spacing
Isn't this double-spacing now.
No, I think double-spacing . . .
Ah, she wants a line in between each of these. (Looks at the Edit menu.)
(Reads the manual.)
(Looks at the other menus. Looks at Format again.) That would probably be in Format I would of thought.
Weren't there some lines on the ruler at the top. Shall we just nip back up and have a look.
Okay. (Returns to the top and looks at the ruler.)
What about those boxes. Do you see those boxes with those lines there?
Ahah, here. (Points at the alignment icons. Clicks at the align justify icon.)
(Points at the spacing icons.) These three have got lines in them haven't they?
(Clicks at the double-spacing icon.)
That's done something, that's triple-spaced it.
It's this one. (Selects the one and a half line spacing icon.)
8. Single spacing
Is it this one (points at the single-spacing icon)?
Probably.
(Selects it.)
9. Centre paragraph
Centre the text. Okay. (Looks at the Format menu. Selects Insert ruler.)
We've got it in the wrong place.
I don't understand what it's done.
It seems to have put a ruler . . . Why did it put it there?
I don't understand why you need a ruler at all. Surely it's just within the margin.
(Explains what centring means.)
Shall we go to Format again and get the ruler.
Yes, okay try that.
(Selects Insert ruler which is again inserted at the cursor.) [She has two rulers in the wrong place.]
Oh, we've got two of them now. Have you noticed it's putting it in at the last cursor position isn't it? So presumably if we want to put one further down we have to move the cursor.
Yes okay. What does she [the experimenter] want us to decide here?
(Explains the justification icons on the ruler.) I don't think we actually move these [the misplaced rulers]. So just put another one where you want it.
So here. (Puts the cursor at the end of the paragraph to be centred.)
I think you probably have to put it above.
(Puts the cursor two paragraphs above.)
No, it's this paragraph.
(Puts the cursor in the right position and selects insert ruler.)
Bril!
(Clicks on the centre icon.)
That's done the rest as well.
Right!
How are we going to get around that.
Not really, no.
We've used a ruler haven't we to change it from normal to centred text, so . . .
Um!
Choose another one to change it back again.
Would it be something like this (points at the align justify icon)?
Presumably if you click on there now it'll go back to what it was. So . . . what would happen if we stuck another ruler in?
Yes, I mean where? (Moves the pointer around.)
(When the pointer is in the correct position.) There.
(Goes to the Format menu and is about to select Insert ruler.)
Well we have to put the cursor down there first don't we.
Yes. (Moves the cursor and selects Insert ruler.) How's that? (Selects the justify icon.)
That's it.
10. Underline word, embolden word
I don't know. (Pops up the Style menu.) Perhaps (selects Underline and nothing happens). Perhaps (marks a piece of text and selects Underline). Ah!
What else do we have to do?

Boldface. (Points at some of the text underlined.) Actually it's better not to have underline there. (Marks the text, but marks a few additional characters at the end which are not underlined. Selects Underline expecting the underline to disappear.) Ah, that hasn't done it. [Because not all of the selected text had been previously underlined. The underlined option was not ticked on the Style menu.] What about bold. (Selects Bold.) [The text is both underlined and bold.] (Selects underline again, which is ticked this time. The underlining is removed. Subject did not notice the difference of the tick on the Style menu.

11. Cut and paste

(Looks at the Format menu.)

What we're looking for is some way of cutting and pasting it. It's not in that menu is it?

(Edit perhaps.) Looks at the Edit menu. (Tries to select Cut.)

But, that's grey.

(Tries to select Cut again and then looks at the File menu.)

Presumably with Cut being grey at the moment it means we haven't done something.

But, perhaps I was thinking of file. Maybe you can change . . . (Looks at the File menu, Edit, then File again.)

Seems to me that with everything else on this we've had to highlight something before we do it.

Oh right. Maybe if we try that. (Highlights the paragraph.)

Now look at the menu if you can get at Paste now.

(Pops up the Edit menu.) Ah! Cut is now black. (Selects Cut.) Okay.

So now we want . . .

The trouble is it's disappeared.

You know like in Wordstar you cut something and it goes into a buffer.

(Scrolls to the top of the text.)

If you want to stick it somewhere here.

(Pops up the Edit menu and is about to select Paste.)

Ah, but where.

(Positions the cursor and selects tries to select Copy [which is greyed].)

Presumably it's Paste. I think Paste is the only one you can get at.

(Selects Paste and the paragraph is inserted.)

12. Print

(Goes to File and selects Print.) All, shall we do all. (Clicks on it but it is already selected.) Shall I press OK? (Does.) [The printer status box pops up.] Shall I press Continue [which is greyed]? (Presses Continue.) [The printer starts printing.]

13. Quit document

Let's get out.

(Pops up the File menu.) Quit? (Selects Quit.)

Bril.

14. Create a document

MacWrite options (highlights).

Well, the word processor is MacWrite.

(Highlights it.)

Now you've got to open it. Open on the File menu.

Oh. (Selects Open.) [The untitled document appears.] Do I have to give it a title?

I think that we can do that when we save it.

(Starts typing in a document.)

15. Save a new document

(Goes to the File menu and selects Save.)

Subject 20

1. Save file

(Clicks on the File menu and selects Save.)

2. Change margins

(Explains about the ruler.)

Yes, I can see that. I'm not sure how you change it though.

(Reads the manual.) Right, you go up to the black triangles. These are the margin markers. You want to drag those along.

So we put the cursor there do we? So what do I have to do press there to get it?

Point the arrow there [the left margin marker]. Click and drag it.

(Tries to do it and selects the ruler by mistake. Has difficulty to control the mouse. Eventually drags the paragraph indent marker and moves it to 25.)

(Explains that she's dragged the indentation marker so only the first lines of each paragraph have been moved.)

(Grabs the left hand margin marker and drags it to 1.5.)

(Explains that she must move the paragraph indent marker back as well.)

Now this one. (Grabs the right hand margin marker and moves it to 6.5.)

3. Insert word

Do I have to correct this one first then? (Positions the pointer and clicks to position the cursor.) Do I just write or do I use the keyboard? (Types a word.)

4. Delete characters

(Positions the cursor behind the character to be deleted and presses BACKSPACE. Proceeds to delete the other characters in the same way.)

5. Delete words

Do I do it a word at a time?

Yes.

How do you do that?

(Reads the manual.) You want to mark . . .

Before and after or something? (Clicks the cursor at the beginning and at the end of the word.)

Click at the beginning then drag the cursor over the text that you want to delete.

(Marks one word.)

There are two words on the next line as well.

(Marks the other two words thereby undoing the marking of the first word. Marks one word and presses BACKSPACE. Marks the two words on the next line and presses BACKSPACE as well.)

6. Delete line

(Marks the line and deletes it using the BACKSPACE key.)

7. Double spacing

Do I go to Format to do that sort of thing [double-spacing].

Do you want me to have a look? That's at the top of the document.

(Pops up the Format menu.)

No, actually it's underneath the ruler. See the little pictures. If you click on them you'll get that spacing.

[Subject keeps looking at the ruler.]

No those. (points to the spacing icons.)

What will they do?

They are different types of line spacing.

(Points at the single-spacing icon.)

That's the one you've currently got.

So this one. (Points at the one and a half line spacing and selects it.)

No, I think it's the other one.

(Points at the double-spacing icon and selects it.)

8. Single spacing

You have to change it back to single-spacing.

(Selects single-spacing from the ruler.)

9. Centre paragraph

Format . . . (pops up the Format menu and select Insert ruler). [A ruler is inserted at the current cursor position.] Is that what I was meant to have done?

You want to . . .

I want to centre this one (points to the paragraph).

(Reads the manual.) If you want to change the alignment for a few lines in a document use the align command from the menu. Rather than using the align commands from the ruler. Click an insertion point any where in the paragraph.

I don't see what I'm meant to do at all.

Just within the paragraph you want to centre position the marker.

(Clicks the cursor within the paragraph.) And drag it along to the end.

It just says click and insertion point.

(Pops up the Format menu.) And select?

The align the command.

(Selects Align centre.)

10. Underline word, embolden word

What are we actually meant to be underlining it doesn't say? (Pops up the Style menu.)

Any word in that paragraph.

(About to select Underline.) Ah, I should have . . . clicked on it [the word] first before selecting Italics. (Selects Italics and nothing happens. Positions the cursor in front of a word and selects Underline again. Nothing happens.) Um! Does it say about it there. I was trying to underline the word underline.

How do you think you've got to mark it?

The cursor. Perhaps dragging it along. (Struggles initially then manages to highlight the word. Selects Underline. Marks the next word and selects Bold.) [Since the word is still highlighted she can't see the difference and selects Bold again. This de-selects the Bold.]

It's okay, if you click the cursor again . . .

(Does.) [The word is in plain text.]

(Explains that she both selected and de-selected the Bold option for that word.)
(Highlights the word and selects Bold again.)
If you click the cursor somewhere else.
Okay. (Does.) [The word is emboldened.] Got it.
11. Cut and paste
I'm not quite sure what it means but I'm lighting it up here. (Highlights the paragraph. Scrolls to the top of the text. Positions the cursor and highlights a piece of text at the top.)
What do you think you are doing?
I was trying to move it [the paragraph] to just there, but I can't actually move it. Shall I try Format again?
Where do you think it might be?
Ah, Edit. (Looks at Edit and selects Paste.) [The contents of the clipboard are pasted over the selected text.]
(Explains what has happened. Makes the subject look at the original paragraph.) See, it's still there?
12. Print
It's in the File menu.
(Goes to the File menu and selects Print.) [The printer dialogue box appears.]
You just want to click on okay.
(Does.) [The printer status box appears.] (Tries to select Continue which is greyed.)
The printer will start any second.
[The printer starts to print.]
13. Quit document
[Runs out of time.]
14. Create a document
15. Save a new document

MacWrite Comparison Group

Comparison-Subject 1

1. Save file

(Pops up the File menu, hesitates.)

What are you trying to do?

To select Save, where do you have to go? To the keyboard or to the . . .

On the menu.

The S [the keyboard accelerator?

Yes, pull it down.

(Selects Save from the File menu.)

2. Change margins

So the left margin to 1.5 . . .

Do you have any idea what to do?

No, not really.

Do you want to try something?

Search maybe (pops up the Search menu). Format maybe (pops up the Format menu). Align left maybe (selects Align left). [Nothing happens.]

What do you think this would do? You've got to change the left tc 1.5 and the right to 6.5.

Well I haven't changed anything have I? Let's go to Format. I'll go there again. (Pops up the Format menu.) Set page? (Selects Set page.) [Dialogue box appears for the new page number.] That's not it. (Selects Cancel.) So I haven't actually changed the left margin to 1.5 have I?

No. Do you want to try any of the others?

(Looks through the other menus.)

(Reads the manual.) There's a bit here about changing margins - you use those ruler thingies on the screen. The little markers at the corners.

(Points to the left hand markers.) These?

Yes.

(Tries to click at the left hand margin marker, but selects the ruler instead.) Let's try some of these here. (Clicks at the one and a half line spacing. De-selects the ruler.)

No, you've just changed the spacing. Put it back.

There (clicks on the single-spacing). Yes.

Those margin markers - you have to drag them.

(Clicks and tries to drag, but moves the window.)

Those markers.

(Clicks on the left hand margin marker and starts dragging it.) Ah, I see. We'll get there eventually. So that's that one.

What about the right hand one.

That was 6.5. (Points at it, clicks, and drags it to 6.5.) [Hasn't moved the paragraph indent marker to the correct position.]

3. Insert word

(Moves the pointer to the text insertion point and clicks to position the cursor.) Do I print that now using the keyboard?

Yes, just type it in.

(Types the word in.)

4. Delete characters

(Moves the pointer behind the first character to be deleted and presses BACKSPACE.) [Deletes the last character of the word she has inserted and is confused.] Why have I got two cursors? (Retypes the letter just deleted.) Is it because I left it there? How do I move it, clicking maybe? (Tries to drag the cursor.) I want it to come with me.

So where do you want the cursor to go?

(Points on the screen.) There.

So if you go down there.

(Moves the pointer and jiggles it.) So that doesn't come with me. So that's the moving one [pointer], but that [cursor] is still staying there. How do I get it then?

See what you can do with the one that moves around the screen. You got it there somehow, so you must have done something to get it there.

(Plays around with the mouse and marks a line of text.) Why does that turn it black?

You could try moving it there and clicking it in.

So if I move and click onto that (moves the pointer behind the first letter to be deleted and clicks to position the cursor.) (Presses the BACKSPACE key to delete the character.) Now move it to the other one. (Moves the pointer and presses BACKSPACE.)

You've done it again.
(Corrects the mistake then proceeds to delete the other characters.)
5. Delete words
There must be a quicker way to do this than to do the whole . . .
Yes, what do you think?
(Deletes one word by backspacing.)
Is there a way of marking them?
With the mouse.
Any idea how to do it?
No, but it must be possible.
(Reads the manual and reads out to the subject how to mark a piece of text.)
Ah, here we go (marks a word and presses DELETE).
6. Delete line
So (marks the line and presses DELETE).
7. Double spacing
Any ideas?
If we blacked out one of the lines and moved it with the arrow cursors.
I think you have to do the whole document.
(Marks the paragraph.)
So what are you going to do now?
So that's no use then is it?
What options could it be on? (Reads the manual.)
Format? (Pops up the Format menu.) Not really.
Any of those other menus?
(Looks at Edit and Style.) Why is it not under Format? That's where I would have put it.
Tell that to the people who design these things. (Points at the manual.) It's actually on the ruler.
So we have to bring that back don't we?
You have to go back to the top of the page I suppose.
(Scrolls back to the top of the page.) Right. That one here must be double-spacing (points it and selects it.)
That's double-spaced it.
Has it?
Well, you've got twice as much space between the lines as you had before.
8. Single spacing
So we need to get back for that. (Goes to the top of the text and clicks on the single-spacing icon.)
9. Centre paragraph
[Is still at the top of the text.] Insert ruler (selects). [A ruler is selected at the current cursor position.] Oh!
What happened?
It has inserted a ruler . . . there.
What have you done?
It told me to insert a new ruler and I have.
But why there?
I don't know why it was there. So if I went back up to the top again. Now I've got a ruler in there where I don't want. [The subject thinks that she has to be at the top of the text to use the menus.] (Clicks on the Format menu.) So how do you know where your ruler is going to appear? (Selects Insert ruler.) It's just chance? [Another ruler is inserted immediately below the previously inserted ruler.]
It's more than chance.
Ah, so it's where I leave that cursor. So the next one will appear there (points to the cursor position on the screen). (Clicks the cursor somewhere else.) Now it would appear above that line. To centre text . . .
You've got two rulers now.
(Points to the centre icon on the second ruler.) That one? Or do I have to black that paragraph before? (Marks the paragraph to be centred and selects the centre icon.) [The text below is centred as is the paragraph above into which the two rulers have been inserted.]
What are you doing now?
I'm going back to the top to get rid of the rulers. (Goes to Format and highlights Hide rulers.) I wonder if I have to set the page? Or use Ruler, that would be more useful wouldn't it? (Selects Use ruler.) [This returns her to the piece of text where the rulers are.] (Clicks on the rulers.) I'm trying to black one of the rulers.
Why?
Or could we just go back and hide the rulers?
No, I don't think that would get rid of them.
Blacking out is cheating.
Why is blacking out cheating?
Because it's not really there is it?
So what are we going to do?

I don't think we are really going to achieve very much here.

Well we've got two rulers.

Yes. I don't seem to be able to pick up this cursor.

What are you trying to do.

The second ruler appeared where I left the cursor. So if I took it [the cursor] into there (points at the ruler) I can make it disappear.

I don't know.

The rulers can be selected from Format, you just can't get rid of them. (Scrolls to the top of the text and pops up the Format menu.) [Seems to think that she has to be at the top of the text to use the menus.]

So what are you trying now?

Get rid of the ruler. Hide rulers? (Selects Hide rulers.) Yes, that's got rid of the one at the top. (Returns to the paragraph.) So we just need one don't we? (Scrolls back to the top.) [To use the menu.]

Wait a minute. Where are you going to put it?

Well it's going to appear where the cursor is at the moment. (Selects Insert ruler from the Format menu.) [There are now three rulers above the paragraph to be inserted.] We've got three now. [A line of text which was highlighted has been deleted when the ruler was inserted.]

How can we get rid of the other two, any ideas?

No, not really.

What could you do?

What haven't I tried? Well now I know where the next one will appear when I tell it to give me another ruler.

You'd made it black before.

But you can't black a ruler.

You did that at the top when you tried to align the tabs.

(Clicks on the ruler and nothing happens.) See, the cursor is left there [below the ruler]. It doesn't want to come. (Tries to drag the cursor into one ruler thereby highlighting it.) How did I do that? (Marks all three rulers and a piece of text.) Well, lots going to go in a minute. (Clicks the cursor and the marking disappears.) Now how did I do that? (Tries to click on the rulers again trying to highlight them, finally managing to highlight one of them.)

Now what are you going to do?

Delete (presses BACKSPACE).

Now you can get rid of another one.

Was that just around there? (Clicks a couple of times and manages to highlight another ruler. Presses BACKSPACE.) Are we meant to be using this one [the one remaining ruler]?

Yes, centre the text but only in this paragraph.

Right. (Marks the paragraph below the ruler.) Now.

What are you going to do now?

Go back at the top.

No.

No. Centre the text. (Selects the centring icon.)

[The text below the ruler is centred but the first paragraph below the ruler doesn't look centred because of the combined effect of the paragraph indent marker not being set correctly and the lines of text within the paragraph happen to contain the maximum amount of characters. The subject is now totally confused and proceeds to try all alignment and spacing options.]

What are you trying to do?

Centre it but . . . (Points to the centring icon and selects it.) I thought that one would but . . .

Yes, but it didn't centre the paragraph that you wanted it to do.

(Selects the Right align icon.)

Go back to single-spacing.

(Does.)

So why hasn't it centred. [It is quite clear now that the alignment and justification options apply to all the text below the ruler.] (Points at the single-spacing icon.) That's just for the up and down spacing it's not sideways spacing is it?

You've centred the bit below the bit to be centred. [The co-experimenter is confused. Actually, everything below the ruler has been centred.]

(Clicks the left align icon.) That's how it was originally. (Clicks on the centring icon again.) That's centred that (points o the paragraphs below the first paragraph). So I must have to move my black [marking] up. It's not changing this paragraph at all.

What do you think?

(Removes the marking. Marks another line in a paragraph below.) If I just do that that is going to centre that, or is it? (Clicks on the left align icon. Tries the spacing icons.) [Seems to believe that any choice made on the rule only affects the marked text.]

It's affecting the whole lot, but you just want to centre the one paragraph.

We didn't achieve anything with that paragraph at all except up and down spacing.

Try clicking on the centre one [icon] again (points to the centre icon).
(Does.)
That's centred it. But, it's centred everything below it as well. Any ideas?
It must be something to do with what's below that the cursor, which is below the first paragraph].
What's your suggestion now?
Well I've got to get it up there haven't I. (Marks the paragraph above the ruler.) It will centre everything below. Isn't that going to help?
No, I'm just trying to work out what you're thinking.
Well, when we blacked out this paragraph [the paragraph below the ruler] it centred everything below. So if we want to do that paragraph [the one below the ruler] we have to do [mark] the paragraph above it.
Won't that still centre everything below [the ruler].
Yes.
What do you think? We've got the ruler there now and we've centred everything below it.
Move the ruler down?
Hang on, another one?
Move it [the ruler] up.
(Starts reading the manual.)
(Clicks the cursor at the beginning of the second and then the first line of the paragraph to be centred.) That's just moving it to the beginning of each line. (Points at the Format menu.)
Try another ruler?
[The co-experimenter doesn't realise that the subject doesn't realise that the paragraph below the ruler is actually centred. The co-experimenter is trying to get the subject to put another ruler below the paragraph to be centred, to format the rest of the document correctly. However, the subject is still trying to centre the paragraph, thinking that every paragraph below the ruler except this paragraph is centred.]
Putting it where? Below this paragraph? (Positions the cursor and scrolls back to the top of the text.)
So you're going to the top of the page now?
Didn't need to do that did I because I've got those little words [the menu bar] there. [The subject finally realises that she does not have to be at the top of the text to use the menus.] (Returns to the paragraph and selects Hide rulers.) Hand on.
That hid it.
It [the ruler] is still there though. That's the trick the ruler is still there.
Don't you want another one.
When I put it back in we'll have two again won't we. [The subject understands that when a ruler is inserted, all hidden rulers are displayed as well.] (Selects Insert ruler. The ruler is inserted below the paragraph to be centred.)
The first one [ruler] has centred everything below. What do you do with the next one?
(Points to the first ruler.) This one has centred everything below. Right. So this one (points to the second ruler) has that one centred everything below it?
It's on centred.
So . . .
Any ideas?
(Selects right justify on the first ruler.)
Hang on.
That's now centred (points to the paragraph to be centred which is now right justified.)
No, you've just switched it to right [justification].
Oh!
No, it affects the text below it.
(Selects centre again on the first ruler.)
That's centred it.
Right.
Everything below that paragraph you want to put back to what it was before.
To the left, that's that one (selects the left justify icon). Job done? So now we want to get rid of some of these rulers don't we?
It's up to you.
(Points to the Format menu and pops it up.)
How did you do it before?
Blacked them (lets go of the Format menu.) Highlights the first ruler and presses BACKSPACE to delete it. Highlights the seconds ruler and deletes it also by pressing BACKSPACE.)

10. Underline word, embolden word

(Highlights a word and goes to the Style menu.)
Underline.
(Selects Underline. Highlights another word.) This one on bold face. (Goes to the Style menu and selects Bold.) Happy?

11. Cut and paste

Any ideas?

It's got to be blacked. (Marks the paragraph.)

What are you going to do with this?

Edit (goes to the Edit menu and selects Cut). So this will do that.

Right, now you have to put it at the top of the document.

Edit (pops up the Edit menu) we want to paste it somewhere (selects Paste). Has that put it back where it was?

Yes.

So I have to move this cursor first have I? To the top. (Pops up the Edit menu and selects Undo Paste.) What's happened there.

It's gone again. You undid the Paste.

(Then pops up the Edit menu again and selects Redo Paste.) So that's put it back in. (Pops up the Edit menu and looks at the choices.) And you don't want to do anything else.

You are supposed o put the paragraph at the top of the document. What do you suggest.

We did that before . . . Well it knows what paragraph we're talking about. (Pops up the Edit menu again.)

Try to move it to the beginning of the text.

So do I have to go back to the beginning of the document. (Scrolls to the beginning of the document.)

Where do you shove it.

(Positions the cursor.) There.

Alright then.

(Selects Paste.)

Yes.

(Returns to the bottom of the document.) We've still got that piece of text there so shall we just delete it? (Highlights the paragraph and presses BACKSPACE.)

12. Print

So I want to print the document. File (pops up the File menu). Print (selects Print). [The printer dialogue box appears.] (Looks at the options.) Draft?

Yes.

All? (Tries to select it.)

It's on All.

Copies 1 (tries to select automatic but it's already on automatic). What now?

You've got OK or Cancel.

Ah (selects OK).

[The printing in progress box pops up.]

(Tries to select Continue.)

13. Quit document

(Pops up the Format menu.)

What are you trying to do?

Undo the changes that I've made.

Well, if you just leave the document without saving. That will get rid of it.

Back to the beginning.

No, you have to quit or leave it. Go back up to the menus again.

(Scrolls up to the top of the document.) I don't really need to go up to the top do I? (Looks at the File menu.)

(Reads out the choices which are blackened.)

Quit (selects Quit). [The quit dialogue appears.] Save changes - no.

14. Create a document

[Not completed because of lack of time.]

15. Save a new document

Comparison-Subject 2

1. Save file

(Clicks on the File menu and selects Save.)

2. Change margins

Change the left margin to 1.5 and change the right margin to 6.5.

Right. (Points at the the left hand margin marker and the paragraph indent marker and clicks on them. Starts to move the paragraph indent marker.) So if I . . . left margin to 1.5 (positions the paragraph indent marker at 1.5). Right margin to 6.5. (Grabs the right hand margin marker and drags it to 6.5. Returns to the left margin and drags the left margin marker.) Do I try and change the left margin here?

That's not quite there. If you try to move it.

(Grabs the left hand margin maker again and drags it to 1.5.)

That's it.

So I've changed both the margins, the left one to 1.5 and the right one to 6.5. I guess we have to move to the next page.

3. Insert word

(Moves the pointer to the text insertion point and clicks it, then types in the word.)

4. Delete characters

(Positions the cursor behind the first character to be deleted.)

Which character are you going to delete?

This one (presses the BACKSPACE key). (Proceeds to delete the other characters in the same way.)

5. Delete words

(Goes to the first word to be deleted and marks it with the mouse and presses the a key.)

Oh, how did you do that?

I don't know, I just pressed SPACE.

You pushed space to delete a word. I didn't know you could do that?

Push the SPACE to delete it? I thought it might.

Did you think it would do that or have you used it before?

I remember that one from before, yes. If you blocked things out on something I used I before then you could get rid of the whole lot at once. (Marks the remaining two words and deletes them by pressing SPACE.)

6. Delete line

(Marks the line and pushes SPACE to delete it.) [Instead of just deleting the text she's added a SPACE as well.]

7. Double spacing

Spacing . . . (pops up the File menu, then the Edit menu.)

What are you looking for?

How to change it from single space to double space. (Pops up Search and then Format.)

So you are just looking through the menus.

I'm just looking through the menus to see where it might have a . . . to change it from single space to double space (continues to look through the other menus.) (Now proceeds to look back through the menus from right to left. Looks at the Style menu.) So that's what it [text] is going to look like. What's that? (Looks at Font then Format.)

Any ideas?

No, we need to look up . . . would it have anything on the size of the space?

(Reads the manual.) This thing at the top of the page. The ruler thing. Line-spacing boxes. This thing (points in the manual).

Oh, the ruler. (Clicks on Format and selects Insert ruler.)

On top of the page.

(Looks at the ruler which she's just inserted and points to the double-spacing icon.) So that must be double-spacing. (Selects the double-spacing icon.)

You haven't changed the whole document.

I haven't changed the whole document? (Pops up the Format menu.)

There was a ruler at the top of the page, at the top of the document.

(Scrolls up to the top.) Ah, Like there. So that's one (points to the single-spacing icon, and then clicks on the double-spacing icon). So that's all being double-spaced.

8. Single spacing

If I go back to the top and go back to single (does, and selects single-spacing). (Scrolls down the text.) [The text below the second ruler is still double-spaced.]

That's still double that bit.

(Inserts another ruler above the second ruler.) That's interesting. Why have I got two rulers now? Did I just put in another ruler when I already had another ruler in? (Selects the single-spacing icon on both of the rulers.)

Yes.

Okay. (Selects Hide rulers from the Format menu.)

9. Centre paragraph

(Reads the instructions) . . . centre the text but only in this paragraph . . . So I have to insert a new ruler. (Inserts another ruler without paying attention to where the cursor is.) [The two hidden rulers are now also displayed.] How many rulers are on here?

You've got three here. We can get rid of two of them.

(Selects Hide rulers again.) When I hid the rulers before that took away all of them didn't it? So why . . .

But you've got rid of the one you want.

(Scrolls through the whole document to see if there are any rulers left.) No. (Selects Insert ruler again.) If I get another one I'm going to get all three again. [There are now four rulers.] So each time I get an extra one.

Any idea?

There must be a way of just coming up with the original ruler. (Selects Hide rulers again. Selects Insert ruler.) Am I going to get five now?

Yes. You keep inserting new ones. How are you going to get rid of them?

Can I?

There are five of them now.

Yes, I think there are. (Highlights Hide rulers.)

That's only hiding them obviously.

Oh right. (Looks at the Format menu.) So instead maybe of adding another ruler I want to Use ruler maybe instead. (Looks at File menu, then Edit and selects Undo Insert ruler. Pops up the Edit menu again and selects Redo Insert ruler, then selects Undo Insert ruler. Pops up Search and Format.)

What are you trying to do now?

(Looks at File and then Edit.) So I've only got rid of one of them. [Which is correct.] So I've got 1, 2, 3, 4. (Looks at the Edit menu.) But that [the Redo Insert ruler] is only going to allow me to redo. So I can't get rid of another one that way. So I'm stuck forever with the four. I think I'll go ahead and centre it and try and forget about the others. I'm going to insert a new ruler.

How do you get rid of text?

Um, (starts clicking on a ruler) you block them out and delete them. (Clicks on several parts of a ruler and fails to highlight it.) Can I drag the thing over it? (Tries to click on different parts of a ruler, finally manages to highlight all four rulers and presses BACKSPACE to delete.) Back to centring the text.

But only that paragraph.

So if I only want one paragraph centred, block that paragraph out (highlights it). Whatever I select now will only happen to that paragraph.

(Reads from the instructions.) You have to insert a new ruler, new rulers can be selected from Format.

(Selects Insert ruler which deletes and is inserted at the paragraph.)

Now what happened to the paragraph.

I didn't delete did I?

Can you Undo do you think?

(Pops up Edit, looks at File and Search.) So that did delete it didn't it? (Looks at Format, Search, and then Edit. Looks at File.)

What are you doing at the moment.

I'm looking if I can see anything that might get something back.

It's on the next one.

(Pops up the Edit menu.) Paste maybe.

No, Undo Insert ruler.

(Selects Undo Insert ruler.) [The ruler is gone and the paragraph comes back.] Oh, there it is. (Cancels the highlighting.)

So you've got to insert a ruler.

(Selects Insert ruler and gets a ruler above the paragraph to be centred.) There's the ruler and I want to centre it?

Yes.

So . . . (points at justify - which is the current selection) that looks like it might have something to do with centring (selects it). [Nothing happens.]

(Looks at the manual) You've got align left, centre, right, and justify. (Points at the icons in the manual.)

So centre is the second one?

Yes.

(Selects it.) But only this paragraph. So it's going down all of the document after my cursor. Put the cursor to the end of that paragraph?

And then what?

And then back to ruler and change it back to what it was before which was this one (clicks on the justify icon).

That's put them all back.

If I try to block out those (marks the paragraph) and then put it on centre do you think (Selects the centre icon.)

That's centred everything also. Another ruler maybe?

Yes. (Positions the cursor and selects Insert ruler. Selects the justify icon on the new ruler.) Do we have to leave these two rulers in here?

Do you want to get rid of them? What did you do before when you had five of them?

Which one was it (pops up File, Edit, and Search menus). I don't want to Hide the rulers because I'll just keep having them back. I dragged across the line then I deleted it. (Tries to click on the ruler to highlight it, but can't find the spot.)

What are you trying to do?

I'm trying to delete it. By getting to the end of the ruler and getting to the end of the other one and deleting them.)

Why at the end of the ruler.

I thought that I had to put the cursor behind what I had to delete. (Positions the cursor at the end of the line of text below the ruler and tries to drag upwards from there to mark it.)

Try to click on the ruler itself, you keep clicking on the box [icon] there.

Oh, I see. There. (Tries again and manages to mark the second ruler and presses BACKSPACE to delete. Then highlights the first ruler and deletes it in the same way.) [They don't seem to notice that this has undone the formatting.]

10. Underline word, embolden word

(Pops up the Style menu.) Underline a word (select Underline). [Nothing happens.] (Pops up the Style menu again and notices that Underline is now ticked.) That has selected it, so now if I write anything it will be underlined.

Would it?

(Pops up the Style menu again.) See, that's ticked.

But how do you underline a word that's already there.

If I went and did that (marks a word). Go to Style and select Underline (does). [The word is underlined.]

Now to bold.

(Pops up Style again and select Bold.)

11. Cut and paste

So I can black all of this out (marks the paragraph). And I'm dealing with just that. Now I have to move this paragraph to the beginning of the text. That's Edit. (Pops up Edit.) Cut, Copy, Paste. (Highlights Cut and hesitates. Then selects Cut.) Now if I put this to the beginning (scrolls to the top of the text) and Paste (selects Paste). [The paragraph is pasted back to where she cut it from.]

What happened?

(Reads the instructions again. Looks at the Edit menus again.) Undo paste, well what if I . . .

(Explains that she cut and pasted it in the same positions.)

Okay, we'll try that again. (Highlights the paragraph again. Selects Cut.) And I didn't put the cursor at the beginning did I? (Goes to the beginning of the text and positions the cursor then selects Paste.)

12. Print

Find out where printing will be. (Pops up the File menu.)

Yes.

(Selects Print.) [The print dialogue box appears.] (Looks at the options.) How many pages have I got? From page?

(Explains that All is the current selection.)

Okay, so that's . . . (clicks on OK). [Printer status box appears.] Printing in progress.

(Explains about the printer status box.)

13. Quit document

Save, where will Save be? (Pops up the File menu. Highlights Save.)

Without saving.

Oh, (reads the instructions again) without saving the changes you've made. So if I just leave it then.

Quit this without saving the changes.

(Goes to File menu and selects Quit.)

14. Create a document

So now I've got to open a new file?

How do you open a new file?

(Points to Empty Folder, opens it it, then closes it. Pops up the File menu. Highlights Empty Folder and selects Open from the File menu.)

What about MacWrite.

(Selects MacWrite options.)

There's MacWrite there.

(Double clicks on MacWrite and opens it.) So I'm now at the beginning of my untitled document. (Starts typing.)

15. Save a new document

(Goes to the File menu and selects Save.) Save current document as . . . (types in a file name then clicks on Save.) (Selects Quit.)

Comparison-Subject 3

1. Save file

I think you go up to the top [File menu] and select Save.

(Pops up the File menu.)

And select Save.

(Does.)

2. Change margins

Any idea?

(Points at the left hand margin marker.)

What are you trying to do now?

Don't know. (Points at the tab icons.) Is it one of them?

So what suggestions would you have, or ideas?

I don't know.

(Starts reading the manual.)

If you try and move any of the things there.

(Clicks on the ruler and selects it. Grabs the paragraph indent marker and moves it along the ruler.)

I think that's 35 now.
Oh, right. (Points on it trying to move it back.)
Try clicking on it.
(Eventually manages to pick it up and move it to 1.5.)
Move the right to 6.5.
(Does.)
There are still these bits here. It's only indented the first line of each paragraph.
(Points t the paragraph indent marker.) That? (Grabs the left margin marker and moves it to 1.5.)
3. Insert word
(Moves the pointer to the text insertion point and clicks the cursor.)
Insert?
Do I type it? (Types in a word.)
4. Delete characters
(Moves the pointer behind the first character to be deleted and presses BACKSPACE, thereby deleting the last character of the word just inserted. Types the letter back in again and tries to move the cursor by dragging it with the pointer.)
What are you trying to do?
Go down there. (Tries to drag the cursor with the pointer and highlights a large piece of text.)
What are you trying to do?
I don't know. I want to go there. Am I done with that one.
Yes.
(Moves the pointer behind the first character to be deleted.)
What are you trying to do now.
Delete it.
What?
The extra letters.
It's gone all black, I just wondered what you were doing.
(Clicks somewhere and manages to get rid of the marking. Moves the pointer behind the first character to be deleted.)
(Points to the cursor on the screen.)
(Uses the arrow keys to position the cursor and presses BACKSPACE to delete a character. Proceeds to delete the other characters in the same way.)
Do you find it easier to do that from the keyboard than with the mouse?
5. Delete words
(Hesitates.)
What are you trying to do?
Delete words.
Any idea?
(Positions the cursor at the end of the text to be deleted.)
Are you going to do something with the mouse now
(Highlights two words and deletes them by pressing BACKSPACE. Marks the other words and deletes them in the same way.)
6. Delete line
(Marks the line and presses BACKSPACE to delete it.)
7. Double spacing
Double spacing.
What do you mean by double-spacing?
(Explains.) There should be something to do it automatically.
(Marks a line.)
You should do it for the whole document.
(Proceeds to mark the line.)
What are you trying to do now?
Trying to move the line down.
Why
To make a gap in between.
Do you want to do that for every line? Don't you think there would be an easier way? See if you can find that. (Starts reading the manual.) See if you can find anything in the menus.
(Looks at Edit, Format, and then the other menus. Looks at Format again.)
Any ideas?
No. (Proceeds to look at Search and Style.)
It says here that you have to use the ruler.
(Pops up the Format menu again.)
I think there's one at the top.

(Scrolls to the top of the document. Points at the 1.5 spacing and selects it. Is quite happy with the result.)

8. Single spacing

(Returns to the top of the document and selects single-spacing.)

9. Centre paragraph

(Goes to the Format menu and selects Insert ruler.) [The cursor was in the right position.]

Any idea what to do to centre it?

(Looks at the ruler. Points to the margin markers.) Move these bits along?

Well, at the moment it is justified.

(Points at the tab markers.) These?

I don't think they'll do it.

(Looks at the Format menu again.)

It says here there are line-spacing boxes and align boxes as well.

(Points to the alignment icons.) One of them?

I think so.

(Selects the right justify icon.)

I think that's right alignment. You want it centred.

(Clicks on the centre icon.)

You've done the whole lot. Any idea how to do just one paragraph.

What, on the ones above as well?

(Points to the paragraph above the ruler.) They're still the same. What do you think you should do?

Go . . . (points to the paragraph below) put this back to the left or the right.

Yes.

(Goes to the Format menu.)

What are you thinking of doing.

(Highlights Align left.)

It was justified before.

(Selects justified.) [Nothing happens.]

It's still centred.

(Positions the cursor in the paragraph below the one to be centred and clicks on the align left icon.)

That's left alignment.

Was it right [aligned] before?

No, it was centred.

So do I want to centre that bit.

Yes, you want to centre that paragraph [points to it]. But, you don't want to centre these paragraphs beneath it. And, you don't want to centre anything above it. (Explains that when she centred everything before all paragraphs below the ruler were centred.)

I might move this down.

What?

The ruler. (Points at the centring icon.) If I centre that bit and move the other bit back.

How are you going to do that?

(Selects centring.) It's centred now?

Yes.

Right.

So, how can you move the bit back?

(Scrolls down, points at the Format menu and selects Insert ruler.) [The ruler is inserted in the middle of the paragraph below the one to be centred at the current cursor position.].

Have you got any idea why that happened.

Did it too low

What shall we do now?

(Goes to the File menu and selects Insert ruler.)

We've got 2. Any idea why we've got two there?

(Pops up the Format menu and highlights Hide rulers. Lets the menu go.)

Is there any reason why it has come in between the word options?

That's because the cursor is there.

Can you get rid of the rulers then

(Looks at Format and selects Hide rulers.)

So where do you want the rulers?

(Tries to move the cursor by dragging it.)

How are you trying to move the cursor?

(Uses the arrow keys to position the cursor. Selects Insert ruler.) [The new ruler is inserted in the correct position and the other two rulers reappear.]

Can you get rid of those.

(Pops up the Format menu and highlights Hide rulers.)

That will hide all of them.
(Selects the left align icon on the new ruler. Goes to Format and selects Hide rulers.) [The text between the new ruler and the two previous ones is set to left align. The text below the other hidden rulers is still centred.]
(Points this out.)
(Selects Show rulers.)
Can you just delete those two rulers.
(Tries to click on them.)
How did you get rid of letters and text?
(Manages to highlight one ruler and presses BACKSPACE. Struggles, then highlights the second ruler and deletes it using BACKSPACE.) Can you change that from justify to left align? (Selects left align from the Format menu.) Has it done it?
No. How did you do it before?
(Selects centre icon.)
That's centred, you wanted justify.
(Selects the justify icon.)
Do you want to get rid of the rulers now?
(Deletes the bottom ruler.) [The text has gone back to being centred.]
What about the other one.
(Deletes the other ruler.)

10. Underline word, embolden word

(Goes to Style and selects Underline.) What happened?
Can you underline a word?
What word?
Any.
(Marks a word and selects Underline.)
Can you put one on bold.
(Positions the cursor within a word and selects Bold. Nothing happens. Does the same again.)
What do you want to do?
I want that to go . . . Can I do any word?
Yes.
That bit went black.
How?
By pressing it. (Positions the cursor in another word and selects Bold. Nothing happens. Manages to mark a word by double-clicking on it. Selects Bold and the word is emboldened.)

11. Cut and paste

(Marks the paragraph.)
Cutting and pasting, how do you do that?
(Pops up Format, Font, then Edit. Selects Cut.)
And now you put it at the top of the document.
(Scrolls to the top of the document and selects Paste. The paragraph is pasted where she deleted it from.)
You put it back. Why is that?
Because the cursor was still there. (Selects Undo Paste. Return to the top of the document and clicks to position the cursor. Selects Paste.)

12. Print

(Looks at File and selects Print.) [Printer dialogue box appears.] (Looks at the options, clicks on All - even though it's selected. Clicks on From, but nothing happens. Clicks on OK.) [The printer progress box appears.] (Tries to click on Continue.)

13. Quit document

Now, leave the document without saving changes.
(Goes to File.) Quit?
Yes.
(Selects Quit.)

14. Create a document

You have to open up a new file to write a letter.
(Highlights MacWrite, then double-clicks on it to open it. Starts typing a document.)

15. Save a new document

Comparison-Subject 4

1. Save file

[Has some problems sorting out how the menu works.] (Eventually selects Save.)

2. Change margins

Change the left margin to 1.5. Okay. (Points to the ruler and then pops up the Format menu. Highlights Align left.)
So what are you doing now?

It says change the left margin to 1.5 and the right margin to 6.5.

So you're looking through this.

Yes, just check the Format. I presume it'll be in Format anyway. Align left - I presume that . . .

That will align all the text left.

Alright. (Selects Set page and clicks on OK very quickly without realising.)

Any more ideas.

(Looks at the Font menu, then Style, Search, Edit, and File.) What about Page setup? (Selects Page setup.) [The Page setup dialogue box appears.]

No, Cancel it.

(Does.)

Have you got any ideas?

What about this? (Points to the left hand margin marker and paragraph indent marker. Grabs the paragraph indent marker and moves it to 1.5.) [The first line of every paragraph is set to 1.5.] Um! (Moves to the right hand margin marker.)

It's only moved the top bits.

Wouldn't it help if there was a menu there because on a word processor that I've used it was very very easy because all you did was bring up a menu for the margin and you just tell it how much you want, how many lines in very very quickly.

Move it to 6.5. [Right hand margin marker.]

(Grabs the paragraph indent marker and moves it.)

So what are you doing now?

(Drags it to 50.) Keep coming? [Wanted to drag it to 6.5.]

I think you've moved it too far.

(Drags it back a little.)

That's 40 I think. That's moving the first line bit here.

That's what it's doing, it's just reformatting those two lines.

I think it should be 1.5 that [the left hand margin marker.]

(Moves it a little further left.)

You want the left to 1.5 and the right to 6.5.

That must be there. (Moves it to 16.) [Finally understands that the first lines are aligned with the paragraph indent marker.]

(Points to the right hand margin marker.) What about those margin markers?

That one? (Points to the margin marker.) What about that one? (Points to the tab marker and drags it. Points to the margin marker.)

Try that one.

(Moves the right hand margin marker to 6.7.) On my computer which I used last year which was an Olivetti it has a counter which shows you exactly how many columns you've moved it.

Here you've got scales on a ruler.

(Looks at the Edit menu.) No. (Looks at Format, Search, Style, and File.)

3. Insert word

Find the missing word?

Yes, and write it in.

(Starts typing, and the characters are inserted at the cursor position.)

What happened there?

How do I get rid of it?

BACKSPACE.

(Presses BACKSPACE.)

Why has that [the text] gone up there do you think.

Good question. You must have to use a command to say insert.

Well it went up there first when you started typing, but you want it to go there (points to the text insertion point on the screen). Any idea?

Is there an insert command.

I don't know. I don't think so. (Starts reading the manual.) It says here you position the cursor with the mouse.

(Tries to move the cursor by dragging it thereby highlighting a piece of text.) Ah, I see. (Still keeps dragging it a few lines at a time.)

You want to put it down here.

That's a bit strange [the effect of the highlighting]. Can I make a suggestion about the cursor as well?

You want to try just putting it [the cursor] in.

(Still tries to move the cursor by dragging it.)

Can you try and position it between and and the rest of the sentence. What are you trying to do.

(Still tries to drag the cursor to the text insertion point thereby highlighting some text.)

Why is it going black? What do you think?

Maybe it was sort of blocking each line as I went over it. (Clicks the pointer without realising.) The cursor ha just moved.

It says position the cursor with the mouse.

That's what I'm trying to do. Why it's going black I don't know. (Moves the pointer to the text insertior point.)

Try clicking it now.

(Does.)

Put the word in now.

(Types in the missing word.)

4. Delete characters

Can we use just BACKSPACE or do you have to use the mouse. Lets see. (Presses BACKSPACE which deletes the last character of the word she's just inserted. Re-inserts the character.) Ah, the cursor has got to be there.

How did you get it [the cursor] there in the first place.

It just followed. (Is still trying to move the cursor by dragging it.)

Try positioning the cursor with the mouse.

When the cursor in not on text and do that (marks a blank line) . . . (Starts using the arrow keys to position the cursor.) That's cheating. (Positions the cursor and deletes by backspacing. Proceeds to delete the other characters in the same way.)

5. Delete words

Is there any way you can think of of just doing the word itself instead of just deleting each letter of a word. (Reads from the instructions.) You can mark the words with the mouse and delete them. Can you find out how? You've got three words to delete.

If I delete words on that line first will it interfere with the other lines?

Any ideas?

(Positions the cursor and starts deleting by backspacing.) There ought to be something else. (Moves the pointer over the words to be deleted without highlighting them.)

Any ideas?

(Looks at the Edit menu.) I'm going to see if there's anything in the menus. (Looks through the other menus.)

It says you can mark the words with the mouse.

The question is if you are using the mouse what key afterwards do you press.

Don't know. (Starts reading the manual.)

Because I was thinking if you position the mouse there (points to the pointer at the end of the word) it would take away everything between it. [Seems to think that text can be marked by having the cursor at one end and the pointer at the other.] (Means to press DELETE but presses backslash by mistake and doesn't realise.) I was hoping it would take away the whole word.

How can you distinguish between that and a word?

Good question. You've got to tell it.

Any idea how to tell it?

If you position the cursor before (points to the beginning of a word) and then click on that and tell it to delete.

For selecting text it's got to be black.

What it was doing before with cursor (marks a piece of text) like that? (Presses BACKSPACE. Marks another word and deletes it in the same way.)

6. Delete line

Ah, so basically (marks the line and presses BACKSPACE to delete it).

7. Double spacing

Any ideas on how we can double space it?

(Pops up the Format menu.)

What are you looking for?

Well this is Format . . . Or Style (looks in the Style menu). No. (Looks at Edit.) That's strange.

Any ideas? (Reads the manual.)

No.

If you go back to the top of the document. It's something to do with the ruler thing.

(Scrolls back to the top of the document.) I wonder what these are? (Points to the spacing and alignment icons.) We'll soon find out. (Looks at the spacing icon more closely and then selects the double-spacing icon.)

That's done it.

8. Single spacing

And then you want it back to single. (Clicks on the double-spacing icon again.) How do you cancel it?

How do you do that?

Or do you change it back to single space? (Clicks on the single-spacing icon.)

9. Centre paragraph

(Pops up the Format menu and selects Insert ruler. The ruler is inserted one paragraph above where it should be.)

Why has the ruler gone there and not where we are trying to put the ruler?

(Pops up the Format menu.) How do you cancel this? (Points at the ruler. Clicks around the ruler and manages to highlight it. Presses BACKSPACE and deletes it.)

So how can we get the ruler?

(Points to the cursor.) It's the cursor there that's told it. We've got to move it haven't we.

How do we do that?

(Tries to move the cursor using the mouse by dragging it. Abandons this approach. Moves the cursor by using the arrow keys.) Selects the ruler. (Goes to the Format menu and selects Insert ruler.)

How do we centre the text? Any ideas.

When we centre it what does it mean?

(Explains what centring is.)

(Points at the right align icon.)

That's more lining it up to the right.

(Points to the centring icon.) That one? (Selects it.)

Yes, that's centred. (Explains that only this paragraph is to be centred.)

Shall I put the cursor there? (Points to the end of the paragraph.)

Well it hasn't done the text above has it?

No. (Points to the cursor.) Well, that's told it where to start [centring]. So if I put the cursor at the end. It was on that before. (Clicks on left align icon.)

So what are you trying to do now?

(Positions the cursor at the end of the paragraph to be centred.) Try it. (Selects the centring icon.)

That's still centred all of it. You could use another ruler.

(Changes it back to left align.)

You want to centre that paragraph. Any ideas? It's done everything below the ruler.

Insert another ruler there (inserts another ruler).

And now what are you going to do?

(Selects centring on the first ruler.) Then if I . . . How do I remove it? Before I made the ruler go black. (Clicks around the ruler trying to mark it. Marks it and deletes it. Deletes the second ruler in the same way.)

So we're back to the start again.

So there ought to be a way of keeping them.

So what are you going to do?

(Pops up the Format menu.) Insert a ruler. Let's try again. (Inserts one ruler at the top of the paragraph to be centred.) And another one. (Inserts one below.)

We have to change that to centring now.

But why is it on left now?

Because there's one [ruler] at the top.

Do we change that?

No. Can we sort of hide them?

What, Hide rulers?

Yes, but we want to centre it first.

(Selects centring on the first of the two rulers.)

Yes, well done.

(Selects Hide rulers.)

10. Underline word, embolden word

(Pops up the Style menu.) Underline.

How do you do it?

Well you have to move the cursor. (Positions the cursor at the beginning of the word to be underlined.) Will that underline all of it? Let's try it.

What are you trying to do.

I reckon if we put the cursor there it will probably underline the whole lot from then on. Let's give it a go. (Does and nothing happens.)

No.

(Looks at the Style menu again, selects another style and nothing happens. Tries to move the cursor using the arrow keys while highlighting Underline at the same time.) There's obviously something you have to do before.

Any idea how to tell it?

(Moves the cursor around the word.)

Any idea how to signal what you want to underline. How did you delete things?

(Marks the word.)

Are you trying to underline using the keyboard.

(Pops up the Style menu.) Yes, on the menu it says you can use that (points to the keyboard accelerator). (Releases the menu and uses the keyboard sequence to underline the word. Moves the cursor with the keyboard to the end of the word to be emboldened. Tries to drag the pointer, thereby moving the cursor again.) Oh! (Moves the cursor to the end of the word using the arrow keys again.) So! (Marks the word.) Bold. (Pops up the Style

menu to find out what the keyboard accelerator command is. Presses the keyboard accelerator to embolden the word.)

11. Cut and paste

That's in Edit. (Pops up the Edit menu.) Cut, Copy and Paste. Do I have to Cut and Paste?

Any ideas on how to Cut it?

I should imagine you have to black this before? (Tries to highlight the whole paragraph but can't quite manage it. Moves the cursor with the arrow keys to the end of the paragraph. Tries to highlight the paragraph several times. Each time repositioning the cursor at the end of the paragraph with the arrow keys. Finally manages to highlight the paragraph. Pops up the Edit menu to see what the keyboard accelerator command is and cuts it using the command.)

Now you've got to move it to the top of the document. Any ideas on how to do that?

(Scrolls to the top of the document. Positions the pointer.) Where is my cursor now? [Still doesn't understand that the mouse has to be clicked to position the cursor.]

If you do it with the mouse.

(Scrolls back down again.)

What are you trying to do now?

Trying to find my cursor. (Scrolls down the text.)

There it is.

(Moves the cursor using the arrow keys.)

So what are you doing now?

(Pops up the Edit menu.) So Paste is that and V [the keyboard accelerator]. Uses the keyboard accelerator command to Paste the text in.

12. Print

(Pops up the File menu and presses the keyboard accelerator command to select Print.) [The printer dialogue box appears.] (Tries to select All and Automatic even though they are selected. Selects Best quality and clicks OK.)

13. Quit document

(Pops up the File menu.) Quit. (Presses the keyboard command to select Quit.)

Why do you keep on using the keyboard instead of the menus?

I didn't realise. Can you use the mouse? I'm totally used to using the keyboard. I've never had a mouse on any computer I've used.

14. Create a document

[Ran out of time.]

15. Save a new document

Comparison-Subject 5

1. Save file

(Clicks on the File menu.) Click on File (does). Oh, I see. (Selects Save.)

2. Change margins

(Points to the left hand margin marker.) Will that one there . . . (Grabs the paragraph indent marker and drags it to 25.)

That's about 25.

Oh, I see. (Tries to drag it back, accidentally highlighting the ruler.)

If you click on it with the pointer . . .

(Grabs the paragraph indent marker and positions it at 1.5.) I've used one of these [mouse] things before filling in a golf course on a computer game. I wasn't very dexterous.

You've indented the first lines to 1.5.

I can change the right to 6.5. (Grabs the right hand margin marker and drags it to 6.5.)

Yes.

Is that all you want me to do.

You've only indented the first lines of every paragraph.

Yes, I see what you mean. Have I been moving the wrong bit then?

What do you think?

(Inspects the icons on the ruler.)

What are you doing now?

I don't know (clicks on the single-space icon). I don't know, fiddling. As you say I've only brought the starts of paragraphs in. It says you have to change the left margin to 1.5 so that means moving all of them in doesn't it?

Yes. If you look at how you change the right one.

What's wrong with it? (Grabs the left hand margin marker and drags it to 1.5.)

Yes, that's it.

3. Insert word

So you have to put a word in I suppose.

(Clicks on Search, and Edit.)

Now try and position the cursor with the mouse.

Where is the cursor now?

I haven't a clue.

Well I've got to get the word "find" from somewhere. What can I . . . Ah! Of course there's a keyboard sitting there (laughs).

Yes.

Where's my cursor? (Clicks at the top of the window and selects Close by mistake.) I don't want that.

Just Cancel.

(Does.)

What do you think will happen.

Well somehow I've got to get myself a cursor on the screen. (Moves to the text insertion point and clicks.) This is very easy. (Types in the missing word.)

4. Delete characters

Now you have to delete a few letters.

How do I move the cursor? (Does it again by highlighting and positions the cursor behind the first character to be deleted. Deletes by pressing BACKSPACE. Proceeds to delete the other characters in the same way.)

5. Delete words

Now you have to delete a few words.

You can mark words with a mouse and delete them . . . Oh yes. I've seen this done before, where you put them in a block and blast them. So you've had enough of me deleting words have you?

No, you've got to delete "words words words".

Oh, I know. (Highlights two words and deleted them by pressing BACKSPACE. Tries to mark the rest of the words but has some problems with highlighting, because show doesn't realise that she can just click at where the highlighting is to start.) I can't control this stupid thing. Keeping the button down when you're moving it . . . (Manages to mark another word and deletes it by pressing BACKSPACE.)

6. Delete line

(Marks the line and presses BACKSPACE to delete it.)

7. Double spacing

I could just go along and rid of the extra spacing in.

There must be something easier.

Edit (Pops up the Edit menu.) Cut? (Tries to select Cut even though it's greyed.) That didn't do anything.

Any other ways you can think of to change it?

If all I'm doing is taking out these extra bits of space . . .

(Explains what double-spacing is.)

(Highlights a blank line.)

What do you want to do?

Well, there's a blank line there. (Clicks,, the highlighting goes.) No, that didn't work.

Have you got any other ideas. It's usually something very easy and you can do it for the whole document. (Reads the manual.) It says here at the top of every document in MacWrite there is a ruler with the present format which you can keep or change.

(Pops up the Format menu.)

At the top of every document there is a ruler.

There's a ruler. Oh yes. (Clicks on the top of the window. Scrolls to the top and looks at the ruler.)

Can you see anything?

(Points to the double-spacing icon.) That?

That's up to you.

(Points to the ruler.) Because that bit was just working on the margins. (Points to the double-spacing icon and tries to drag it.) But you can't take it anywhere.

Just try clicking on it.

(Does.) Oh it's done it for me already.

8. Single spacing

(Returns to the top of the document and selects 1.5 line-spacing. Then selects 6 lines per inch.)

9. Centre paragraph

(Positions the cursor on top of the paragraph to be centred and selects Insert ruler.) Alright, that wasn't clever How do I get rid of it? Oh, I have put it in the right place haven't I.

Yes, now you've got to centre that paragraph.

Centre the paragraph . . . It looks pretty centre to me. What does that mean? Does it have to be central in the page?

(Explains what centring means.)

(Points at the centring icon.) Oh yes. (Clicks and tries to drag the centring icon.)

What are you trying do?

Well, that looked like the centre icon. Well if I just do it the way I did it back there. (Clicks on the centring icon.)

That's centred everything.

Does that matter?

You're only supposed to do that paragraph.

Another ruler and we could change it all back. (Pops up the Format menu, but unfortunately the ruler is immediately below the first ruler. Pops up the Format menu again.) Can I move it?

Delete it or get rid of it.

(Highlights the ruler, undoes the highlighting, pops up the Format menu.)

Any ideas.

Want to get rid of that (points to one of the rulers).

We also want another ruler as well.

Ah, well we can get a new ruler in there. (Selects Insert ruler. The ruler is inserted below the paragraph to be centred.) This extra one here, does that matter particularly?

I suppose just having one would be better than two. How do we get rid of it?

Edit (pops up the Format menu).

What are you trying to do there?

Get rid of the second one.

So how do you go about that?

(Fiddles around and manages to select all of the rulers.)

How do you the words?

Well, you've got to mark first of all. You're deleting the words by deleting them from in front of the cursor. (Points to the ruler.) Though this is not actually part of the text though is it?

How do you tell it the thing we want to delete is words?

Got to mark them with a black box. (Tries to highlight the ruler.) I had it black just there didn't I. [Tries to find the points to click on a ruler to highlight it.] (Moves the pointer across the ruler.)

Try clicking it.

(Clicks, marking the ruler and presses BACKSPACE to delete it.) I'm sure I tried that but it didn't work.

And now you've got to put the rest back justified haven't you.

(Clicks on the 1.5 spacing icon on the second ruler.)

No, that was the spacing thing. What did you do to centre it?

Well, to centre it I used that didn't I? (Points to the centring icon, then clicks on the justify icon.)

That's it.

10. Underline word, embolden word

(Pops up the Style menu and selects Underline. Nothing happens.)

Are you going to underline a particular word?

(Highlights a word and then undoes the highlighting.)

What are you trying to do?

Well I was thinking, to delete it you put it in a box and then pressing it. But that didn't work.

So you put it in a box and then what were you supposed to do?

(Tries to drag the cursor again. Pops up the Style menu.) I can't remember did I use BACKSPACE?

That was for deleting. (Reads the instructions to her.)

(Pops up the Style menu again.) Yes, Yes, so I've got them down. I've got it down to Underline (highlights and then selects Underline). [Nothing happens.]

What were you trying to underline

Well, a word. (Still trying to drag the cursor.)

Any idea.

(Manages to underline a word.)

Yes.

(Selects Underline from the Style menu. Highlights another word and selects Bold.)

Bingo!

11. Cut and paste

(Marks a paragraph.)

How do you Cut it and Paste it?

That was on the (pops up the Edit menu). (Selects Cut.)

Now you've got to put it back at the beginning of the document. How do you do that?

Oh dear, what have I done?

It's disappeared.

I can get it back can't I?

I would presume so. Did you think it had gone?

(Scrolls to the top of the text, positions the cursor and selects Paste.)

Brilliant.

12. Print

(Pops up the File menu and selects Print.) [The printer dialogue box appears.] Quality Best, what do I do?

What do you think?

Pages, From 1 (types in 1).

(Explains that it would be easier just to have All selected.)

[Wants to enter 1.5 to 6.5 as the page range.] Enter? (Presses RETURN.)

13. Quit document

(Pops up the File menu.)

Any ideas?

I can't Quit until I put it back. (Selects Quit.)

14. Create a document

Get a new document.

Click twice on MacWrite.

(Does.)

[Runs out of time.]

15. Save a new document

Comparison-Subject 6

1. Save file

So those are the commands are they? (Points at the menu bar.)

Yes, so if you try clicking on File. (Points to File on the menu bar.)

(Points to the File menu.) And now select Save?

Try clicking on it.

(Pops up the menu and selects Save.)

2. Change margins

That's Format isn't it? (Selects Align left.) Is that 1.5? (Points to the position on the ruler and clicks.) Is that right?

What are you trying to do?

Try Format again, Align right (does). And 6.5. (Clicks on 6.5 on the ruler.)

No, it hasn't moved. There must be some other way of doing it.

Format, that's what I did last time (points to Format on the menu bar). Format again (pops up the Format menu). It says Align left. Justify? Oh, no, that's not right. Display? Set page, must be. (Looks at Set page.) Oh no, that's wrong. (Clicks on the Style menu and leaves it.) It must be Format, it can't be anything else. (Pops up the Format menu again.)

(Reads the manual.) Setting Format, that's the sort of thing you would do with this thing here, the ruler. There are some markers on it. (Points in the manual.) There are some markers on it. Indentation marker, tab marker, left margin marker and right margin marker.)

How do I move the marker?

I think you just drag it. Click on it, press the mouse button, hold it down and drag it along.

Ah, I see I've got to get it to 6.5 inches [on the right hand side]. Ah, there it is (clicks on 6 lines per inch).

No. They are those little triangular things.

(Struggles to move the markers. Eventually manages to grab the paragraph indent marker and move it to 1.5.) Now (points to the right hand margin marker) that must be the other one. (Grabs the right hand margin marker and moves it to 6.5.)

I don't think you've quite got it there because what you've done there only indented the first lines of every paragraph.

(Points to the paragraph indent marker.) Isn't that the margin marker?

(Explains the difference between the paragraph indent marker and the left margin marker.)

(Grabs the paragraph indent marker and drags it back to 1.0.) Is it that one? (Points to the tab marker.)

No.

That one?

Yes.

I tried to move it but it wouldn't move. (Tries to move it again and manages to position it at 1.5.)

And the other one [paragraph indent marker].

The other one's is at 6.5. [Subject thinks that he means the right hand margin marker. The paragraphs are extended.]

3. Insert word

(Pops up Search, then Font.)

What are you trying to do now?

I'm trying to find out the details of how I can put in extra words. Edit (pops up the Edit menu). Copy, Paste . . . Paste, I'll try Paste (does). [The ruler is still highlighted and a message appears saying that the first ruler cannot be deleted.] Did I see insert? Edit, is it Edit? (Pops up Font.) What is Font? (Pops up Edit.)

(Explains that the instructions say to click the cursor with the mouse.)

(Moves the pointer to the text insertion point.) Can I just type it in? (Types the first character.) [Gets the message explaining that the first ruler cannot be deleted.] I want to put insert.

You've turned the ruler black and it wasn't black when we first started. It was white when we first started.

(Looks on Search.) Do I press RETURN to get rid of it?

Why did you do that?

Because I couldn't think of any other way of getting rid of it [highlighting]. Tries to type again. [Gets the same error message.] Is there insert on here (looks at the keyboard)? No. (Moves the pointer to the text insertion point.) Tries to type again. [The same error message appears.] (Clicks on the left align icon.) (Very confused, eventually moves the pointer to the text insertion point.)

Try clicking now.

(Does.) Probably won't be able to put anything in there. Just wondering what that flashing dash is?

The cursor.

How do I move that now?

Tries to drag it.

How can I move that cursor? (Highlights a line of text.) I don't know how to insert that word.

Click now.

(Presses BACKSPACE and the highlighted text is deleted.) I can't move that cursor.

(Tries to get the subject to de-select the 6 lines per inch option saying that it will make it easier for her to position the cursor.)

(Highlights a line by accident.) Why is it that it makes that line go black? I don't know how the cursor is moved down. I haven't worked that out yet. It won't come with me when I ask.

So how are you trying to move.

I tried to move that forked think [pointer] on top if it to see if it would move. It doesn't tell me how to move the cursor.

(Reads the manual.)

(Presses RETURN a couple of times.)

What are you doing now?

I was trying to move the cursor but it wouldn't move.

It doesn't seem to say much in here [the manual].

(Trying to drag the cursor and eventually manages to get it to the text insertion point.)

Yes, there.

(Types the word in.)

4. Delete characters

(Still tries to move the cursor by dragging it.) Why doesn't it follow? Can you find out about the cursor?

I think you just click where you want the cursor.

(Manages to position the cursor and presses BACKSPACE to delete the character.)

Try to get rid of the 6 lines per inch it'll make it easier.

(Does. Proceeds to delete the characters by backspacing but still tries to move the cursor by dragging it. Highlights a line and a half and deletes it by pressing BACKSPACE.)

You've deleted a whole sentence.

How did I do that? How do I get that back? If I've got that thing on memory . . . (Selects Save from the File menu and presses RETURN.) [This makes the loss of the text permanent.]

5. Delete words

(Marks a word and presses BACKSPACE to delete it. Struggles trying to highlight the other words.)

How are you trying to delete the words.

I don't know what I'm doing. I don't know why when I'm trying to delete a word it's made the whole sentence go black. I'll get rid of it all if I'm not careful. Does it say how to delete things?

(Reads the manual.) Select the words you want to delete.

It doesn't say how I actually do that.

(Reads the instructions out from the manual.)

(Moves the pointer around and accidentally highlights a couple of lines.) See, it does that. (Eventually manages to highlight one word.)

Let go, now delete it.

What, do I press the mouse again?

No.

(Does anyway and the highlighting goes.) How did I delete before?

You must have done something else apart from highlighting with the mouse.

(Highlights the word again and presses BACKSPACE.)

6. Delete line

(Highlights the line and deletes by pressing BACKSPACE.)

7. Double spacing

(Clicks on Format.) That's the way I want the page. I would have thought it be Format. Can you look up spacing.

It says here there are line-spacing boxes on the ruler at the top of the page.

It was as the top was it? (Returns to the top.)

There. There should be some line-spacing boxes on there.

Which boxes does it say it is?

Those three in the middle.

(Points to single-spacing.) That's 1. (Points to the 1.5 line-spacing icon.) That's 2. (Points to the double line spacing icon.) That's 3. (Selects the 1.5 line-spacing icon.) That's double-spacing.

8. Single spacing

(Returns to the top of the text and selects the single-spacing icon.)

9. Centre paragraph

(Returns to the top of the text. Clicks on Format.) Insert ruler (selects Insert ruler.) [The ruler is inserted at the current cursor position.] (Tries to drag the cursor and accidentally highlights some text and the ruler. Clicks on Format and selects Insert ruler.) [The new ruler replaces the highlighted text and the first ruler. The subject doesn't realise.]

Why did the ruler go in there? (Points to the position on the screen where the ruler was inserted.)

(Pops up the Format menu.) Use ruler (selects Use ruler and nothing happens). That must be centre. (Selects the centring icon from the inserted ruler.)

But, (points to the paragraph to be centred) it says here you're only supposed to centre the text in that paragraph.

(Clicks on justify, then single-spacing.) That's single-spacing, that's the right one. (Clicks on the left align icon.)

What are you doing now?

I'm blacking the whole paragraph. (Struggles, but eventually manages to highlight the paragraph.) Now (clicks on the centring icon on the ruler). [All of the text below the ruler is now centred.] (De-selects and selects the paragraph.) I did that and then centre and I thought it would centre that paragraph.

But what happens when you do do that [click on the centring icon] when you haven't blacked it?

Well, I wanted to tell that thing that I only wanted to centre that paragraph.

Everything else is centred here. (Points to the text below the ruler.)

(Clicks on left align, clicks on centre again, clicks on left align again.) Can you look up centring?

(Reads the manual.) Do you have any ideas?

I'm trying to set it aside from the other paragraphs, but I need to know how to change just that one paragraph, how to centre it.

Those boxes, it seems to centre everything below the ruler.

Doesn't it say what to do if I just want to centre just one paragraph.

Well, everything seems to be done below the ruler. (Points to the ruler.) Why did it put the ruler in there?

(Selects Insert ruler from Format thereby deleting the paragraph which is currently highlighted.)

Why did you put the ruler there. You've put it in the middle . . .

Oh, I see. But, I didn't even tell it where I wanted to put my ruler.

Can you get rid of the ruler it's not in the right place? [Doesn't realise that it has overwritten the paragraph to be centred.]

(Selects Hide rulers. Scrolls down the text.) I don't recognise that. I think the paragraph has gone?

Yes, we've lost the paragraph haven't we.

Yes I have. I don't know how I did that. How do I reclaim it?

Try to centre to that paragraph, but not the rest (Points to another paragraph. Struggles, and eventually manages to highlight the paragraph.)

What are you doing?

Oh, I have the feeling if I want to centre just that paragraph I have to set it apart from the others.

When you were doing things with the ruler it was changing everything below the ruler.

I was trying to get the ruler down, but it happened to go in the middle and I don't know why. (Pops up the Format menu.) If I select Insert ruler how do I know where the ruler is going to go because I haven't told it?

What do you think?

(Selects Use ruler and nothing happens. Presses BACKSPACE and deletes the paragraph.)

Now you've deleted the paragraph.

10. Underline word, embolden word

Underline a word and put a word in boldface.

(Pops up Font and Format.)

That's in Style it says. (Points to the instructions.)

(Selects Bold and nothing happened.)

Just do a word in bold or underline it. What are you doing now?

(Marks a word.)

Have a look at the Style menu now.

(Selects Bold.) Well done. That means I ought to find a word first and then press the boldface, rather than selecting the boldface. So if I want to look at boldface I want to press that after. (Manages to Underline a word as well.)

11. Cut and paste

(Struggles but eventually manages to highlight the paragraph.) If I manage to black out that paragraph then I'll look how I can move it. It must be Format. (Pops up the Format menu.) No. (Looks at Search, then at Edit.) Paste (highlights Paste).

Cutting and Pasting.

Well if I Cut it will it delete it because I want to put it somewhere else? (Selects Paste and the highlight paragraph disappears.)

It's gone somewhere.

But I didn't tell it where to go. I'll look at the top of the page. (Scrolls to the top of the text.) It's not there. don't know where it's gone because I didn't tell it where to go. I wanted it pasted but I didn't tell it where. So, should have actually told the thing where I wanted to move it to.

12. Print

[Not completed because of lack of time.]

13. Quit document

14. Create a document

15. Save a new document

Comparison-Subject 7

1. Save file

(Clicks and the File menu flashes up. Nothing happens.)

Click again and hold it down.

(Does.)

And select Save.

(Does.)

2. Change margins

(Positions the pointer on the ruler.)

What are you going to do?

I was looking at the margin rulings at the top. (Clicks on the ruler but nothing happens.) Maybe I have to take the cursor . . .

What are you trying to do now?

I'm trying to move the margin out. It's a bit difficult. Oh, I might try Format. (Points to the Format menu.)

(Points to the ruler.) You can move them [margin] with the mouse.

(Pops up the Format menu.) I'll see what Style is like. (Pops up the Style menu.) So, it's got to be . . . (Pops up the Format menu again.) Um, Align left. (Selects Align left and nothing happens.) No, that doesn't help.

(Reads the manual.) To drag the margin marker, you just position the pointer on the marker, press and hold the mouse button and drag the marker, and then release the mouse button.

Is there anything . . .

The dark black ones, the black triangles. They are the margin markers.

(Clicks on the paragraph indent marker and drags it to 1.5.)

That's indented it. (Looks in the manual again.) That one is the indentation marker the other one is the left margin marker.

(Points to the tab boxes on the left hand side.)

No, that one there. (Points to the left hand margin marker.)

(Drags the left hand margin marker to 1.5.) Right.

And the right one to 6.5.

(Grabs the right hand margin marker and moves it to 6.5.)

3. Insert word

You just try and insert a word.

(Puts the pointer at the text insertion point.) Okay, inserting. (Clicks on Spelling, then all the menus from right to left.)

Any ideas how to insert a word?

(Moves the pointer to the text insertion point and clicks. Starts typing.) Will that . . .

Yes.

(Types the whole word in.) I just put the cursor in the place and typed.

4. Delete characters

(Goes to Spelling.) Maybe I could just sort of delete on the actual . . . What would you use here BACKSPACE?

Yes.

(The cursor is positioned in the word in which a character should be deleted. Presses BACKSPACE deleting the wrong characters.) I'll type them back in again?

Yes. You should position the cursor . . .

(Positions the cursor correctly and deletes the character with a BACKSPACE. Proceeds to delete the other characters in the same way.) [Occasionally deletes the wrong letter because she doesn't move the pointer off the word and therefore can't quite see where the cursor is.]

5. Delete words

It says you can mark whole words with the mouse and delete them. Can you find out how?

(Goes to Spelling.) Use the dictionary?

What? See if you can mark the words with the mouse.

(Marks a word with the mouse and presses BACKSPACE. Proceeds to mark the other words one by one and presses BACKSPACE.)

6. Delete line

So I do the same. (Marks the whole line and presses BACKSPACE to delete it.)

7. Double spacing

Well, I'll try Format first. See if they've got anything to offer. (Pops up the Format menu.) No. (Pops up Font, Style, and then Spelling. Looks at Search and Edit.) Have you got anything in that there?

(Starts reading the manual.) Line-spacing, you've got line-spacing boxes on the ruler at the top where you changed the tabbing.

Oh, the ruler.

It was at the top of the page, the document.

(Returns to the top of the document.) So the line-spacing boxes are which ones?

The three middle ones.

(Points to the single-spacing icon.) Well, that's obviously single. (Selects the double-spacing icon.) Right, that's it.

8. Single spacing

Single, that's back to . . . (Selects 1.5 line-spacing.) Is it that one?

That's 1.5.

(Clicks on single-spacing.) Right, okay.

9. Centre paragraph

(Pops up the Format menu.) Hang on, I need to use the ruler. Only in that paragraph.

Any idea.

Perhaps I can scroll it up.

You have to insert a new ruler. What do you think?

Um, have you got anything in there?

You can align left, right, centre, and justify from the ruler.

I'll go back to the top . . .

But, you want just that paragraph there. You want to insert a ruler from Format. So we'll have to insert a ruler.

It's a bit inconvenient because if I go back up to the top I'll lose that paragraph.

So how are you going to do it?

I'll see what Format has. (Pops up menu.) Insert ruler. (Selects Insert ruler.) [A ruler is inserted at the current cursor position.]

You've inserted the ruler . . .

In the wrong place. So delete ruler. (Pops up the Format menu again.) But how do you delete the ruler? I don't know how to get rid of it now. Perhaps I can delete the whole thing. (Clicks on the ruler. Pops up Search and selects Change.) Change perhaps. [The Change dialogue box appears.]

No.

(Gets rid of the dialogue box. Highlights the ruler.) Will that delete it?

Try.

(Presses BACKSPACE and the ruler is deleted.) Shall I scroll this up perhaps.

Where do you want to put the ruler? What are you going to do?

Well the Format brings me the ruler again. (Pops up the Format menu.) I want the ruler to stay with that paragraph.

So, how are you going to do that?

I was thinking of scrolling it up till (positions the paragraph to be centred at the top of the window). [Seems to think that the ruler is inserted at the top of the window.] I wonder if that does it. (Selects Insert ruler.) [The ruler is inserted at the same place as the previous ruler.]

That's put it where it was before.

I wonder why it keeps going there? (Clicks on it and marks it again and deletes it by pressing BACKSPACE.) Ah, this is getting to me. Oh, I see. It's where the cursor is. Right, so I have to move that. Oh, we'll move it. (Tries to drag the cursor.) How do I move the cursor?

How did you move the cursor before when you were inserting and deleting words?

Yes, but I can't quite remember how that moved. (Tries to drag it.) I can't remember how I moved it now. Perhaps I can go like that. (Uses the arrow keys to position the cursor.) So now I'm okay because the ruler will go there. (Clicks on Format and selects Insert ruler.) Okay, now we've got to centre the text. (Looks at the co-experimenter.)

(Starts reading the manual.) It says there are some boxes for alignment and centring on the ruler.

Boxes, well these? (Points to the alignment icons. Points to the centring icon.) Well, this looks like centring. (Selects the centring icon.) Right, okay.

Is it only in that paragraph?

Yes. (Scrolls down the text a little way.) Oh, it's not. It's centred everything.

So what else can we do?

We can move the ruler down and rearrange the rest or . . .

Put another in.

Put another ruler in. (Positions the cursor using the arrow keys, hesitates and selects Insert ruler.) Um, and that will be that one. (Selects left align on the second ruler.) Alright.

Well have a look and go down.

(Scrolls down.)

I think that's just aligned to the left and before it was justified.

(Looks at the top ruler.) Oh, I see. (Selects justify on the second ruler.)

Can you make the rulers disappear so you can't see them?

Yes. (Marks and deletes them.) [Doesn't seem to notice that the formatting has gone.]

10. Underline word, embolden word

(Pops up the Style menu.) Lets try Underline. (Selects Underline and nothing happens.) Well, that's wrong because it wasn't in the right place. (Positions the cursor at the beginning of a word using the arrow keys and uses the mouse to mark it. Undoes the marking.)

What are you trying to do?

I'm trying to mark this word. (Positions the cursor at the beginning again and selects Underline. Nothing happens.)

What happened there?

I'm putting the cursor on the word I want, but nothing happened. (Selects Bold and nothing happens.) This is not very good. Format won't help me.

What have you tried before?

Well before I chose one of these menus. (Pops up the Style menu.) But the cursor doesn't go where I want it to go.

It says here, editing and styling text - you first make a selection and then act on it by choosing a command from the menu. So I think you have to mark it and show it what you want.

(Positions the cursor at the beginning of a word.) So we'll show it like that. (Starts highlighting the word, selects Underline. The word is underlined.) Right. (Marks another word and emboldens it.)

11. Cut and paste

Do I have to . . . (highlights the paragraph). Oh, I see. Let's try (pops up the Format menu).

Any others?

Style? Is Format not . . . (pops Format up). What about this Insert page break? (Pops up Search, Change, I could Change it. Looks at Spelling.)

Which ones haven't you looked at.

(Looks at File.) There was one where I saw Paste. (Pops up the Edit menu.) Ah, let's Paste it. (Does.) [The paragraph disappears.] Has it gone? Oh no.

Why did you paste it?

I don't know. Is it sort of gone now. (Scrolls up to the top of the document.) I thought I could Paste it and then move the cursor to where I wanted to put it in.

What are you trying to do now with it?

I don't know where it's gone.

So have you lost it?

I think so. Yes, I've lost it. Is there any way I can get it back. (Looks at File, Edit, selects Paste again.) Maybe if I press Save or something. (Pops up the Edit menu.) Can't Undo.

I think you've lost it.

(Selects Save.) Has it just saved what I've lost?

It's saved the whole document.

12. Print

Where did you go to Save?

Try again. (Pops up the File menu and selects Print.) [The printer dialogue box appears.] Do you sort of choose . . . (Clicks on All and Best even though they are already selected.) Does that work?

Yes, but it's already on all.

(Clicks on Automatic, even though it's selected. Clicks on OK.) [The printer status dialogue box appears.] (Clicks on Continue.)

13. Quit document

Leaving the document without saving the changes.

Any ideas, suggestions?

But I have saved. Do you want it back to the original? (Clicks on File.) Is there any way to get back to the original version?

No, not from here. Just now leave without saving it.

Oh, I see. Do I scroll this up. I really don't . . .

Try looking at File.

(Pops up the File menu.) I suppose I Close.

Or?
Or Quit. (Selects Quit.) Where's it gone?
14. Create a document
[Runs out of time.]
15. Save a new document

Comparison-Subject 8

1. Save file
Try clicking on File and select Save.
(Reads the instructions again.) I don't know how to do it.
Click on File and select Save.
Click on File?
Click on the word File there at the top.
Oh these apply to these. (Points to the names of the menus on the menu bar. Moves the pointer up.) Does it matter where it goes?
On the word File.
(Clicks, and menu flashes.) Why isn't it [the menu] staying there?
You have to hold it down.
(Does.)
Now select Save.
Highlight it. (Selects Save as.) [The Save dialogue box appears.]
Click on Save.
(Does.) [MacWrite enquires "Replace existing file?".]
No.
2. Change margins
(Reads the instructions.) Now where are (points at the ruler) the margins here?
Any ideas on how to do that?
Can you do that using the tabulating as on a typewriter?
How would you do that?
Well, on a typewriter you set your tab to 1.5. Then you'd move over to the other side and set it to 6.5. You set it using your tabbing key. I can't think of any way of doing it on this. (Presses the TAB key on the keyboard and nothing happens. Points at the ruler and highlights it. Points to the left margin.) Do we just type in 1.5?
No.
(Tries to type 1.5 in and gets an error message "Can't remove or replace the first ruler".) That's obvious, so I've got to move the screen across. Six lines per inch. (Points to the 6 lines per inch option on the ruler.)
What are you trying to do?
I'm allowed 6 lines for every one inch is that right? I want to change my left margin to 1.5 so what I want to do is tab along to 1.5. But, I can't do it. (Selects 6 lines per inch.)
(Starts reading the manual.)
(De-selects 6 lines per inch.) There is something wrong because I new how to do it on a typewriter.
It says here you've got indentation markers and tab markers (pointing to the manual) which you can actually move by dragging them with the mouse.
So, I've put it on that and I can't move it.
Keep pushing it.
(Manages to drag the paragraph indentation marker and positions it on 1.5.) Now 6.5.
And the right hand one to 6.5.
That's set now isn't it?
That's put the indentation in.
That's put the indentation in.
But it hasn't put the margin to 1.5.
But it hasn't put the margin to 1.5.
The little triangle is the left hand margin marker.
(Points to it.) I had it on there.
No.
(Grabs the left hand margin marker and drags it to 1.5.) What was it [paragraph indent marker] before?
And the right one to 6.5.
(Tries to drag the right hand margin marker to the left.)
You've set the left one now to 1.5.
(Keeps trying, drags it off the screen, and eventually drags it back to 6.5.)
3. Insert word
Now and try and insert the missing word. You can position the cursor using the mouse.
(Moves the pointer to the text insertion point and clicks.)
Put the word insert in there.
(Types the word "insert" into the correct place.)

4. Delete characters

(Tries to highlight one letter with mouse.) Is there a delete on this [the keyboard]? I've marked it but how do you delete it?

How about BACKSPACE.

(Deletes one character in this way, proceeds to delete the other letters in the same way.)

5. Delete words

(Deletes the words by highlighting them and pressing BACKSPACE.)

6. Delete line

(Tries to mark the line.) I'm leaving that [the cursor] behind. [On the previous line.] I need to take that with me. (Tries to move the cursor by dragging it. Finally manages to mark the line. Positions the cursor at the beginning of the line using the arrow keys and then highlights the line using the mouse.) Can I just use BACKSPACE? (Does, and the line is deleted.)

7. Double spacing

(Tries to mark the paragraph.)

Why are you trying to do that?

I'm thinking I'm doing it wrong when you say that. I was going to highlight the line, just the one, and move it down.

You've got to double-space the whole document.

The whole document. I've got to double-space the whole document. I don't know how to set it. So I should be able to set it. I need to bring back a menu and select double-space if there is such a function. How do we bring back a menu? Well, in theory, it's not just this line I'm doing the whole document. In theory I could just go to the end of this line and return it and that would double-space it for that section. What about a function key? What do these do these function keys do (points to the function keys on the keyboard). There should be a function . . . I don't know.

(Starts reading the manual.) It's got in here look there are some line-spacing boxes (points to the manual).

How do I bring up my menu [Presumably means the ruler]? Do I have to go all the way back or can I just bring in my menu here?

That was on the ruler. That wasn't a menu. (Explains again.)

But I need to get back to this [the ruler].

Yes.

So if I go back all the way up to the top of the page I would have lost where I am. Or can I mark the whole document anyway?

(Manages to get back to the top of the document. Points at the spacing icons.) I need double-spacing. I've got to choose one of these. (Points at the line-spacing icons. Points to the double-spacing icon.) Is that double? (Selects it.)

Yes.

8. Single spacing

(Points to the double-spacing icon.) If I click on that and go all the way down the document. (Clicks on the icon and drags the mouse down.) Let's just go down the document that should automatically do it? Do I have to go all the way through? Let's go back up. (Points to the single-spacing icon.) That's the single line spacing. (Clicks on it.)

9. Centre paragraph

From Format, how do I get Format at the top of the page? (Points to the manual.)

That's the ruler.

I should be able to bring up a menu. (Points to the close window square.)

No. You want Format at the top.

(Pops up the Format menu.) I have to - I'm not aligning am I. I'm inserting the ruler (does). [The ruler is inserted in the paragraph below the one to be centred.]

Where has it inserted the ruler?

What am I doing? I take it I can just move this [left margin marker] and re-select a new ruler. Is that possible? Just like I set is to start with.

What do you do to centre text then?

To centre text you can just centre it.

(Points to the alignment icons.)

Oh yes, it's here. That one (selects the centring icon).

Now that's centred below. But you want to centre just this one. (Points to the paragraph above the ruler.)

So I have to move this lot back up. (Highlights the paragraph to be centred and clicks on the centring icon again.) And that should do it.

No.

I would have thought it would. If I've highlighted it it means I've chosen the text that I want to do it. So that means I have to get this [the ruler] up hers [points above the paragraph to be centred]. The ruler, I have to call up the Format again. I have to get rid of it [the ruler] first. (Highlights the ruler.) Can I move it up? (Tries to

drag it, but it doesn't work.) There's got to be some way to move it. (Points to the tab markers.) What are these arrows here.?

(Explains.)

How do I get rid of it [the ruler] then? (Marks the ruler again and presses BACKSPACE to delete it.) So, (marks the paragraph to be centred) Format, I want the ruler back. (Selects Insert ruler which is pasted over the paragraph which was highlighted.) [Doesn't notice that she's deleted the paragraph to be centred.] Am I centring this one (points to the centring icon).

Well the paragraph you want is not there.

The paragraph is not there.

The one you highlighted. Where is it?

(Points to the ruler.) Isn't it under that? That [the ruler] covered the last paragraph that was under it (points to the paragraph below).

You didn't cover [mark] the last paragraph. The ruler was inserted in the middle of that one. It [the ruler] put itself in the middle of it.

In the middle of it. So I take it the paragraph is above that [the ruler].

Any ideas?

I've got to get rid of this [the ruler] again, and bring back my paragraph.

So what are you going to do now?

I want to get rid of it [the ruler].

How did you get rid of the previous ruler?

Highlight it. (Highlights it and presses BACKSPACE to delete it.) (Moves the cursor upwards.) Now I've got to find my paragraph.

It's gone.

I highlighted it and I pulled down the Format. I didn't actually Edit it did I?

It's gone.

It's probably gone to another part of the text. I need to find it. (Pops up the Search menu.)

I think it's gone.

How did I make it go then? I highlighted it and put a ruler in its place. I would have thought that you would have to use a delete function to delete text. Normally it asks you "Are you sure you want to delete this? Yes or no".

10. Underline word, embolden word

I'll tell you what to do rather than do it. [She's become very cautious since losing the paragraph.] I would highlight it, bring Style, and if that's got Underline do it.

Do it.

(Highlights a word and highlights Underline on the Style menu.) Will it underline the whole thing or just the one word?

What do you think?

We'll see. (Selects Underline and the word is underlined.)

Can you do a word in boldface as well?

(Pops up the Style menu and selects Bold.) Oh no. I didn't highlight my word. (Highlights a word and selects Bold.)

11. Cut and paste

(Highlights the paragraph.) Don't know what it's going to offer. (Pops up the Style menu.) No. Will it be under Format? (Pops up Format. Highlights Set page. Looks at the File menu. Pops up the Edit menu.) Cut, Copy and Paste there. (Selects Paste.) But I haven't told it where to go I think. That means I've got rid of another bit.

What's happened then? What were you trying to do?

I was taking a piece of text and in fact lifting it off the paper what ever you call it and putting it up to the top. Transfer the text from one section to another. But instead I've . . .

So you've highlighted it and selected Paste.

Well you have to tell it what text you're choosing, but then you normally tell it where it's got to go. I pasted it nowhere.

Cutting and pasting.

I should have Cut it first. (Looks at the Edit menu again.) So I should have first cut it then pasted it.

That would be one way of doing it.

That would be the long way round. But in theory I should be able to cut it and paste it.

Can you get it back at all?

Search (pops up the Search menu), Find (selects Find). Find what? (Realises it's about finding words.)

Go onto the next one. Print the document.

12. Print

(Looks at Edit, then the File menu.) Print (selects Print). [The printer dialogue box appears.] (Looks at the options.) Do we cancel or do we want to print?

Click on OK.

Oh, I want Automatic paper feed (selects it). [Even though it is already selected.]

13. Quit document

(Pops up the File menu, Edit, and Format.)

You just want to leave the document.

Can I do it under File? (Pops up the File menu. Highlights Close.) Save, do we need to Save it?

Don't.

(Selects Close.) [MacWrite asks "Save changes before closing?".] No. (Selects No.) So hopefully all the bits I got rid of will come back.

14. Create a document

(Goes to File and selects Open.) [Get's the File list up.] What have I got here?

(Explains.)

(Goes to File and selects New. Types a document.)

15. Save a new document

(Pops up the File menu.)

Shall we Save it?

(Selects Save as.)

(Enters a file name.)

(Clicks on OK.)

Comparison-Subject 9

1. Save file

I'm going to click on File. (Flashes the File menu.)

It says click on File and select Save.

How do you save it?

Try clicking it and holding the button down. Can you now select Save?

(Does.)

2. Change margins

Has it something to do with this line across the top? (Points at the ruler.)

Have a go . . .

(Reads) . . . six lines is one inch. Don't know, don't understand that.

If you look at the margin at the moment it's not set. You can set it to 1.5.

I'm not following it.

(Reads the manual.) It says drag the margin markers to where you want them. There are on the line with numbers on.

Yes. (Points at the left margin and paragraph indent markers.)

There, those things there. That's one of them.

(Points to the 6 lines per inch.) Does this mean 6 of them [markings on the ruler] equal one inch?

No, it's got nothing to do with that. (Reads the manual.) It say's that is the standard typewriter spacing option. It's the spacing of the lines to the inch. You should set the tabs there.

(Points to the left markers again.)

Yes, drag the to 1.5.

(Points to 1.5 on the scale and clicks.) [Nothing happens.]

Try clicking on it, holding it down, and dragging it.

Alright. (Drags the paragraph indent marker to 1.5.) Right.

Can you do the other one as well? That's just indented the first lines. It hasn't actually done the margins.

(Moves to the right hand margin marker and drags it to 6.5.)

Can you go back to the beginning and do the first one there. (Grabs the left hand margin marker and drags it to 1.5. Clicks again and marks the ruler by accident.)

3. Insert word

(Moves the pointer to the text insertion point and clicks.)

Type it in now.

(Does.) Do I need to press RETURN? (Does.)

4. Delete characters

(Positions the cursor behind the first character to be deleted and then marks it. Presses BACKSPACE to delete it. Proceeds to delete the other characters in the same way.) [This s a little tedious because it is difficult to mark just one letter.]

5. Delete words

(Marks a word and deletes it using BACKSPACE. Highlights the other words and deletes them using the BACKSPACE key.)

6. Delete line

(Marks the line and deletes it by using BACKSPACE.)

7. Double spacing

Have I got to format it or something? (Click on the Format menu and looks at all the options.)

What are you looking for?

Spaces. None of them seem to apply really.

Any other ideas?

(Pops up the Style menu, Font, Search, then Edit.) How about Undo typing? (Selects Undo typing.) [This brings the last line which she delete back.]

You need to delete that line there.

(Presses BACKSPACE to delete it.) I'm stuck.

(Reads the manual.) It says here changing line spacing there's some boxes on the ruler thing at the top of the document. Change the space boxes.

Yes, they're gone. [The ruler is not visible at this point.]

Can we get them back.

Scroll it. (Returns to the top of the document.)

There are single space, one and a half, and double-space boxes.

Sorry.

In the middle. Those three boxes.

Yes. I want double-space (points at the 1.5 spacing, then at the double-spacing icon.) That?

Yes.

(Selects the double-spacing icon.)

8. Single spacing

(Points at the 1.5 spacing icon.) Is that single-space? No (selects the single-spacing icon).

9. Centre paragraph

(Goes to the Format menu.) Centre . . . (Selects Align centre, and nothing happens.) Has that done anything different?

Can you see any difference?

No. Was that for all of them or just for that one. How do you get it to do just the one paragraph?

(Reads the instructions out aloud.) I suppose we have to insert another ruler.

(Highlights Insert ruler.) We should try for that one. (Selects Insert ruler.)

Should be able to make it centred . . .

(Points to the centring icon.) Is it that? (Selects the centring icon.) Ah, I've done it to the wrong paragraph have I.

You've done it to everything below the ruler. So what do you think you should do?

Get rid of that one.

Get rid of what?

I don't want to centre this one [paragraph] just that one (points to the paragraph to be centred). This ruler needs to be below there (points).

Yes. So how do you think it should be done?

Pressing Format again. (Selects Insert ruler. A second ruler is inserted below the first one.)

What's happened now?

(Points to the alignment icons on the second ruler.) Put it back like it was. What was it like. (Points to justify and then left align.)

It was justified. It was justified right and left I think.

That one? (Selects align justified.)

What are you going to do now?

(Pops up the Format menu, selects Insert ruler.) I don't know how to get rid of this one [the paragraph above the one to be centred and have just that one [the paragraph to be centred].

You've done it three times now and the rulers have all gone into the same place, one after the other.

Right. I don't know.

(Reads the manual.) Do you want to get rid of those three rulers, or . . .

Yes.

How can you do that?

I don't know. I think I need some help.

(Reads the manual.) I can't find anything here. Can you try and see if you can do anything to actually get rid of it.

(Points to the rulers and clicks, but nothing happens. Goes to Edit. Goes to Edit again.) Is there anything helpful under Edit?

You must be able to delete a ruler somehow.

(Pops up the Format menu, but doesn't find anything.)

How do you delete letters and words?

You move the cursor on it and highlight. (Points at the ruler and clicks.) But that's not doing anything.

Can you make it go black or something.

(Tries to highlight it again. Selects 6 lines per inch by mistake.)

Can you change that back.

(Does.)

Try clicking higher up in the ruler.

(Does, and marks one of the rulers. Presses BACKSPACE. Marks the second and third rulers and deletes them as well.)

How can we get the ruler to go in above the paragraph there. (Points above the paragraph to be centred.)

(Tries to move the cursor by dragging it.)

What are you trying to do now?

How do you get the cursor to go down there?

Just move it to where you want it and click it.

(Positions the cursor and selects Insert ruler.)

What do we do now?

(Looks at the spacing icons.)

You want to centre the text.

(Selects the align centre icon.) That's that.

You've centred the one down here as well. Can you make that go back to the other way?

(Marks the ruler.)

Well, can't you put another ruler in.

What, leave that one and put another one in there [below the paragraph to be centred]?

Yes.

Is that okay to leave it black [the ruler is highlighted] or? (Moves the pointer below the paragraph and clicks to position the cursor. Selects Insert ruler.)

Don't you want it to be justified.

(Selects the align justify icon.)

Can you make them [the rulers] disappear so that we don't see them?

(Marks the rulers and presses BACKSPACE thereby deleting them.)

Oh, you're just deleting them?

Is that what you said?

No. We've gone back to where we were before.

So I have to do it again. (Puts the rulers back in and centres the paragraph.) [When positioning the cursor she always clicks at the current position first before clicking at the target position - as if picking up the cursor.]

(Asks for the rulers to be hidden.)

(Goes to Edit and selects Undo ruler change, then Redo ruler change. Pops up the Format menu.) Ah! (Selects Hide rulers.)

10. Underline word, embolden word

Try and underline one of the words Any ideas how to do that.

(Pops up the Style menu. Marks a word and selects Underline.)

Can you put a word in Bold also?

(Marks another word and selects Bold.)

11. Cut and paste

Edit (pops up the Edit menu). (Points at Cut, which is currently greyed.) Um!

You've got to try and move the whole paragraph up.

(Looks at Edit and tries to select Cut, which is greyed.)

What are you trying to do?

Somehow cut this bit [paragraph] out and move it to the top.

How do you tell it what to cut?

These three lines here.

How can you tell it which lines you want?

(Starts marking.) Do you do that?

Yes.

(Marks the paragraph and selects Cut.)

Now put it at the top of the document.

(Scrolls to the top of the document and positions the cursor. Tries to select Copy, which is greyed, twice.)

What are you trying to get from there?

(Tries to select Cut, which is greyed.)

Try pasting it.

(Does, and the text is inserted in the correct place.)

12. Print

Now you can print the document.

(Hesitates, then selects Print.) [The printer dialogue box appears.]

What now?

I don't understand this sort of [the dialogue box], what it's trying to say to me. Do I have to fill things in before I print it?

(Explains the options.)

(Clicks on OK.)

13. Quit document

(Pops up the File menu and highlights Quit.) Press that one?

It's up to you

(Selects Quit.)

14. Create a document

If you just click twice n MacWrite.

(Does. Types a document.)

[Runs out of time.]

15. Save a new document

Comparison-Subject 10

1. Save file

So it's point at it is it? (Points at the File menu Clicks and nothing happens.)

Hold it down.

(Does, and highlights Save as.)

No you want Save.

(Selects Save.)

2. Change margins

What do you think we should do?

Well go over there I suppose. (Moves the pointer to the left hand side of the document.) What's it on at the moment. (Reads from the ruler.) 6 lines per inch. I'm stuck. What are these things (points to the icons on the ruler).

What do you think?

I don't know. Let's have a look. (Clicks on the single-spacing icon, and nothing happens. Clicks on the 1.5 line-spacing.) Oh, what have I done there?

What do you think you've done?

Oh, it [the text] has gone down hasn't it? And the lines have gone from that one (points at the single-spacing icon).

Can you put it back?

I don't know. (Clicks on single-spacing.)

(Starts reading the manual.)

It says here you've got markers on the ruler thing. That ruler, there's some markers on it and you can move them by dragging on it. The black triangles.

(Points at the right hand margin marker.)

That'll be the right one. So you move that to 6.5.

(Starts dragging it and eventually moves it to 6.5.)

If you can do the left one to 1.5.

(Points at the tab marker.) So the white one is the left one.

No.

(Goes to the left.) This one is a bit complicated. (Grabs the indentation marker and drags it to 1.5.)

That's the indenting marker. Can you drag the other one.

Oh, right. So, I'll move that one back again?

No.

(Grabs the left hand margin marker and drags it to 1.5.)

3. Insert word

Now you've got to insert a missing word there or something or put it in the sentence.

So we need a gap?

Can you put a word between the "and" and the "the".

(Moves the pointer between the two words.) Format . . .

What are you thinking of doing?

Maybe it's in the things up here. (Points to the menu bar.) But I don't know which one to do. We don't want Edit. We don't want Font. (Returns to the text insertion point and clicks to position the cursor.)

Yes.

So there's the cursor.

Can you just put the word in?

That might be a good idea, but where's the word.

You can put any word you want to in. Any ideas?

I don't know where I get it from.

What are you thinking? What are you trying to do?

How to get the word to go there.

So what are you looking for? Are you looking for anything in particular.

Some command with . . . Let me look at these [the menus] and see what else . . . (Looks at the menus. Pops up the Format menu.) Insert ruler, Insert page break.

You can just type in a word or a sentence.

Well I need a gap first. (Looks at the Format menu.) Maybe it'll just appear. Can I just try this?

Yes.

(Starts inserting spaces by pressing the space bar.)

So you're just pushing the space bar?

Yes.

So what's happened.

(Positions the cursor at the beginning of the space she's created. Types the first character.) Ooh! (Types the word in.) Now there, we need to get it back together again. [Presumably means closing the gap.] (Presses BACKSPACE and deletes the last character she's typed. Re-inserts it.) Can I leave it like that?

Yes, if you want to.

4. Delete characters

(Positions the cursor.)

Which "v" are you going to delete?

I don't know. Do I need to have a space here? (Presses the space bar. Finally manages to deleted the character after several re-positionings and backspacings.) Somehow I'm not doing this right. Is there a delete button on this? [Even though she's just been using it.] (Uses the arrow keys to position the cursor and deletes the other characters using BACKSPACE.)

5. Delete words

You've got four words here and you want to delete three of them. It says here you can mark them with the mouse. Can you think how to do that? Any idea?

(Pops up the Format menu.)

So what are you doing now? What are you looking for?

See if there's anything that just says like you know . . . (Looks at Search.) Change. (Reads the instructions.) You can mark the words with the mouse. (Drags the pointer over a word and nothing happens.) You can mark them with the mouse . . .

(Explains that she has to mark the words to identify the text to be deleted.)

Oh, I don't know. (Pops up the Edit menu.) Select all. (Pops up the Style menu.) No, I can't think what to do. (Reads the instruction again.) You can mark words with the mouse and delete them.

(Starts reading the manual.) Select text, press and hold the mouse button and drag it across the word.

How do you get text?

Well, the text on the screen.

Oh, right. (Marks a word with the mouse.) And now what?

Delete the word. What about BACKSPACE?

(Presses BACKSPACE and the word is deleted.) Got it. (Highlights the other words and deletes them using BACKSPACE.)

6. Delete line

(Marks the line and deletes it using BACKSPACE.)

7. Double spacing

Ay idea bout how to do double-spacing?

Insert another line.

For the whole document.

(Pops up the Format menu.) Insert ruler, Insert page, Insert Page break, Insert ruler. We don't want a ruler, or do we? (Reads other options.) Set page (selects Set page). New page number, no we don't want that (presses Cancel). That was a waste of time.

(Starts reading the manual.)

(Pops up Format again.)

Any ideas?

(Selects Insert ruler. Points to the spacing boxes.) Those ones there? (Points to the double-spacing icon.) Is that double-spacing?

Yes.

(Selects it.) Yes, yes.

It hasn't done the bit at the top of the document.

Well we don't want that anyway.

It say you should do double-spacing for the whole document.

We go to the beginning first I suppose.

Yes.

So we want to go up. (Does.) Right. (Points to the 1.5 spacing icon.) Is it that one.

That's 1.5 spacing.

So that's one's right?

No. It's the other one.

Oh right. (Clicks on double-spacing.) So now we've got the stupid ruler in there.

Can you get rid of it.

Yes. (Pops up the Format menu.) Hide rulers. I don't want to hide both I only want to hide one.

Surely if you put it in there must be a way of getting rid of it completely.

Well, how did I get it? I inserted a ruler . . . maybe if I. (Selects Insert ruler again.)

You've got two now.

I had that Cancel thing. Edit, Edit, Edit. (Pops up the Edit menu.) Undo Insert ruler, yes. (Selects it. Pops up the Edit menu again.) Redo Insert ruler. Now what?

Can you get rid of the other one as well?

I suppose I could delete it but that would take ages.

How would you delete it then?

The whole thing?

Yes.

I don't know. (Clicks on it and manages to highlight it. Clicks somewhere else and the highlighting is gone. Highlights it again.)

So how do you delete?

(Presses BACKSPACE and deletes it.)

8. Single spacing

What do we do? (Scrolls back to the top of the text and points to the 1.5 line-spacing icon.) So this is single? (Points to the single-spacing icon.) Oh, this one. (Selects single-spacing.)

9. Centre paragraph

(Points to the Format.)

What are you going to do.

Centre the text. Is it not already in the centre?

No, it's justified right and left. (Explains what centred text is.)

(Pops up the Format menu and selects Insert ruler.)

There must be something for centring it.

There, there, that one. (Points to the centring icon.) But only in this paragraph. If I do that surely all of that (points to the text below the ruler) will be centred as well.

Yes.

Don't know. Maybe if I put a ruler there (points above the paragraph to be centred) and a ruler there (points below the paragraph).

Yes, why not. What are you going to do about that one [the ruler previously inserted].

Get rid of it. (Selects Undo insert ruler from the Edit menu.) Where is the stupid cursor? (Positions the cursor.) I want the cursor to be there.

Yes.

(Goes to Format and selects Insert ruler.)

And now centre it.

So if I do it now then everything below it will be [centred].

(Positions the cursor below the paragraph and gos to Format and wants to select Insert ruler.)

Are you not going to centre it then?

Do you want me to do it now? But that will do everything.

But you can stop that.

(Selects centring.) But then all that's centred as well.

Now you can put . . .

Oh, right. (Pops up the Edit menu.) Undo rule change. We can forget that for now. (Goes to Format.) No, wait. (Positions the cursor below the paragraph and then selects Insert ruler.) Insert the ruler there, and then we want to (selects the align justify). And then I want to get rid of all these rulers don't I.

Yes.

I did that before didn't I.

You deleted them before.

(Pops up the Edit menu.) Under ruler change, no. So I have to delete them? I don't know.

What do you think?

I don't know. (Looks at the menus. Pops up the Format menu.) Can we hide them? Or do we want to get rid of them?

Hide them. What do you mean by get rid of them?

Well we don't want them. If we hide them will it hide the first one as well, or does that not matter?

Not really, but it's up to you.

Ah, we'll delete them. (Proceeds to delete the second one. Realises that it's undone the formatting. Inserts the ruler again and changes the formatting.)

So what is the other option then?

Hide it I suppose. (Pops up the Format menu and selects Hide rulers.)

10. Underline word, embolden word

(Pops up the Style menu.) So can I just underline now? Where's the cursor? (Positions the cursor at the beginning of a word and selects underline. Nothing happens.)

What are you trying to do?

(Pops up the Style menu again.) Underline. But you have to tell it which word you want don't you? I would've just put the cursor there, but. (Pops up the Style menu and selects Underline. Nothing happens.)

Well you've got to tell it somehow what you want to underline.

Yes. (Pops up Style again.) It says 9 point here.

(Explains what point sizes are.)

Ah. So we've got to. (Positions the cursor within a word and selects Underline and nothing happens.)

Could we mark the word itself do you think.

(Marks a word and selects Underline and the word is underlined.)

Can you put another word in boldface?

How do I get rid of the black again.

Just click somewhere else.

(Marks another word and selects Bold.)

11. Cut and paste

Presumably (marks a paragraph) you do that first. (Pops up File, then Edit.) So Cut it first and then . . . (selects Cut).

What are you going to do now?

Pasting it. (Points at Edit.) I better go to the beginning first. (Starts scrolling up.) It [the paragraph] has gone now.

Yes, so what are you trying to do now.

(Positions the cursor at the top.) Put it here. (Selects Paste.)

12. Print

(Pops up the File menu and highlights Print.) How do I get it to print it all?

What do you want to do now?

(Scrolls to the top of the text) Then it will do it all.

What are you going to do now?

Well I have to black it all . . . (Proceeds to highlight the whole document.) But you couldn't really do this with a big thing [document]. (Selects Print.) [The printer dialogue box appears.] What do I do here then? Do I just do OK?

Yes

Quality, All, Automatic?

Yes.

(Clicks on OK.)

13. Quit document

How do you think you can leave the document?

(Pops up the File menu.) Save as.

Do you want to save it. It says we should just leave it?

Quit?

It's up to you.

Can I not save it as it was before?

No.

So, I just quit and that's it? (Selects Quit.)

14. Create a document

[Runs out of time.]

15. Save a new document

Comparison-Subject 11

1. Save file

I don't know what to do.

Try pointing at the command at the top and clicking.

(Fumbles for a while, finally clicks on File and selects Save.)

2. Change margins

(Doesn't understand what to do.)

(Explains what a margin is.) What do you think you need to do to change the margin? Change the left margin?

I've got no idea.

Do you see anything on the screen that's going to help you?

(Points to the ruler.) Maybe I've got to move that [the scale].

What do you think it is?

Some kind of measurement. Would it be Style? (Pops up the Style menu.)

What exactly are you looking for now?

I just wondered if Style had anything to do with the way it was laid out. So if you wanted to move it across . . . But there seems to be nothing in there.

And if you try something else.

(Pops up the Format menu.)

Is there anything in there?

I don't know if these would be any good (points to the bottom part of the Format menu).

What do you think they might do?

(Highlights Align right.)

Which do you want to do? Do you want to move the left margin?

(Highlights Align left. Nothing happens.)

What's that done?

Nothing really. So that's no good.

(Pops up the Edit menu.)

Try something different see if anything else happens.

(Selects Align right.) [The paragraph in which the cursor is is set to align right.] It's done something to the paragraph.

Why did it do that paragraph?

Because the cursor was there. So if we put the cursor on each line - would that work? (Positions the cursor in another paragraph and selects Align right.)

What has that done?

(Points to the line.)

It's just moved the first line. That's where the flashing cursor was?

Yes.

It doesn't seem to be doing the right thing. Where do you think the left margin is at the moment?

Where is it?

Yes.

(Points to the left hand side.) All of this is the left margin (points to it).

(Explains to her again what margins are.)

(Selects Align centre from the menu.)

The paragraph below you selected Align right. What is that currently aligned to? How far right has it gone?

6. I don't know what the measurement is.

Is there any way the program might be telling you how far right it's gone?

(Points to the scale on the ruler.)

All the lines start on a different position on the left. But on the right hand side, where do they all finish?

That's 6.

And on the left in the other paragraphs where does that start?

That's 1.

I think you're meant to put it between 1 and 2.

Oh, I see.

Do you think that this at the top [the ruler] tells you anything else apart from how far across the page you are?

(Points to the spacing and alignment icons.) These might be patterns in which the page might be set out.

Anything else?

I don't know. I'm confused. I'm not sure what I'm supposed to be doing.

Shall I look up left margin for you? (Starts reading the manual.) Okay, it says on the ruler there's a left margin marker and a right margin marker, little triangles like this (points in the manual). And it says to change them you just drag the marker to where you want it.

With the cursor? (Points to the left margin and paragraph markers. Tries to drag them. Marks the ruler by accident.)

Try moving it [the mouse] when you press it as well.

(Grabs the paragraph indent marker and drags it to 1.4.)

It says the left margin marker is the triangle.

(Moves the left margin marker to 1.5. Points to the paragraph with the modified formatting.) I have to put that back now don't I?

Ahah.

(Sets the three top paragraphs back to align left.)

The first line of each paragraph is slightly different. I wonder if we can get that back. The margin's now 1.5 isn't it?

Yes. (Selects Align left from the Format menu.)

That didn't do it.

No. (Clicks on the second line in the paragraph and selects Align left.) [Nothing happens.]

If the text is at the right hand margin, marked by the triangle and there is something further left than that . .

.

There's that one [the indent marker].

I wonder what that does. You moved that didn't you?

Yes. Shall I move it back?

Move it somewhere else.
Do I move it back to 1? (Does.)
We have to change the right hand margin as well to 6.5.
(Does.) [Moves on, but the paragraphs are extended.]
3. Insert word
(Moves the pointer to the text insertion point and clicks the cursor.)
You want to type a word in.
Okay. I don't have to move these [the other words] across?
Try it anyway.
(Types the word.)
4. Delete characters
(Positions the cursor with the mouse. Clicks before and after the letter to be deleted.) Can you actually put the cursor on the letter?
Which letter did you want to get on to, the one you wanted to delete?
Yes.
Well you can't get on the letter. You go next to a letter somehow.
(Positions the cursor again.) Then (pops up Spelling, Format, and Edit). I'm stuck.
If you were using another machine what would you do?
You'd put the cursor on the letter and press delete. [Obviously she is used to systems which use a block cursor.]
Is there any button which says DELETE on it?
Not that I can see, no. Shall I try pressing a few?
Yes.
(Looks at the keyboard.)
What do you think BACKSPACE would do?
Go back I suppose. [Interprets BACKSPACE as back one space.]
Do you want to try it?
(Presses BACKSPACE and the character is deleted.)
So that did delete one of the v's?
Yes. (Proceeds to position the mouse and delete another character by pressing BACKSPACE.)
(Explains that BACKSPACE deletes to the left of the cursor.)
(Proceeds to delete the rest of the characters in the same way.)
5. Delete words
(Positions the cursor at the end of the word and presses BACKSPACE. Hesitates.)
Do you want to delete the whole word?
Yes.
Maybe you can delete all the letters.
(Proceeds to delete by BACKSPACING over the whole word. Deletes some of the other words in the same way.)
Did you find out how to mark words?
No.
How do you think words might look when they are marked?
With a black border.
Was that the black border you had before?
Yes.
Do you remember how to do that? Try and do it again.
I think I did it accidentally before.
Perhaps you can move the mouse at the same time and pressing the button.
(Does and highlights a word)
How do you delete it?
(Presses the BACKSPACE key.)
That seems t have done it.
6. Delete line
(Marks the line and deletes it by pressing the BACKSPACE key.)
7. Double spacing
So double-spacing means that the space between the lines is twice as big as it is now.
Did you see how to do that earlier?
No. (Pops up Edit, and Format.)
Did the ruler have anything?
Can't remember.
Do you want to have a look and try?
(Scrolls to the top of the document and looks at the ruler. Points at the paragraph indent marker.) Would it have anything to do with those ones.
That was the margin wasn't it?

(Points at the left margin marker.)

Yes that was the margin. That was right. What do the boxes on the ruler mean?

(Points at them.) What these?

The 7 boxes yes.

I would have thought it would have to do with the layout of the lines. (Looks at the boxes again. Points at the double-spacing icon.) Maybe that would give it the extra spaces and make it bigger.

Ahah.

(Selects it.)

There's quite a lot of space there isn't there?

(Selects 1.5 line-spacing.)

How much space do you think there is between the lines now?

I suppose it's double what it was before. [Difficult to tell.]

8. Single spacing

Can you get it back to what it was before.

(Clicks on the single-spacing icon.)

9. Centre paragraph

Perhaps we could centre the text, but only in this paragraph. But that's different. That's got nothing to do with a new ruler. [Seems to remember the align commands from the Format menu.] (Pops up the Format menu and selects Insert ruler.) [The ruler is inserted in the wrong place.]

Where did the ruler go. Where did it put it?

Here (points to it).

Why did it insert it there?

Because of the cursor. (Points to it.)

Because of where the cursor is. That's right.

But we want it here. (Points just above the paragraph to be centred.)

That's right.

(Positions the cursor and selects Insert ruler.)

Okay. And now you want to centre the text.

(Hesitates.)

(Explains what centring is.) So how do you make the lines move towards the centre.

Move this (starts dragging the left margin marker). Would the centre be exactly half way between the two? (Positions the left hand margin marker midway along the scale.)

The text isn't in the centre any more is it?

(Puts the left margin back to 20.)

Well you did something similar before when you tried to put the margin all to the left or all to the right didn't you?

(Pops up the Format menu and selects Align right.)

So what did that do? That's all right aligned. How do you think you could put the text in the centre?

(Pops up the Format menu again and selects Align centre.)

Right.

Do I have to press it again? [The paragraphs don't look properly centred because of the difference between the indentation and the alignment.]

Okay. See if that makes any difference.

(Selects Align centre again.) No that doesn't make any difference. So that's it.

Yes, so that's centred.

10. Underline word, embolden word

(Pops up the Style menu. Positions the cursor at the beginning of the word and selects Underline. Nothing happens.)

That didn't do it. What do you think it did?

What did it do? Nothing as far as I can see.

Anything you could do?

Put it in the black outline. (Marks the word and selects Underline. Marks another word and selects Bold.) What does boldface mean?

(Explains.)

(Pops up the Style menu again, selects boldface again thereby de-selecting it.)

What has that done there? Try again and see exactly what you did?

(Selects Bold again.)

What do you think it's done? Can you see any difference between the old word boldface and the new word boldface?

(Removes the highlighting.) Yes. It looks darker.

That is bold.

11. Cut and paste

Should I put it all in black outline.

Yes, put it in black.
(Marks the paragraph. Points to Edit.)
What do you want to do exactly?
Move it to the beginning.
By cutting and pasting. What do you think that means?
Taking it out and moving it up I suppose.
Okay, how do you take it out?
(Selects Cut.)
So now move it to the beginning.
(Selects Paste.)
Where did it move it to?
Just put it back where it was.
Do you think there is any way of . . .
If you move the document back up maybe.
So do you want to cut it out again?
(Marks the paragraph again and selects Cut. Scrolls to the top of the document. Positions the cursor and selects Paste.)
Where did it put it exactly? How did you tell it to put it there?
By putting the cursor there.

12. Print

How do you think you can tell it to print?
I'm not sure at all.
How do you think you might be able to tell it? I mean it's a command isn't it?
Yes.
So where would you find the command?
I don't know.
Would it be on the ruler?
I wouldn't have thought so.
So if you don't think it's on the ruler . . .
(Pops up Edit.) Are we going to tell it to Copy?
Why do you think it's Copy? Where else could it be?
(Pops up File menu.) Print. I better put the cursor back to the beginning. (Does. Selects Print.)
[Runs out of time.]

13. Quit document

14. Create a document

15. Save a new document

Comparison-Subject 12

1. Save file

(Points to the File menu and clicks on it twice. Pops up the File menu again and selects Save as.) [The save as file dialogue box appears.]
(Tells subject to click on Save.)
(Does.)

2. Change margins

Do you know what the left margin and right margin are?
Well, that's sort of the tabulator isn't it?
(Explains what the margins are.) Can you find out how to change them?
Well, we want a list of commands don't we? Try Format (pops up the Format menu, selects Align left). [Nothing happens because the cursor is not in a paragraph.]
What does that do?
Well the cursor moved . . .
Try again.
(Selects Align left again.) [The paragraph with the cursor in is left aligned.]
Did you see it do anything?
(Selects Align left.) No I didn't see anything. (Selects Align left.) What else is there (pops up the Format menu). When it says . . . let's get rid of that [the Format menu] then. [Lets the menu go and selects Hide rulers by mistake.] Oops.
What did you do.
It doesn't matter. It says left margin to 1.5.
(Explains again what the margin is.)
What is font? Pops up the Font menu.
What did you actually do last time?
(Pops up the Format menu again. Highlights Set page.) I put Set page.
You didn't actually press that did you?

No. What does Set page do?

Can you select the Show rulers? Back at the top [of the Format menu] you selected that by accident.

That would be a good idea then. (Selects Show rulers.)

That's okay, you've got the ruler back now. Now you want to move the left margin to 1.5.

(Points on the ruler with the pointer.) Which is that one. (Clicks, thereby highlighting the ruler by accident. Clicks again and nothing happens.)

Where do you think the left margin is at the moment. Does the ruler tell you where the left margin is at the moment.

It's at one point something. Looks like it's between there and there. (Points to the left and right margin markers and the space in between. Points to the right margin marker.)

So you want to change that to 6.5.

(Grabs the right hand margin marker and drags it to 6.5.)

Yes, that's 6.5.

(Grabs the paragraph indent marker and drags it to 1.5.)

What has that done?

That's just the indentation of the paragraph. So I'll have to drag this other thing. (Drags the left hand margin marker to 1.5.)

3. Insert word

There's a missing word. Do you want to type it in where it should be?

(Moves the pointer and clicks in the correct position. Drags the cursor thereby highlighting the space.) Um! Do I have to make a space there?

That's a space already. There is a space between the two words.

So shall I try to type it in? (Starts typing the word.)

4. Delete characters

(Positions the cursor behind the character to be deleted. Pops up Edit, File, then all the other menus.)

Have you seen anything that might help you to delete the text?

(Looks at the Spelling menu.) Spell word? Can you look at the dictionary perhaps? (Selects User dictionary.) [The dictionary dialogue box appears.]

What do you think that does?

It gives you a few options here what to do.

What do you think that does?

Remove letters?

From what?

(Looks at the dialogue box again.) Ah, I see. I don't want this. How do I get rid of the whole thing? (Doesn't know how to get out.)

(Tells subject to press Cancel.)

(Pops up the Spelling menu again.)

I don't actually think you should do it by using the dictionaries?

Okay. (Tries to highlight one letter.)

Okay, you want to delete one letter. How do you think you can do that?

Type over it.

But here you want to get rid of it altogether.

(Tries to move the cursor by dragging it and therefore keeps on highlighting pieces of text. Marks the whole word.)

You just want to get rid of the letter don't you?

(Positions the cursor behind the letter eventually.)

You've got the cursor in there now.

(Marks the letter.) Press delete?

Ahah.

Is there a DELETE button?

Edit.

(Pops up the Edit menu, lets it go again.) Yes, there is a delete. There should be. (Looks at the keyboard.) That one? (Presses the left arrow key, which remove the marking.)

What did that do?

Just moved the cursor. (Marks the letter again.)

What other keys could you press?

SPACE? BACKSPACE?

Try BACKSPACE.

(Presses BACKSPACE twice. Tries to move the cursor to the next word by dragging it. Struggles to position the cursor.)

What are you going to do?

I want to move the cursor down there.

You've done it before. Didn't you just press the mouse button to position it?

The mouse button? (Still tries to drag the cursor from its current location. Eventually decides to position the cursor using the arrow keys and uses the mouse to highlight the word to be deleted. Deletes by pressing BACKSPACE.)

(Tells the subject to position the cursor by clicking the mouse and then just using BACKSPACE to delete.)

(Does, and proceeds to delete the remaining characters in the same way.)

5. Delete words

(Marks a word ad deletes by using BACKSPACE. Deletes the other words in the same way.)

6. Delete line

(Marks the line and deletes by pressing BACKSPACE.)

7. Double spacing

[Subject believes that double-spacing refers to the spacing between words.]

(Explains what double-spacing is.)

(Pops up File, Format, and Style.)

So what are you looking for? Are you looking for the word double-space somewhere?

(Pops up the File menu again.) Page setup? (Selects Page setup.) [Page setup dialogue box appears.] (Selects Cancel. Goes through the menus again.) No.

(Explains again what double-spacing means.)

What else could you try if you can't see it on the menus? (Goes through the menus again. Selects Set page, and cancels it.)

What did the ruler do?

(Selects Insert ruler. Points at the spacing boxes.) What are these things here? (Points to the double-spacing box.) Ah, that. (Selects it.)

Is that double-spacing?

Well, that looks like two lines between each line. [Difficult to tell.]

How could you get slightly less?

Here. (Selects 1.5 line-spacing.) So the other one would have been triple-spaced?

Okay.

8. Single spacing

Try and change it back to single-spacing.

(Selects Insert ruler and selects single spacing on it.)

Couldn't you have used the old ruler for that?

Sorry?

Is the old ruler still on the page?

(Scrolls up.) Yes, we've got two rulers.

Maybe you could delete one of them.

(Can't work out how to delete a ruler.)

How do you delete several characters at once or a word. There might be a way to delete a ruler like that.

(Tries to mark the ruler by clicking on it and can't find the right spot.) I'm not sure there is.

You made a ruler go black a while ago. Try to click on it somewhere.

(Clicks on 6 lines per inch by accident.)

(Tells the subject to de-select the 6 lines per inch option.)

(Pops up the Edit menu.) No. (Pops up Format.)

How did you make the ruler go black?

Go black?

Um.

With the cursor. No idea.

Can you just press the mouse button on the ruler somewhere?

(Does and immediately highlights the ruler.)

And you want to . . .

I can delete it. (Tries to click mark the second ruler as well. Presses the BACKSPACE key deleting the first inserted ruler.)

Now that double-spaced again. Can you select single-spacing?

(Does.)

9. Centre paragraph

Centre the text in the middle of the page?

Ahah.

But it is isn't it?

(Explains the difference between centring and align justify.)

(Mumbles) . . . move the ruler then. (Tries to grab the left markers and marks the ruler by accident.) I didn't want to do that. (Moves the paragraph indent marker to the left. Moves both the left markers to 1.) That's not centred.

That's still not centred. No.

(Points to the right hand margin marker.) That one to the end?

Try.
(Drags the right hand margin marker to 7.)
That's still not centred is it?
What, it's straight on both sides?
That's right.
(Brings the right hand margin marker back to 6.)
Explains centring again.
(Points to alignment icons on the ruler.) Oh, I see. (Selects the left align icon.)
What did that do?
(Points to the line-spacing icons.) Those ones make them all the same length and (pointing to the alignment icons) these ones don't.
How doesn't that one make it the same length, the one you just pressed? What difference would that make to the screen?
Um. (Clicks on single-spacing.) It's on that one. (Clicks on right align.)
What's the difference?
Well it's aligned it so that it's straight down this right side. (Selects left align.) So it's straight down that side [left], but it's not centred. (Points to the centring icon.) How about that one? (Selects it.) That's not centred.
That's centred between the two margins.
It is? So that's centred then. [The subject didn't really what centring was supposed to look like.]
[Subject moves on to next task.]

10. Underline word, embolden word

(Pops up the Style menu - all choices are greyed since the ruler is still highlighted. Tries to select Underline and nothing happens. Tries again and nothing happens.)
Doesn't let you do that does it?
(Pops up the Style menu again.) Do you use the letter "U"? [The keyboard accelerator.] (Tries to select Underline again.)
It's not letting you do anything at all.
(Pops up the Style menu again. Points to the point size options at the bottom of the menu.) Is this thickness of the line? (Tries to select a point size.)
Which word do you want it to make underlined? Say you want to make it underline the word underline.
(Marks the word underline, thereby de-selecting the ruler. Pops up the Style menu and selects Underline.)
That's worked hasn't it? Can you get the word boldface printed in boldface?
(Marks the word boldface and selects Bold.)

11. Cut and paste

(Pops up Style, then Edit.) Yes.
So it's Cut and Paste.
(Pops up the Edit menu again.) Oh yes. Okay. (Marks the paragraph and selects Cut.)
Now you want to move it to the beginning of the text.
(Starts scrolling up and scrolls to the top of the text and selects Paste.)
Where has it [the paragraph] gone? That's exactly where it was. . . Why did it put it there? Why did it paste it there?
Let me just have a look at this. (Pops up the Edit menu.)
How do you tell it where to paste it?
How should you tell it? (Looks at the Edit menu.) Select all? No. Oh, press it . . . (Marks the paragraph again and selects Cut.)
How do you tell it to paste it at the top?
(Scrolls to the top of the document and positions the cursor.) Put the cursor there. (Does and selects Paste.)

12. Print

(Selects Print.) [The printer dialogue box appears.]
(Explains the options.)
(Selects a different quality.) That's it then.
How do you get it to print?
(Tries to pop up the File menu.) OK. (Selects OK.) [The printer status box appears.] (Tries to click on Continue.) [The document is printed.]

13. Quit document

(Pops up the File menu.) Quit.
No, that's quit the whole program.
Page setup. (Selects Page setup.) [Page setup dialogue box appears.]
You just want to leave the document and try something else.
(Clicks on Cancel.) Save as?
It says not to save at all.
Close? (Selects Close.)

14. Create a document

Now you want to start a new document and write a letter. How do you do that?

(Pops up the File menu.) New. (Selects New.) What do I do, just type? (Tries to position the cursor lower on the empty page by dragging it. [Cannot understand why he can't position the cursor anywhere on a blank document. Tries to use the arrow keys and gives up.] Starts typing a document.)

15. Save a new document

[Runs out of time.]

Comparison-Subject 13

1. Save file

(Clicks on File and selects Save.)

2. Change margins

What do you think the left margin is now?

One.

Why is it one?

(Points to the left markers.) Because it's in line with that one there. I presume that's the margin.

How do you change it?

Under Format would it be? (Pops up the Format menu.) Can I Align left?

Try and see, see what they do.

(Selects Align left.)

What did that do?

I don't know.

Go and see what Align right does.

Do I have to go back up to Format.

Okay.

(Selects Align right.)

What did that do?

It's moved that over (points to the aligned paragraph). Moved the cursor bit over.

How far across did it move it?

Those are inches are they . . . six inches. (Points to the left side of the scale.) This one wants to be 1.5 then. So do you go to Format, select Align left and point to how many inches. (Selects Align left and points to 1.5 on the ruler and clicks, accidentally highlighting the ruler.)

What are you doing? Why do you think the right hand side text was at 6 inches?

It's in line with that there [the margin marker] straight down. So do we want to move this lot over to 1.5 and that lot over to 6.5?

Yes. How do you think the program is telling you where the margins are at the moment.

By putting the scale up on the top, and you just read it off.

It is telling you explicitly where the margins are at present? Or do you just think it's there so that you know where to put it in in the future?

What do you mean?

Well is it telling you at the moment where the margins are?

Yes, as far as I'm reading it off. (Looks at the ruler.) What about one of these things (alignment boxes). Are these to do with lines, and moving it about.

What do you think those 4 do?

They seem to align it all up on the left, on the right and . . . This is the one I want because they'll give us an even margin. (Selects the align justify.)

That hasn't done anything has it?

No.

What are those little blobs there, those shapes on the ruler?

Um, that is where it is at the moment yes? The right margin. (Points to the right margin marker.)

How do you think you can change it?

(Tries a few times then manages to move it to 6.5.)

Is that what you wanted?

That's 6.5 isn't it?

Okay. So can you do the left one as well.

(Grabs the paragraph indent marker and drags it to 1.5.) Missed a bit haven't we?

What exactly has it done?

It's done it into paragraphs hasn't it when a new line's started. I want the whole lot in. (Grabs the left hand margin marker and drags it to 1.5 as well.)

3. Insert word

Do you want to type the word in there?

Can you do that? I have to move everything along then if I want to put it in?

Where do you want to move it to?

I'll have to move this, "the missing word", and all the rest won't I. [To the right.]

And you want the word "find" before that.
Well, I want to type it in.
So how do you do that?
Back to Format? (Pops up the Format menu.) No, I don't think it's that one. Edit (pops up the Edit menu), yes that's the one. Cut, Copy, would that be a Cut? (Selects Cut.) (Gets a warning that the ruler can't be deleted.) [The ruler is still highlighted.]
Why is it talking about the first ruler? Why did it think you wanted to cut out the first ruler?
What's the first ruler?
(Points to it.)
Oh that will be the size of the page won't it?
Why did it think you wanted to do something with that?
Probably because I pushed Cut ruler or something. Cut down the size of the page or something? Got to get rid of it now. (Clicks on OK to get rid of the dialogue box. Returns to the sentence where the word has to be inserted.) I want to move these across, all the sentence.)
Why don't you try to type the letters "find" in first?
What, just in there? (Points to the text insertion point.)
To the left of that don't you?
I just type it in above it. (Starts typing. Again gets the message that the first ruler cannot be deleted because the ruler is still marked. Clicks on OK to remove the message box.)
Where did you want the text to appear? How do you make it appear there apart from just typing them?
How are you telling the computer you want the letters there? What about the cursor?
So do I have to go and click? (Tries to position the cursor by dragging it from its current position.) So how do I move the cursor about? Can you just move the cursor somewhere or do you have to make it all black?
Is there some way you can put the cursor sort of up on the mouse and then position it where you want it?
The cursor id there at the moment. What would happen if you just put in the word "find"?
Well I could move them on this as a word. (Types "find" at the current position.)
So the letters went in where the cursor is, but you actually wanted them to appear between those two words.
Where would you put the cursor if you wanted it to appear between "and" and "the".
(Tries to move the cursor by dragging it. Manages to position it at the text insertion point.) Shall I just type it in?
Why don't you try it?
(Types the word "find" in.)

4. Delete characters

So I want to move the cursor again in front of these extra letters. (Looks at the keyboard.) There should be a delete button on here somewhere.
Which one do you think it might be?
I don't know. On the other hand is it one of those with an arrow? Shall we move it? Might as well get it there. (Positions the cursor by dragging it.)
So how would you delete that?
BACKSPACE? (Deletes the character by pressing BACKSPACE. Deletes the remaining characters in the same way.)

5. Delete words

We've got words now.
How are we going to delete those?
(Positions the cursor at the end of a word and proceeds to delete by backspacing. Proceeds to delete the other words in the same way.)
It says here you can mark words with the mouse and delete them. How might you mark words with the mouse?
(Marks a word and deletes it.)

6. Delete line

So I've got to get rid of the whole line now. (Still struggles to position the cursor. Eventually manages to mark the line with the mouse and deletes it.)

7. Double spacing

Double-spaced as in the type being double-spaced and the lines.
Yes, that's right.
A style would that be? (Pops up the Style menu. Tries to select a larger point size.) No, that hasn't done anything.
What else could you do?
Format again. (Pops up the Format menu.) Can you do that with a ruler, it's at the top. (Selects Insert ruler.) Or one of these perhaps. (Selects the 1.5 line-spacing icon.)
Is that double-spaced?
Did I just do that?

8. Single spacing

Do you want to change that back?

(Selects single-spacing.)

9. Centre paragraph

Insert a new ruler. (Pops up the Format menu and highlight Insert ruler.)

Where's it going to insert the new ruler?

Don't know. I'm not quite sure about these rulers. (Reads the instructions again.) Insert a new ruler.

But where do you want to insert it?

Between these (points above the paragraph to be centred).

How would you tell it to do that? Where did it put the last ruler?

By the cursor. (First tries to position the cursor by dragging it, then highlights the paragraph to be centred. Highlights Insert ruler.)

What are you trying to do exactly?

(Selects Insert ruler, which is inserted over the marked paragraph deleting it.)

The text has disappeared.

Or is it under the ruler? It's disappeared somewhere.

Maybe you did the wrong thing.

Yes.

You can undo the change somehow.

(Pops up the Format menu.) Hide rulers? (Selects Hide rulers.) No, that [the text] is still lost.

See if there are any other commands.

Search for it. (Pops up the Search menu.) I could find page 1. Are there no pages numbered?

You are on page 1. Where was the text you wanted to find, was that on page 1.

No, that was on the second screen. Does each screenful count as a page?

Might be a page on the printer. So, how do you think you could undo the change? I think there's a command for it somewhere.

File (pops up the File menu). (Pops up the Edit menu, then lets it go.)

It says something about undo there . . .

Can't Undo.

Okay, maybe we've lost it altogether. Try and centre that paragraph.

(Inserts a ruler immediately below the another one which is now displayed also. Pops up Format menu.) Align centre?

See what that does.

(Selects Align centre from the Format menu.)

Don't think so. What's happened to the cursor?

The cursor's gone to the centre . . .

Try moving the cursor to the text of the paragraph you want to change.

(Marks the paragraph to be centred but then marks one of the rulers at the same time, removes the marking.) I don't want to black it out, got rid of it all last time I did that. (Marks the paragraph again and selects Align centre from the Format menu.)

That's right, that's in the centre.

How do I get rid of these rulers now?

Don't worry about that.

10. Underline word, embolden word

Shall I underline "underline"?

(Highlights the word.) Style. (Pops up the Style menu and selects Underline, then selects Bold.)

11. Cut and paste

(Marks the paragraph.)

What are you trying to do?

I've seen that moving and pasting under Edit. (Pops up the Edit menu.) Cut. (Selects Cut.)

And it wanted you to paste it at the top of the document didn't it?

(Scrolls to the top of the document and positions the cursor.) Edit. (Pops up the Edit menu and selects Paste.)

12. Print

Is that there? (Pops up Edit, then File.) Print. (Selects Print.) [The printer dialogue box appears.] What have I got Automatic feed? From what to what?

What does that mean?

Well from the computer onto a bit of paper.

I'm not sure it means that. (Explains what it means.)

(Clicks on some selections even though they are selected.) And now tell it OK? (Clicked on OK.) [The printer status box appears.] Continue, yes. (Clicks on Continue even though it is greyed.) [The document starts printing.]

13. Quit document

How do you leave the document.

(Clicks on File and highlights Save as.) As what?

You're not supposed to save it.

Quit, yes?

That would leave the program, but you still want to do something else.

Close?

Try that.

(Selects Close.)

14. Create a document

You want a new document, a new file actually.)

(Pops up the File menu and selects New.) I wanted a new document. I got one. (Looks through the menus.)

What are you looking for?

Looking for if you want to write a letter it might have something in it. [A standard letter format.] (Starts typing.)

15. Save a new document

Where is the save? (Pops up the File menu and selects Save.) [The save file dialogue appears.] (Looks at the list of current names. Clicked on the Save box which is greyed.) Save.

You need to give it a name.

(Enters a name and selects Save.)

Comparison-Subject 14

1. Save file

(Pops up the File menu.) I'm trying to get onto Save. Do you use these? (Points to the arrow keys.)

No. You can just pull it down.

(Selects Save.)

2. Change margins

(Points to the ruler and tries to click on 2.5 on the scale and marks the ruler by accident.) Why isn't it doing anything?

What are you trying to do?

I tried to click there. That's 1.5 isn't it?

Where abouts do you think the margins are at the moment?

(Points to the left markers.) Oh, is that the margin?

How about the right margin?

(Points to the right hand margin marker.) There. (Returns to the left markers and tries to move them.)

You thought the right margin was at 6 and the left was at 1? What makes you say that, because it looks it?

(Points to the left and right markers.) It's just these two.

Do you think these control the margin? How might you change them?

(Points to the 2.5 again.) Is it here?

If you move the left one to 1.5.

Oh, I see. (Points to 1.5.) There. (Clicks.)

Try changing the right one first.

(Tries to move the tab marker, but has problems getting it to move.)

Try pointing a little bit lower.

You mean with the mouse? (Clicks the pointer in the text, thereby un-marking the ruler.) So that's it is it? (Points to the tab marker.)

Not quite, I think the right margin is at 6 inches. (Has problems controlling and manoeuvering the mouse.)

(Explains how to move the mouse.)

(Eventually picks up the tab marker and moves it to 6.5.) Is that the right (correct) one?

That's done something, but you haven't changed the margin. You still got the left hand side at 1 and the right hand side at 6. So you want to change 6 to 6.5.

(Grabs the right hand margin marker and drags it to 6.5.)

Ahah.

I've got to move this two. (Grabs the left paragraph indent marker and drags it.) Is that the indent marker? [Doubtfully.] (Drags it to 1.4.)

What difference did it make?

Don't know. Did I move that?

(Explains what paragraph indentation is.)

So. (Grabs the left margin marker and drags it to 1.5. Adjusts the paragraph indent marker to 1.5 as well.)

3. Insert word

I think it wants you to type in the missing word.

(Positions the pointer and the text insertion point and types in the first letter. Pops up the Format menu.)

What are you looking for?

Is it justify . . . no, that's changing it all. Insert ruler?

What happens when you just type the word insert or whatever? What happens then?

It [the pointer] wasn't moving. (Lets go of the menu and selects Insert ruler by mistake.)

What would happen if you just typed in the word?
(Types the word in, which is entered at the current cursor position.)
Where does the word go?
Oh, it's there. (Points to it on the screen.)
But you want it down there. How do you make it appear down there?
Move it, no? (Tries to drag the word.)
How would you move the cursor between the words?
(Clicks to position the cursor in the correct place.)
Now you've got the cursor there. How do you make the letters appear?
Edit? (Pops up the Edit menu, then pops up the Format menu.) Do you go to that? (Highlights and selects Align right.)
Oh no. That didn't do it.
It just set the . . .
It moved the paragraph didn't it?
(Pops up the Format menu again.)
But you want to make the letters appear there?
How did you make the word "insert" appear up there?
Just typing it. I don't know, I didn't see. I didn't see how it got there, I just typed it in.
If the cursor's there what would happen?
(Positions the cursor at the beginning of the word "insert".)
Try typing now. Where would the word appear if you typed it now?
(Still tries to move the word by dragging it. Highlights a line of text, starts typing and overwrites it.)
What happened there?
It inserted it . . .
There was a lot more text there before, where did it go? What happened to it?
It went up. It's just gone up the screen hasn't it?
Can you try and find the old sentence that was there?
(Scrolls up and down looking for the missing text.)
Why did the text disappear?
Can't tell you.
Well it was sort of reversed [highlighted] wasn't it?
I can't see when that's happening you see. [She's looking at the keyboard or mouse when she's operating either of them rather than looking at the screen.] (Moves the pointer around the screen.) So you've got to press it first and then type it. (Tries to position the cursor and type the word, but gets cursor position and pointer position confused. Finally types it.)
Why did the word "insert" appear there?
Because I was typing it in it was happening in the space.
Why did it appear in that space?
Because the cursor was there.
Okay, right.

4. Delete characters

(Presses the BACKSPACE and deletes the character at the cursor position rather than the one intended.)
Which letter did you delete then?
The "t", It's in that line [where the cursor is] there. But, I can't seem to steady the . . .
The cursor . . .
. . . dead on.
Which ones do you want to delete?
I to delete the two i's.
Okay.
(Tries to position the cursor by dragging it, thereby highlighting it. Manages to position the cursor the character to be deleted, then marks the character with the mouse and presses BACKSPACE. Deletes the next character in the same way. Deletes the other characters in the same way.) [Is always very careful to position the pointer over the letter to be deleted as well.]

5. Delete words

(Marks the first word to be deleted with the mouse and presses BACKSPACE.) If I'd gone along and covered it all in black would it delete it all in one?
Try it.
(Marks the remaining words and deletes them by pressing BACKSPACE.)

6. Delete line

(Marks the line and deletes it by pressing BACKSPACE.)

7. Double spacing

How do you change that . . . (Types in a 2.) Or is that the first page perhaps. Edit, try Edit. (Pops up Edit, and Format. Looks at the spacing icon on the ruler previously inserted.) Ah! Is that it?

Okay.

(Clicks on the double-spacing icon.) That's double-spacing.

That's more, that's 3 isn't.

Oh, is that 3? I'll change it. (Clicks on the 1.5 line-spacing.) [The spacing is not done for the whole document.]

8. Single spacing

Where did the ruler go to?

It's up isn't it? (Scrolls up until she can see the ruler then selects single-spacing.)

9. Centre paragraph

(Pops up the Format menu and selects Insert ruler.) [The ruler is inserted at the cursor position which is below the paragraph to be centred.]

It's inserted the ruler there. You wanted it below the paragraph to be centred. Why did it appear where it is?

Um, why did it appear there? Perhaps because that (points to the cursor) was there.

You want it in front of the paragraph.

So you want it in front of the paragraph. (Positions the cursor and selects Insert ruler.) Yes, that's right. So centre, it's something to do with. Is it this one (points to the justify icon)? No.

What's that do?

I'm not quite sure. (Clicks on it, but nothing happens.)

Try pressing it and see.

(Clicks on it, but nothing happens.) I can't think which one centres the paragraph. Oh, is it this one (points to the centring icon)?

Try it.

(Does, and the text is centred.)

10. Underline word, embolden word

(Pops up the Style menu and highlights Underline.) Does it say which word.

Underline the word "underline".

Right, we'll go back to the . . . (Marks the word and selects Underline.)

So, you've done that. Okay. Can you put another word in boldface.

Right. (Selects Bold.) [The word "underline" is both underlined and emboldened.]

11. Cut and paste

(Pops up the Edit menu.)

What do you actually want to do.

I 've to get this paragraph, and I got to sort of get the beginning and the end have I? Or make it dark? (Highlights the paragraph, highlights Cut.) So you go Cut?

That's right.

(Selects Cut.)

You've moved it from where it was.

Yes.

So now you've got to paste it to the top of the document.

So it's Copy. (Pops up the Edit menu and tries to select Copy.)

That didn't really do anything.

(Pops up the Edit menu.) Undo Cut is it?

That's put it back.

Is it Paste? (Selects Paste.) No. (Pops up the Edit menu.)

Undo Paste.

Try again. (Selects Undo Paste.)

You've got the paragraph selected.

(Pops up the Edit menu.) Redo Paste.

What happened when you cut the paragraph?

(Selects Redo Paste.) It took it completely, it took it away.

It asked you to cut it and then paste it didn't it?

Yes.

So, once you've cut it you want to paste it, you want to paste it somewhere else. Try and redo the paste.

(Does.)

Have you cut it yet?

No.

Try and cut it again.

(Does.)

Now you want to paste it at the top of the document.

Yes, so do I take that (pointing to the cursor)?

Yes.

(Scrolls to the top of the document, and positions the cursor.) Try. (Selects Paste.) [The paragraph is pasted.]

Ah, that's it.

12. Print

I've got to print. (Pops up Edit then File. Selects Print.) [The printer dialogue box appears.] (Looks at the options and selects OK.) [The printing in progress box appears.] Is that okay? [The document is printed.]

13. Quit document

(Pops up the File menu.)

You don't want to save do you

Can I use that . . . (points to Quit) . . . Quit?

Quit would quit the entire program.

Save as?

You don't want to save it.

Save as?

Try and select it and see what it does.

Save current document as "trial".

It's asking you to save something and you don't actually want to do that?

(Pops up Edit, then File.) Print?

You've just printed it haven't you?

Close? (Selects Close.)

14. Create a document

(Goes to File and selects Open.) [Open file dialogue box appears.] Open?

You don't want to do that at all. You want to open you're own new document.

(Selects Cancel. Selects Open again.) Untitled? (Wants to click on Open.)

(Explains that she should have a completely new file.)

(Clicks on Cancel. Pops up the File menu and selects New.) So I just type it in do I? (Does.)

15. Save a new document

So I take it to File?

You want to save it.

(Selects Save.) [The save file dialogue box appears.]

What name do you want to give it?

(Types in a name and presses RETURN.)

Comparison-Subject 15

1. Save file

(Clicks on the File menu and selects Save.)

2. Change margins

Oh, I see. Change the left margin to 1.5, change the right margin to 6.5.

Change the right margin first it's easier. Where abouts is the right margin at the moment?

(Points to the right hand margin marker with her finger.) There.

That's right.

Go to Format. (Pops up the Format menu.)

Do you see anything that might change the margin there?

(Pops up Edit, File, Format, and selects Set page. Selects Cancel in the dialogue box.)

What did that do?

I don't know. I lost the whole thing there. Nothing happened did it?

I didn't see anything happen on the screen.

I've no idea how to change the margin.

You thought the right margin was at 6? Why do you think the right margin is at 6?

I don't think that's the margin actually. I was just looking for something that . . . On anything else I've seen before the line that goes across the top usually denotes where the tabs are and where the margins are. So I assumed that's what that was. (Points to the scale on the ruler.) But, perhaps for this one you have to look for it somewhere else.

Why did you say before the margin was at 6?

Because of the little black thing there. (Points to the right margin marker.)

Okay, if the black triangle is at 6 now can you change it to 6.5?

Can you pick it up with the mouse and take it?

Try it and see.

(Grabs the right margin marker and drags it to 6.5. Grabs the paragraph indent marker and drags it to 1.7.)

What's that? What did that do? That's not the left margin is it?

(Points to the left margin marker.) That's the left margin. (Tries to move the left margin marker and highlights the ruler by accident.) What have I done there?

You just missed it. Try and move it again.

I've changed the operation, have I sent it to off or something? [The ruler is still highlighted.] (Tries again and drags the left margin marker to 1.5.)

3. Insert word

(Positions the cursor and types in the word "insert".)

4. Delete characters

(Positions the cursor using the arrow keys, hesitates.)

What are you doing now?

I was going to use the keyboard, but having read the instructions you can do it with the mouse. I was going to remove the "v". But, I have to tell it that it's got to be removed.

How are you going to do that?

(Pops up the Edit menu.)

No, that isn't very helpful is it?

(Pops up File, Font, Style, and Spelling, then lets it go.)

Could the keyboard help you at all?

(Presses BACKSPACE to delete the character. Positions the cursor with the arrow keys and presses BACKSPACE to delete the other characters.)

5. Delete words

(Deletes the words by positioning the cursor and backspacing.)

How do you mark a word with the mouse?

Just go to the end of it and click it.

Is that marking a word?

Just go to the end of it and click it, that should mark it.

How do you know something is marker?

Because I'd moved the cursor. (Points to the cursor on the screen.)

6. Delete line

(Positions the cursor at the end of the line.) There's got to be a quicker way than BACKSPACE. I have to mark the sentence and then just delete it. (Starts pressing BACKSPACE.)

How would the sentence look if you marked it? Cursor at the end?

No, it would be highlighted.

(Asks for another sentence to be marked.)

(Positions the cursor several times. Looks at the Format menu.)

Are you looking for a way to highlight a sentence?

Yes. (Pops up the Style menu and highlights Bold.) No, that's just going to turn it to bold isn't it? (Selects Bold.)

What happens when you press the mouse button?

It moves the cursor.

And press the mouse button at the same time?

(Highlights the line and presses BACKSPACE to delete it.)

7. Double spacing

(Pops up Style, Format, Edit, and File. Starts scrolling up.)

What are you going to do?

I'm not sure. Something's happened, and I missed it. [Possibly confused because the ruler is not at the top of the window.]

Where else could the spacing be changed apart from one of the menus that isn't there?

I don't know, I really don't.

What happened to the rule that was on the screen? Where did that go? The one you changed the margin with.

It's still at the top of the page I think. (Scrolls up.)

Do you think the ruler helps at all?

6 lines to one inch. (Selects it, then de-selects.)

That's done something but it's not double-spaced.

(Points at the spacing icons.) I was wondering whether that's close spacing. (Points to the single-spacing icon.) And that's double. (Points to the double-spacing icon. Selects the double-spacing icon.)

Is that more than double-spaced do you think?

(Selects 1.5 line-spacing.)

Yes, that's now double-spaces now.

8. Single spacing

(Returns to the top of the text and selects the single-spacing icon.)

9. Centre paragraph

(Pops up Format and selects Align centre.) [The paragraph in which the cursor was has been centred, which is not the correct paragraph.]

What does that do?

Well, yes, I didn't move the cursor.

Okay, so try moving the cursor this time.

(Marks the paragraph.)

Okay.

(Selects Align centre.)

That's centred isn't it?

Yes.

10. Underline word, embolden word

(Pops up Style and highlights Underline.) How can I cancel from there now because I've realised that I haven't put the cursor where I want to underline.

By moving the mouse away from the menu.

(Marks the word and select Underline.)

The next one is boldface.

(Marks a word and selects Bold.)

Okay, that's good.

11. Cut and paste

(Marks the paragraph.)

How do you cut and paste a paragraph.

(Selects Cut.)

You've got to move it to the top of the text, the top of the document.

(Goes to the top of the document and positions the cursor. Points to Edit and hesitates.)

What are you trying to do?

I can't find it again now. What did I do with it?

You cut it didn't you? So did it stay in the text?

(Scrolls down.) I don't know, I'll go back and have a look.

(Points.) It was there I think. So it's gone now. Can you paste it anywhere? You've cut it once, can you paste it somewhere?

It seemed I could go where I want and paste it there. But, I'm not exactly sure where it [the text] is now. Where did I put it then I cut it.

I don't know, where did you think it went? Did it delete itself completely?

(Looks at the space where the text was cut from.) I've taken it from there. Presumably it's just sitting, waiting for me to put it where I want it to go. All I did was I scrolled to the beginning to put it where I wanted to put it and I put my cursor there (does).

Can you paste it yet? Is it where you want?

(Selects paste.) [The text is pasted at the top of the document.]

12. Print

(Pops up the File menu and highlights Print. Hesitates.

What would that do?

I'm just wondering whether would print the whole page.

Try and see.

(Does.) [The printer dialogue box appears.]

What do you think it will do. The printer is set up.

It's set to Automatic I'll just press OK.

Yes.

(Hesitates.) Or do I have to enter the page range here.

Leave it as it is.

Ah, it's on All at the moment. (Selects OK.) [The printer starts printing.]

13. Quit document

(Highlights Quit.)

Quit will quit the entire program.

(Highlights Close.) Close the document?

Try and see.

(Does.)

14. Create a document

(Selects Open and looks at the list of files.)

Those are all the previous peoples letters. You want to create your own. You want to create a new document don't you.

(Points at Open.)

No, you don't want to do that.

I want . . .

You don't want any of those.

(Points to untitled.) I want that one.

No, you don't want that.

(Can't work out what to do.)

There's nothing there that you want to do is there? So how do you get out of it?

Cancel? (Selects Cancel.)

Well, you want something new.

[All menus except File, Edit and Spelling are greyed.] (Looks at Search, Format, Style, and Apple menu.)

It's not there. Have you tried everything?

Yes.

Have you tried everything on File?

(Pops up the File menu and selects New. Starts typing a document.)

15. Save a new document

(Pops up the File menu and selects Save.) [The save file dialogue box appears.]

You have to give it a name.

(Enters a file name.) [A replace existing file warning appears.]

(Explains.)

(Changes the name and selects Save.)

Comparison-Subject 16

1. Save file

(Points to File.) Select Save? (Pops up the menu.) How do I get there?

Try moving the mouse.

(Does and selects Save.)

2. Change margins

I want Edit or something don't I?

Try.

(Pops up the Edit menu.) Cut, Copy, Paste, No. Format? (Pops up the Format menu.) Must be somewhere in there. It's not Font, I know it's not Font. (Pops up the Search menu.) Where could that be? It's not in File is it? (Pops up the File menu.)

No.

Where abouts do you think the right margin is at the moment. (Points to the right hand margin.) There.

How does MacWrite tell you where the margin is?

(Points to the right margin marker.) That one there, that black thing . . . Oh, right!

How do you change it?

(Grabs it and starts moving it.)

Move it to 6.5.

(Does. Grabs the paragraph indent marker and moves it to 1.5.) Is that . . . Have I done it.

No, there's still text on the left isn't there? What happened when you moved that one? What happened to the screen when you did it?

It moved over didn't it?

Try moving it with the mouse, the little arrow head. The little shape that you moved to 1.5 what did that do?

(Clicks on the ruler and highlights it by accident.) It didn't really move. (Grabs the left margin marker and moves it to 2.)

You wanted 1.5.

(Drags it to 1.5.)

Okay.

3. Insert word

Try and find the missing word?

That's right, and type it in.

(Moves the pointer to the text insertion point.) If I go about there. (Clicks and types the word in.)

4. Delete characters

(Positions the cursor.) Delete. (Looks at the keyboard. Hits the BACKSPACE key. Proceeds to delete the other characters in the same way. Deletes the wrong character twice because she doesn't position the cursor accurately.)

Why did you delete that one?

Because I didn't put the mouse in the right place. (Accidentally deletes a character while positioning the cursor.) Why does it go black?

What might it mean if it goes black? What do you think it means? What happens to the cursor when goes black? Is the cursor still on the screen?

I hadn't noticed. I assume it goes from what you say.

5. Delete words

Can you delete a whole word at once? (Starts backspacing.)

How do you think you'd do it?

I don't know. (Deletes the first word by backspacing.) Turn it black maybe.

How do you delete the two words at once?

I don't know.

How do you tell the program to delete two words at once?

I don't know. (Tries to mark by positioning the cursor first at the beginning and then at the end of the text.) Well, that didn't work.

How do you tell the machine what to delete?

I want to show it with a different background.

How will it tell you it's going to delete two words?

The two words will flash.

Can you make them flash at all?

I don't know how you do that. I'll have to do it really boringly now, or will you tell me how to do it?

See what it says in here. (Starts reading the manual.)

(Keeps trying to mark the words by moving the cursor over them. Eventually deletes the words by backspacing.)

6. Delete line

It says here you can select some text by dragging the mouse button across the letters you want to delete.

Oh, I see. (Highlights the line.) And you do this. (Presses BACKSPACE.)

7. Double spacing

(Points to the space between two paragraphs.) Does it mean that?

(Explains what double-spacing is.) How do you think you can do that?

I'll search for spacing up here [in the menus]. (Pops up Edit, Search, and Format.) Don't know. (Pops up Style, and Spelling.) What's a ruler?

That's the thing at the top of the page that you change the margins in.

So I could have changed the margins with those really [commands on the menu]. I don't know how to do this.

See if you can find the ruler, see if that will help you at all.

(Pops up the Format menu.) Hide ruler, Insert ruler. (Selects Insert ruler.) [The line of text which was highlighted is deleted.]

Do you think that will help you to double space the text, that thing there? Try something and see.

I wonder what that is? (Selects 6 lines per inch.)

What did that do?

Put a cross in it [the box].

What did it do to the text? It squashed it up didn't it?

Oh yes. (De-selects it.) Oh I see. It's this lot here. It's this one. (Selects 1.5 line-spacing.) That's double-spaced.

8. Single spacing

(Selects single-spacing.)

9. Centre paragraph

Centre the text, what does that mean.

(Explains.)

(Pops up the Format menu and selects Insert ruler.) But I've got that one haven't I? I've got two now.

Try something anyway. What do you think might change the . . . the way the text looks.

(Grabs the paragraph indent marker and moves it to the right, positions it at 2.0.) If I grab this one, the right hand margin marker and make it even narrower. (Puts it to 6.0.) That's not centred is it?

No. (Explains again what centring is.)

You mean like this one? (Selects the centring icon.)

Yes, that's centred now.

(Puts the markers back.)

10. Underline word, embolden word

(Pops up the Style menu.) Is it Bold, boldface? (Selects Bold.) What happened?

Where did it do it. Did you tell it to underline the word?

No, it didn't. So if I pick a word. (Marks a word and selects Bold.)

Can you underline a word as well?

(Pops up the Style menu.) Oh, I haven't done the whatsit. (Marks the same word again and selects Underline.)

11. Cut and paste

(Marks the paragraph.) What to that bit there? (Points below the paragraph.)

You want to move the whole paragraph by cutting and pasting it to the top of the document, the top of the first page.

So, if it's on black, if I make it go forward (starts scrolling up) and press the mouse it should just recall it shouldn't it? (Positions the cursor at the beginning of the document.)

What are you actually going to do there?

Last time I told it "do this bit" but this time I haven't actually told it to do anything. Right, I'm going back. (Returns to the paragraph.) Where's it gone? [The highlighting was removed when she clicked the cursor at the top of the document.] I want the whole lot to be deleted and kept somewhere like that.

Well, it says Cut and Paste.

So it wants me to . . . (starts marking paragraph) . . . no.

What?

Well that's what I did last time. I covered it all in black.

But you didn't tell it to do anything did you?

I don't know what to tell it to do.

Would the ruler help you or one of the menus help you?

(Pops up Format.) Display. What's a Header and a Footer?
(Explains.)
So, if I say Display header.
(Explains again what headers and footers are.) That's separate from the document.
I want a delete button. I want to cover that [the paragraph] in black and store.
Cover it in black anyway and do something with it.
(Marks the paragraph.)
What does it say to do, cut and paste?
I don't know.
See if you can select something that will let you do it on the menus.
Ah, on the menus. (Pops up the Edit menu.) Cut, yes. (Selects Cut.)
Okay.
(Scrolls to the top of the document. Positions the cursor.) I want to tell it where to do it as well.
How do you do that.
Let's see what Paste does. (Select Paste.)

12. Print

(Pops up the File menu and selects Print.) [The printer dialogue box appears.] (Clicks on copies.) One copy.
That's okay as it is.
Okay, let's go. (Clicks on OK.) [The printer status box appears.] (Clicks on Continue.) [The printer starts printing.]

13. Quit document

Edit? (Pops up Edit, then File.) Close?
Try.
(Selects Close, and selects No on the question box.)

14. Create a document

(Pops up the File menu.) New. (Selects New.) Is that it? Dear Angela, so I can type. (Starts typing.)

15. Save a new document

(Pops up the File menu and selects Save.) [The save file dialogue box appears.] Save as . . . (points at Save which is greyed) . . . untitled.
If you just give it a name.
(Types in a file name and clicks on Save.)

Comparison-Subject 17

1. Save file

(Points to File and clicks briefly.)
Try keeping the button down.
(Does and selects Save.)

2. Change margins

Format is that then is it?
What do you think? Any ideas?
No. (Pops up the Format menu.) No. (Lets go, clicks on Style.)
So what are you doing now?
I'm just seeing what they [the menus] say. (Clicks on the tab markers and nothing happens.) Does it tell you in the manual then?
(Starts reading the manual.) Here, you've got a left and a right margin marker. If you position the pointer on the marker, press the mouse button, drag it where you want to and release.
(Tries to click on the left margin marker and accidentally marks the ruler.)
What are you trying to do?
Put it onto the left one. (Tries to move it unsuccessfully.) That's not taken it anyway has it?
If you try to hold the mouse button down.
(Tries again, and eventually grabs the paragraph indent marker and drags it to 1.7.)
I think that is the indent marker. You've just indented the first lines.
(Points to the left margin marker.) So I want this one as well then. (Grabs it and moves it to 1.7 as well.)
You've got to move the right one to 6.5.
(Points to the tab marker.) That one?
No, the one on the 6.
(Grabs it and drags it to 6.5.)

3. Insert word

(Hesitates.)
You're supposed to insert the missing word. You can position the cursor with the mouse.
(Positions the cursor.) So you just insert it?
Yes.
(Types in the word.)

4. Delete characters

(Positions the cursor behind the character to be deleted.)

Do you know how to delete it?

With a key on here (points to the keyboard) perhaps. (Clicks the cursor again and then presses the BACKSPACE key deleting the wrong character.) What have I done?

(Explains that the wrong character has been deleted.)

(Types the character in.) Is it where that line is flashing where I actually put it? (Presses BACKSPACE and deletes the same character as before. Types the character back in again.)

I think that flashing line is the cursor.

How do you move the cursor then? (Can't work out to position the cursor. Marks the character eventually and presses BACKSPACE to delete it. Tries to position the cursor by dragging it. Marks several character and presses BACKSPACE and accidentally deletes them.)

I think you've deleted the whole lot.

(Tries to move the cursor again by dragging. Marks a large chunk of text.) This is very annoying. I'm trying to move the cursor, but I can't work out how to do it. (Proceeds to position the cursor by dragging and then clicking. Deletes the remaining characters by moving the cursor in this way and pressing BACKSPACE.)

5. Delete words

(Marks a word and deletes it by pressing BACKSPACE. Marks the remaining two words and deletes them by pressing BACKSPACE.)

6. Delete line

(Marks the line and deletes it by pressing BACKSPACE.)

7. Double spacing

(Pops up Style.) No. (Pops up Format.)

Any ideas?

No, well I would have thought it was . . .

What?

(Points to the menu bar.) In one of these. (Looks at Font and Edit.) Manual please.

(Reads the manual.) At the top bit on the ruler there are some boxes for single-space, one and a half space and double space.

So how do I get there?

The ruler is at the top of the document.

(Scrolls to the top of the document. Points to the double-spacing icon.) That one. (Selects it.)

8. Single spacing

So I'm going back for single-spacing first?

Yes.

(Scrolls back to the top of the document and selects 1.5 line-spacing.)

That one and a half.

(Selects single-spacing.)

9. Centre paragraph

(Is still at the top of the document.) Format. (Pops up the Format menu.)

What are you doing now.

The next bit said centre the paragraph. (Scrolls down to read the instructions again. Scrolls back to the top of the document.) I didn't need that did I because the Format is there all the time. (Pops up the Format menu and points to Align centre.)

What are you doing now?

I'm going to try and align that paragraph. (Select align centre.) [The cursor was positioned between two paragraphs and is centred.]

Any idea what happened?

No.

(Reads the instructions to her.)

So I need a ruler then. (Pops up the Format menu and selects Insert ruler.) [The ruler is inserted one paragraph above the one to be centred.] (Scrolls up.) Where's my ruler gone? (Goes to Format and selects Insert ruler.) [The ruler is inserted immediately below the first one.]

You've got two rulers now.

I need to do my . . . (points to the left hand margin marker.) . . . this again.

(Points out that the paragraph below should be centred.)

So I want to delete my ruler then. Is that possible?

If you can put them in there it must be possible to get them out. Any idea how you could delete them?

(Clicks on the ruler and manages to mark it. Presses BACKSPACE and manages to delete it. Points to the left margin marker on the remaining ruler.)

So what are you going to do now? How are you going to centre the text in that paragraph?

Do I want Align centre from Format? (Pops up the Format menu again.) I keep trying this one. (Selects Align centre.) [Nothing happened.] (Points to the cursor.) So is this in the centre now?

The cursor, yes.
(Points to the scale on the ruler.) What about 4.1.
What are you thinking of doing?
Set it Align centre. I thought that would do it for me.
(Reads the manual.) There are alignment boxes on the ruler for justify left, right, centre, or justify both sides. (Points to the alignment boxes.) These are the alignment boxes for setting format.
(Points to them.) These 4 here?
yes.
(Points to the justify box which is currently selected.) This one here?
No centre.
(Points to the centring icon.) This one?
Yes.
(Selects it.) [All of the text below the ruler is centred.]
But you were only meant to do it in that paragraph.
So my ruler is too high up then?
So what do you think you should do?
Move on to the next one.
No, no,
(Selects justify.) And now I move the ruler down. (Tries to drag it down with the pointer. Clicks on the ruler.)
What are you trying to do?
I'm trying to delete this ruler.
How did you do it last time?
It went black. (Clicks again and marks the ruler and deletes it.)
What are you going to do now?
(Pops up the Format menu and selects Insert ruler.)
What's happened now?
It put it too high up. I think I'm too stupid . . . (Marks the ruler and deletes it.) I forgot to move the cursor. How do you do that? (Tries to drag the cursor again.)
How did you do it before?
I just thought that if it was at the top of the screen it would put it at the top. (Tries to drag the cursor.) Why won't the cursor come with me then? (Tries a few more times.) I don't know.
You moved the cursor before.
I know. I can't remember. I can't remember how I moved it. (Finally moves the pointer above the paragraph and clicks to position the cursor.) Ah, it's there. (Selects Insert ruler. Selects Align centre from the Format menu.)
How are you going to centre it?
(Clicks on the centring icon.)
That's centred everything below the ruler. You only wanted to centre that paragraph.
Do I take the cursor below [the paragraph] and change that.
How are you going to do that?
(Positions the cursor.) Selects Insert ruler.
Okay.
(Selects Align centre from the Format menu.) That didn't do it?
What?
(Clicks on the justify icon.)
Why align centre? (Suggests that the rulers should be removed from the screen.)
I don't know how. (Pops up the Edit menu and select Undo ruler change.) [The text is now set back to centred.]
What happened now?
I don't know.
I think you've centred everything again below the second ruler.
(Selects Redo ruler change from the Edit menu.) That's not it then.
Oh, have another look. You haven't looked hard enough.
(Looks at Search, then Format.) Um! (Selects Hide rulers.)

10. Underline word, embolden word

(Pops up the Style menu and selects Underline.)
Can you underline the word "underline"?
(Tries to mark the word by clicking first at the beginning and then at the end.) No.
How are you going to do it?
I want to move the cursor. (Selects Underline again and nothing happens.)
So what are you trying to do now? Well how are you going to show it which word you want to underline?
(Marks the word, un-marks it, marks it again.) Now that's the word I want.
The options are in the Style menu.

(Pops up the Style menu and selects Underline. Points to the word just underlined.) That's got that black bit on does that matter?

(Suggests that another word should be changed to bold.)

(Marks another word and selects Bold.)

11. Cut and paste

(Marks the paragraph, pops up the Edit menus and hesitates.)

So what are you doing now?

Cut it? (Selects cut.)

So how are you going to put it up there to the beginning of the text?

Where has it actually gone now?

What do you think has happened?

It's been taken away.

What's happened so far?

Well, it's cut it out. It's cut out the paragraph and I want to take it with me to the beginning. (Pops up Edit.) Oh dear, Show board perhaps. (Highlights Show board then selects Paste.) [The text is re-inserted back from where it was cut.] It's come back to where it was before.

So what you think you should do now?

I've got to move the cursor to the beginning where I want it to be.

So can you get rid of that paragraph now and put it to the beginning of the text.

(Pops up the Edit menu.) So I can't cut it now. (Selects Undo paste.)

Can you put it at the beginning of the text?

(Scrolls to the top of the text, positions the cursor and selects Paste.)

12. Print

Is that in . . . (pops up Edit then File. Selects Pint.) [The printer dialogue box appears.] (Selects draft quality, tries to select All which is already selected.)

Can you get it to go and print.

(Clicks on Automatic.) Can I have a look in the book then?

(Explains the options.)

(Clicks on OK.) [The printer status box appears. The document is printed.]

13. Quit document

(Pops up the File menu, reads the options, highlights Close and hesitates.) Save as? (Highlights Save as.)

You don't want to save?

(Selects Close.)

[Runs out of time.]

14. Create a document

15. Save a new document

Comparison-Subject 18

1. Save file

So those are the menus at the top? (Points to the File menu.) Do I have to press that? (Pops up the File menu and hesitates.)

Select Save.

(Does.)

2. Change margins

Any ideas how to change the margins?

No.

Have a go at something. . . . What are you thinking about.

Are you using the mouse, or something else?

Well, how are you thinking of changing the margin?

(Pushes the arrow keys.)

So you tried to push those arrow keys.

Um. (Presses the SPACE bar a couple of times. Pushes the first line of one paragraph to 1.5 using the SPACE bar.)

What are you doing now?

I don't know.

You were just putting some spaces in. You just added spaces into the first sentence. . . . Any idea? (Starts reading the manual.) There's margin markers, these little black triangles on the ruler, and it says if you click, press and hold the mouse button on it and you can drag the marker to the position where you want it and delete it.

(Grabs the paragraph indent marker and drags it to 1.3.) What have I done now?

It's indented it a bit.

(Points to the left hand margin marker.)

Move that to 1.5.

(Grabs the paragraph indent marker and drags it to 1.7.) Oh, I see.

Can you move the margin markers to 1.5 on the left and 6.5 on the right.

(Points to the body of one paragraph.) Why hasn't this moved then?

You've just moved the indentation marker, you haven't moved the other one.

Ah. (Points to the left margin marker.) That one.

Yes.

(Grabs the left hand margin marker and moves it to 1.6. After some fiddling manages to move it on 1.5. Moves the indentation marker to 1.5 as well.)

And the right one.

(Grabs the right hand margin marker and moves it to 6.5.)

3. Insert word

You're supposed to put a word into that sentence. Any ideas?

(Puts the pointer at the text insertion point. Positions the cursor and types in the word.)

4. Delete characters

(Tries to drag the cursor to the next paragraph and highlights the words just inserted.)

What are you trying to do?

I'm trying to pick that [the cursor] up and take it to the next paragraph. (Finally positions the cursor in front of the character to be deleted.)

Which character are you trying to delete? Which "v" are you trying to delete?

The first one. So I have to go after the "v" don't I?

How are you going to delete?

(Hesitates.) There should be a delete button somewhere on here. (Looks at the keyboard.) Is it this one?

Which one?

Clear?

I don't know.

(Pushes Clear and nothing happens.) No. Which button do you press to delete?

Try BACKSPACE.

Ah, of course. (Pushes the BACKSPACE key and deletes the character in front of the one to be deleted. Types the character back in again and tries to move the cursor by dragging marking the rest of the word.) So, what have I done now. (Finally manages to position the cursor and deletes the character by backspacing. Deletes the remaining characters by positioning the mouse with the cursor and backspacing.)

5. Delete words

It says you can mark words with the mouse and delete them rather than deleting them letter by letter. Can you find out how?

(Marks one word and deletes it by pressing BACKSPACE. Marks the remaining two words and presses BACKSPACE.)

6. Delete line

(Marks the line and presses BACKSPACE to delete it.)

7. Double spacing

How are you thinking of doing it?

Do you use these arrows here?

What the arrow keys? What were you going to do with those?

Um, the cursor.

So what are you going to do?

(Fiddles around for a while.) I've no idea.

(Starts reading the manual.) At the top of the document on the ruler there are spacing boxes for single, one and a half, and double-spacing.

So I have to go all the way back up there again.

Yes.

(Scrolls to the top of the document.) So. (Clicks on the double-spacing icon.)

Right.

8. Single spacing

So I have to go all the way up to do that. (Scrolls to the top of the document. Points at the single-spacing icon, hesitates, and selects it.)

9. Centre paragraph

(Pops up the Format menu and selects Align centre.) [The paragraph in which the cursor was is centred. It's the paragraph above the one to be centred.] Oh, what have I done?

You've centred the paragraph above the one you wanted to centre.

Ooh! Was the cursor in the wrong place?

It says you should insert a new ruler as well. Can you change back what you just did?

(Pops up the Format menu.) Which one was it?

I think it was justify before.

I use Align left this time?

No, justify.
(Selects Align justify.)
Okay, centre the paragraph below that one.
What does it mean "a new ruler"?
Well, there is a ruler at the top of the document.
So you go back again.
Well it says you can insert new rulers from Format.
So you go to Format? Yes? (Pops up the Format menu.)
What are you going to do now?
Why can I . . . (selects Insert ruler by mistake) . . . Whoops! What have I done now? [The ruler is inserted one paragraph too high.]
You've inserted a new ruler.
Was I supposed to?
Well, you wanted to centre that paragraph (points). So, how are you thinking of doing that?
Oh, I see.
Any ideas?
No.
None whatsoever? What are you doing?
I don't know. I've no idea.
(Reads the manual.) There are alignment boxes on the ruler.
(Points to the alignment boxes on the ruler.) These things here?
Yes. There's left, centre, right alignment, and justified.
Do I select justified?
What do you think?
I don't know. (Clicks on justified and nothing happens.)
(Points to the paragraph.) You want to centre the text.
(Clicks on the centring icon on the ruler.)
You've centred it, but you've centred the one down below as well. Any ideas on how to do just that one?
No.
Well, what's happened where you centred it? What's happened now?
I've centred them all not just that one.
Have you centred the ones above the ruler?
No.
No you haven't. So any ideas how you could just centre a single paragraph.
Move down.
Could you insert another ruler?
Mm! (Scrolls up and down the text.)
What do you think you are doing now?
Well I have to . . . Well I've centred that one. (Points to the paragraph immediately below the ruler.)
Well yes.
But I wasn't supposed to.
Well yes. You've centred everything below the ruler.
So I have to move the rule down.
You could put a new ruler in.
Um. I'm not sure how to control where it goes, but I know how to get it.
How do you think you can get it where you want it to go?
Move the text up.
You can try.
(Scrolls up, then scrolls down.)
Where do you want it?
Above the paragraph here. (Points to the paragraph to be centred.)
So what do you want to do now?
I don't know. I don't know what I have to do. I haven't a clue. I have to change those back. (Points to the spacing boxes on the ruler.)
Yes, you've centred all the ones below, so you can change the others back if you put another ruler in.
Can I use that? (Selects the left align icon.)
You've left aligned everything including that one there which you want to centre.
So I want to move the ruler down over that paragraph [the one to be centred].
So how are you going to do that? You could get rid of the ruler you've got now and put another one in. So how do you do that?
(Points to the tab markers.) Is it one of those two?
How do you think you could get rid of the ruler?
Go back to Format. (Pops up the Format menu and selects Hide rulers.) Have I got rid of it?

What do you think?
Yes, it's not there any more.
So what do you want to do now? So what's happening now?
Well I've got to centre this paragraph somehow.
So what are you going to do now.
(Pops up the Format menu.) Insert another ruler.
Where?
Um, don't know. Well, if I insert the ruler below the paragraph then . . .
So you are going to insert a ruler. Where are you going to insert that ruler?
Well if I put it above the paragraph it will centre everything below it won't it?
Yes.
So if I centre it . . .
You could do that.
I could do it but I'd probably centre the one . . .
You'd centre them all below it.
Yes.
But if you put another ruler in below it.
Ah, right. I could put a ruler above and below it.
So how are you going to insert?
Back to Format. (Pops up the Format menu.)
Where are you going to insert it?
I don't know. (Selects Insert ruler.) [The ruler is inserted below the previous ruler and both are now displayed.]
What's happened.
I don't know.
Well you've got two rulers now one after the one that you had before.
Oh, so I didn't get rid of it. So I have to get rid of both of them now. I don't know how.
How are you thinking of doing that?
(Pops up the Format menu.)
How are you going to get rid of them then?
Don't know. It's not the one that says Hide rulers because I've tried that before.
So what are you going to do now?
I don't know.
Any ideas on how you could delete the rulers?
Try Edit? (Pops up the Edit menu and selects Undo insert ruler. Pops up the Edit menu again and selects Redo insert ruler.) [Subject thinks that it means repeat command.] Um. (Selects Undo insert ruler again.)
You got rid of one. How can you get rid of the other one?
I don't know. (Pops up the Edit menu.) I can't use that [Redo insert ruler] again.
No.
(Pops up Format.) I don't know.
Any ideas.
I don't think so.
You've done those other things. What could you try to do now?
I don't know, I've tried everything.
Well, not everything.
Well, everything I can think of.
How you tried marking the ruler and deleting it? (Starts reading the manual.)
(Tries to click on the ruler several times and finally manages to mark it. Deletes it by pressing BACKSPACE.)
You want to get another ruler in don't you? So what are you going to do now?
(Scrolls down so that the paragraph to be centred is at the top of the window. Pops up Format and selects Insert ruler.) [The ruler is inserted in the same position as before.] What have I done? - Why has it gone there?
I don't know. (Marks it and deletes it.)
What are you going to do now?
(Positions the cursor.) I've put the cursor there. (Selects Insert ruler.)
What are you going to do now?
Put in another ruler. (Positions the cursor and selects a second ruler.)
Alright. And now what are you going to do.
(Pops up the Format menu and selects Align centre.)
Hm! No. You have to use the alignment boxes, you've used them.
(Hesitates.)
The four boxes on the end.
(Selects the centring icon.)
You've done it.
Do I have to get rid of the rulers?

You want to get rid of what?
These. (Clicks to mark the first ruler and deletes it.)
Now you have put it back [the paragraph formatting].
(Select Insert ruler and selects the centring icon.)
So how could you make them disappear?
Edit. (Selects Undo ruler change.) [The paragraph is now set back to justify.]
That said "Undo ruler change".
(Pops up the Edit menu again and then selects the Centring icon again.)
Can you make the rulers disappear anywhere?
(Pops up the Format menu again and selects Hide rulers.)

10. Underline word, embolden word

(Points to Style.)
So how do you think you can underline a word.
(Clicks the cursor at the beginning of the word.) Move the cursor. (Pops up the Style menu and selects Underline.) No?
What are you trying to do?
Well, I tried to underline the word "underline".
How?
Um, move the cursor . . . to underline and then select Underline.
Try and do it.
(Pops up the Style menu again.)
How can you indicate which word you want to underline apart from putting the cursor at the beginning?
(Puts the cursor at the end.) Ah. (Tries to mark the word, slips, and highlights a couple of lines of text.) How do I get rid of that?
What were you tying to do?
I was trying to get the word black.
Just try clicking again.
(Does, marks the word and selects Underline. Marks another word and selects Bold.)

11. Cut and paste

(Pops up the Edit menu.) I highlight it then . . . (Marks the paragraph, pops up Edit, and selects Cut.)
Now can you put that at the beginning of the document?
(Selects Paste.) [The paragraph is inserted back from where it was cut.] Um.
How can you do it?
(Marks the paragraph again.)
What were you trying to do?
Well, I cut it but then when I used Paste in the Edit.
Yes, you want to put it back at the top of the document. So how could you put it at the top of the document?
I don't know. (Marks the paragraph again. Pops up Edit, Format.)
What are you looking for now? What are you trying to find?
Something which mentions the beginning.
Something to put it to the beginning of the document.
Yes.
What do you think you could do now?
(Pops up Edit.)
Cut it out.
You have to cut it out first. (Selects Cut. Scrolls up to the top of the document.)
Right, now where are you going to put it?
There. (Positions the cursor and selects Paste.)

12. Print

(Looks at the Format menu.)
What are you looking for?
Something that tell you how to print.
What do you think it might be?
I'm just guessing.
Where have you looked.
I've looked under Format. (Pops up Edit.)
Anything else.
(Looks at Search, then File and select Print.) [The printer dialogue box appears.] Oh gosh! (Looks at the options for a while, points to OK.) Click on that.
It's up to you.
(Does.) [The printer status box appears.] (Tries to click on Continue.) [The document is printed.]

13. Quit document
(Pops up the File menu and hesitates.)
Is there anything that tells you how to leave a document.
Quit. (Selects Quit.)
14. Create a document
[Runs out of time.]
15. Save a new document

Comparison-Subject 19

1. Save file
(Clicks on the File menu several times, the menu flashes.)
Can you select Save?
(Pops up the menu.) Do you have to hold it down?
Yes.
(Highlights Save.) And just let go when it's there?
Yes.
(Selects Save.)
2. Change margins
What does it mean "Change the left margin to 1.5"?
It means you have to move the text in to 1.5 and the right margin to 6.5.
(Points to 1.5 on the ruler with the pointer.) So to there?
Yes.
(Clicks and thereby accidentally highlighting the ruler.) Um.
What are you trying to do?
I don't know how to do this so . . .
Any ideas.
No. (Points at 6.5 and clicks, nothing happens.) No? No. (Points to 6 lines per inch.)
Why has the ruler gone black?
I don't know. You're asking me?
(Starts reading the manual.)
(Experimenter tells the subject to click the cursor in the text.)
(Does, thereby de-selecting the ruler.)
Now you can change the margin to 1.5. It says you've got margin markers, those little black triangles.
Oh, the little triangles.
And if you just click on them.
Oh, I see.
Drag them to where you want to.
(Tries to click on the left margin marker and accidentally marks the ruler. Clicks the cursor into the text to de-select the ruler. Grabs the paragraph indent marker and drags it to 1.5.)
That's the indentation marker. The triangle is the margin marker.
What do you mean?
(Points to the indentation marker and to the text.) That's only indented the first line to 1.5. The left triangle is the actual margin marker. Can you move that to 1.5?
(Points to the left margin marker.) Move that to 1.5? (Grabs the left margin marker and drags it to 1.5.)
Can you grab the right hand one and move it to 6.5.?
(Does.)
3. Insert word
I think you're supposed to insert a word there between "and" and "the". Any ideas on how you do it?
Just get the cursor down. (Tries to drag the cursor from the current position.)
How are you going to do it?
(Keeps trying.) I'm trying to move it. Are you allowed to move the keys? (Uses the keys to position the cursor and types the word in.)
4. Delete characters
(Positions the cursor with the arrow keys and deletes by pressing BACKSPACE.)
5. Delete words
Can you delete the words other than deleting them letter by letter. It says can you mark the words with the mouse and delete them?
Oh right. (Positions the cursor at the beginning of the word to be deleted using the arrow keys. "Picks" up the cursor with the pointer to mark the word. Deletes the word by pressing BACKSPACE. Moves the cursor to the beginning of the remaining two words and deletes them in the same way.)

6. Delete line

(Moves the cursor to the beginning of the line using the arrow keys. Clicks the mouse while moving the pointer, accidentally highlighting a block of text.) Oh no. Help. (Presses the BACKSPACE key and deletes the block.) Oh no. I've lost a whole sentence. (Positions the cursor at the beginning of the sentence using the arrow keys. "Picks" up the cursor with the mouse, marks the lines, and deletes it by pressing BACKSPACE.)

7. Double spacing

Any ideas how to double-space the document?

An extra line between each sentence?

Between each line, yes. But that's for the whole document. There must be a way of doing it rather than manually going through and putting the extra lines in. Any ideas?

Style? (Pops up the Style menu.) Format? (Pops up Format, Font, Edit, Style, Search, Format, Search, Edit, and Format.) Page break is it? I don't know.

Is there anything there? (Starts reading the manual.)

It doesn't really help telling you to open headers and open footers and things like that.

It says there is a ruler at the top of the document that's spacing boxes on it, single space, one and a half, and double space.

Does that mean I have to go back up to the beginning?

Yes.

Double space? (Points to the double-spacing icon.)

Yes.

(Selects the double-spacing icon.) Right.

8. Single spacing

Oh, you want it back again. Oh no. (Scrolls back to the top and selects single-spacing.)

9. Centre paragraph

(Pops up the Format menu and selects Use ruler.) [Nothing happens.] (Marks the paragraph.)

So how are you thinking of doing it?

To start with what's a ruler?

That's the thing at the top. The one where you used the spacing boxes.

Right. (Clicks on Format and selects Insert ruler.) [The marked paragraph is overwritten by the ruler.]

What happened?

I've lost all the print. (Clicks on the ruler and marks it. Selects Hide rulers from the Format menu.) It's gone all together. Brilliant.

What happened?

The text was replaced with the ruler. The ruler has been hidden or whatever. (Pops up the Format menu.) Let's get that back. (Selects Show rulers. Pops up Format again and selects Use ruler.)

What are you trying to do?

I'm trying to get the script back.

Why did the ruler replace the script, any ideas?

No.

(Reads the manual.) Can you undo what you've done.

I ought to go back here. (Looks at the Format menu.)

How about deleting that ruler and centring another paragraph.

Okay. (Selects Hide rulers.)

How about centring that paragraph there?

(Starts marking it.)

So what are you trying to do now?

Pick out the paragraph so that I can centre. (Marks the paragraph.)

Now what are you going to do?

(Pops up the Format menu.) That one, Align centre. (Selects Align centre.) Yes.

10. Underline word, embolden word

(Positions the cursor at the beginning of the word to be underlined and pops up the Style menu. Selects Underline, but nothing happens. Highlights the word.) Again. (Selects Underline. Positions the cursor at the beginning of a word, pops up the Style menu, lets go, marks the word, and selects Bold.)

11. Cut and paste

(Pops up Format, then Edit. Marks the paragraph, scrolls to the top of the text, and positions the cursor.) Right. (Pops up the Edit menu and selects Paste.) [The wrong paragraph has been inserted.]

(Tells the subject to return to the paragraph at the bottom of the text and shows that the paragraph is still there.)

I didn't cut it out did I? (Marks a paragraph, scrolls to the top of the text, positions the cursor, pops up the Edit menu, and tries to select Cut.) But Cut isn't coming up is it?

Have you got any ideas why? Do you want to go back and look?

(Pops up the Edit menu again and points at Cut.) It's not in the same type as the others. [It's greyed.]

If it's greyed that means it won't let you do it.

Oh great.

There is a reason why. What are you trying to do now?

I'm trying to find out why?

What didn't know that you want to cut something? How do you show it that it needs to cut a certain piece?

I've done it in black.

Is it still in black?

(Scrolls back.) No, it's not. Is the cursor likely to stay at the beginning if I mark it now? (Marks the paragraph, and pops up the Edit menu.) Yes, Cut. (Selects Cut. Points to the Edit menu.)

And now.

(Lets the menu go, scrolls to the top, positions the cursor, and selects Paste.)

12. Print

(Pops up the File menu, selects Save first by accident, and then selects Print.) [The printer dialogue box appears.] Oh no, what questions. (Studies the choices. Points to the From box where the cursor is flashing.) I don't know how many pages it's going to be.

(Explains that it will print out all pages.)

Okay. (Clicks within the dialogue box and nothing happens. Looks again and clicks on OK.) [The printer status box appears. The document is printed out.]

13. Quit document

(Pops up the File menu and selects Quit.)

14. Create a document

[Runs out of time.]

15. Save a new document