

MODELLING BASIC FORMULAE

Microsoft Excel - school fete

| | Estimated number of people | |
|----|----------------------------|--|
| 1 | 400 | |
| 2 | | |
| 3 | INCOME | Cost No. bought per person Money in |
| 4 | Drinks | £2.00 1 £200.00 |
| 5 | Tea/coffee | £0.50 1 £200.00 |
| 6 | Cakes | £0.25 1 £100.00 |
| 7 | Hot dogs/burgers | £1.00 1 £400.00 |
| 8 | Shades | £0.75 4 £300.00 |
| 9 | Games | £0.40 3 £120.00 |
| 10 | Staff | £0.50 2 £100.00 |
| 11 | Prizes | £1.50 2 £300.00 |
| 12 | Tombola | £0.50 2 £100.00 |
| 13 | | £5288.00 Total INCOME |
| 14 | EXPENDITURE | Money out |
| 15 | Drinks | £200.00 |
| 16 | Tea/coffee | £100.00 |
| 17 | Cakes | £25.00 |
| 18 | Hot dogs/burgers | £400.00 |
| 19 | Shades | £300.00 |
| 20 | Games | £120.00 |
| 21 | Staff | £100.00 |
| 22 | Prizes | £300.00 |
| 23 | Tombola | £100.00 |
| 24 | | £1673.00 Total EXPENDITURE |
| 25 | | £3615.00 Profit/Loss |

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Wherever you see this symbol, make sure you remember to save your work!

BASIC FORMULAE

Using formulae Excel can do calculations for you automatically.

To see how the most basic formulae in Excel work, we will use the following symbols:

- + addition
- subtraction
- * multiply
- / divide

You will need to set up your worksheet by doing the following:

Type the text ADD, SUBTRACT, DIVIDE, MULTIPLY in cells A1, C1, E1 and G1 (as below).

Then type all the numbers as shown in the correct cells.

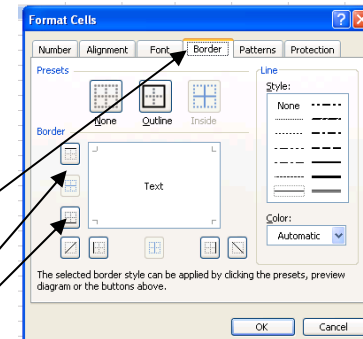
| | A | B | C | D | E | F | G | H |
|---|-----|---|----------|---|----------|---|--------|---|
| 1 | ADD | | SUBTRACT | | MULTIPLY | | DIVIDE | |
| 2 | 100 | | 100 | | 100 | | 100 | |
| 3 | 400 | | 400 | | 400 | | 400 | |
| 4 | | | | | | | | |

Make your worksheet look better by formatting the cells and changing the font.

Inserting a border

Cells A4, C4, E4 and G4 need a thick top and bottom border. To do this:

- Click on cell A4. Hold down Ctrl while you click on each of the other named cells to select them
- From the main menu, select Format and then Cell s...
- A dialog box should appear. Click on the border tab.
- Select the line style by clicking a thick line in the Style box.
- Click in the border boxes to specify top and bottom borders.
- Click OK.



MODELLING : TASK 1

Entering formulae

Formulae are entered using cell references.

- Click in cell A4
- Type in an equals (=) sign to tell Excel that you are about to enter a formula. (Every formula begins with an =)
- Type a2+a3 so that the formula appears - shown below:

| | A | B | C |
|---|--------|---|----------|
| 1 | ADD | | SUBTRACT |
| 2 | 100 | | 100 |
| 3 | 400 | | 400 |
| 4 | =a2+a3 | | |
| 5 | | | |

- As you can see above the formula is also shown in the Formula Bar. It is possible to edit your formulae here if you need to.
- In cell C4, type = C2-C3
- In cell E4, type = E2*E3
- In cell G4, type = G2/G3

Your worksheet should look like this:

| | A | B | C | D | E | F | G | H |
|---|-----|---|----------|---|----------|---|--------|---|
| 1 | ADD | | SUBTRACT | | MULTIPLY | | DIVIDE | |
| 2 | 100 | | 100 | | 100 | | 100 | |
| 3 | 400 | | 400 | | 400 | | 400 | |
| 4 | 500 | | -300 | | 40000 | | 0.25 | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |

Automatic Re-calculation

One of the reasons we use computerised spreadsheets, is that once you have entered the formulae, you can change the contents of the other cells and the answers will still be correct. This is because we use cell references in the formulae and not the values in the cells.

! Try experimenting by changing the values in rows 2 and 3, to see if the answers are still correct.

Q. What is 2.798565×4.694937 ?

Entering Formulae By Pointing

You can enter formulae, such as =a2+a3, by using the mouse to point to the cells in the formula.

Have a go - delete all formula in your spreadsheet.

- In cell A4, type = and then click the mouse in cell A2.
- Type + and then click the mouse in cell A3.
- Press Enter.

! Now try entering other formulae in the same way.



BASIC FUNCTIONS

Functions allow us to perform more complicated calculations. They are pre-programmed into Excel. There are over 200 available!

SUM Function

The SUM function adds up the numbers in a range of cells.

In a blank spreadsheet, enter the details as shown below.

| | A | B |
|----|-------------------|-------------------------|
| 1 | ICT GRADES | |
| 2 | | |
| 3 | Name | Exam Mark (/100) |
| 4 | Peter Smith | 70 |
| 5 | Mary Davenport | 69 |
| 6 | Anthony MacDonald | 84 |
| 7 | Sheila Roberts | 98 |
| 8 | David Jones | 32 |
| 9 | Sarah Collins | 78 |
| 10 | | |
| 11 | | |
| 12 | TOTAL | |
| 13 | | |

If we want to add up the total score for everyone in the group for their exam and put the total in cell B12, we can do the following:

- Select cell B12, by clicking in it.
- As with any formula, you should type =SUM([including the opening bracket]
- Now click in cell B4 and hold the left mouse button while you drag down to cell B9. This will select all exam marks to add up.
- After B9 type) to finish to formula.
- Press Enter.
- The formula should look like this =SUM(B4:B9) The values within the brackets are the range of cells that are selected.
- You will also be able to see the formula in the formula bar, shown here. It is possible to edit the formula here.

! In cell C3 type Coursework (/50) enter a mark out of 50 for each pupil. In cell C12, using the SUM function, work out the total score for everyone in the group.

AVERAGE Function

The average function works in much the same way as the SUM function.

To work out the average mark for the exam results, do the following:

- Click in cell A14 and type AVERAGE.
- Click in cell B14 and type =AVERAGE(
- Click in cell B4 and drag down to cell B9.
- Type) to finish the formula.
- Press Enter.
- The answer appears in the cell.

! Now work out the average mark for coursework.



MODELLING : TASK 1

MAX & MIN Function

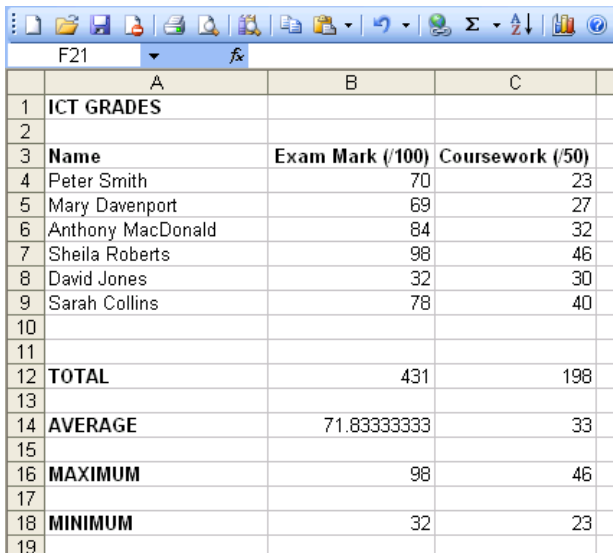
To find the minimum or largest value, you need to use the MAX function.

To find the maximum exam mark, do the following:

- Click in cell A16 and type MAXIMUM
- Click in cell B16 and type =MAX(
- Click in cell B4 and drag down to cell B9.
- Type) to finish the formula.
- Press Enter.
- Enter a formula in cell C16 to work out the maximum coursework mark.

! Now use the MIN function to find the smallest values for the exam marks and coursework marks. Type MINIMUM in cell A18 and enter the MIN function in the appropriate cells.

Your work should now look like this (remember you will have entered different values into the coursework column).



| | A | B | C |
|----|-------------------|------------------|------------------|
| 1 | ICT GRADES | | |
| 2 | | | |
| 3 | Name | Exam Mark (/100) | Coursework (/50) |
| 4 | Peter Smith | 70 | 23 |
| 5 | Mary Davenport | 69 | 27 |
| 6 | Anthony MacDonald | 84 | 32 |
| 7 | Sheila Roberts | 98 | 46 |
| 8 | David Jones | 32 | 30 |
| 9 | Sarah Collins | 78 | 40 |
| 10 | | | |
| 11 | | | |
| 12 | TOTAL | 431 | 198 |
| 13 | | | |
| 14 | AVERAGE | 71.83333333 | 33 |
| 15 | | | |
| 16 | MAXIMUM | 98 | 46 |
| 17 | | | |
| 18 | MINIMUM | 32 | 23 |
| 19 | | | |



COUNT Function

Counts the number of cells that contain numbers, in the selected range.

This example will count the number of results that have been considered. (Although it is quite simple to work this out in this example, the function would be more helpful with a longer list).

- Type Number of Marks in cell A20.
- In cell B20 type =COUNT(
- Click in cell B4 and drag down to cell B9.
- Type) to finish the formula.
- Press Enter
- The answer should be 6.

This formula has counted the number of cells that have a number in them (or in this case a mark).

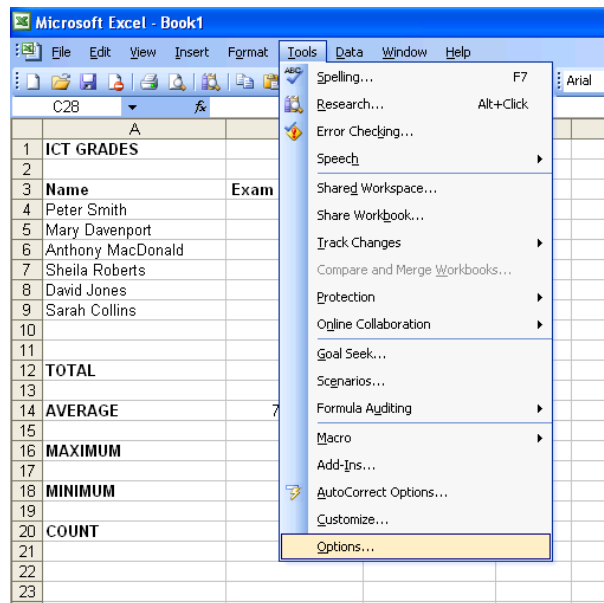
! Experiment with the formula that you have just entered. Try changing the range of cells to include the marks in column C. What happens to the result of the count function?

MODELLING : TASK 1

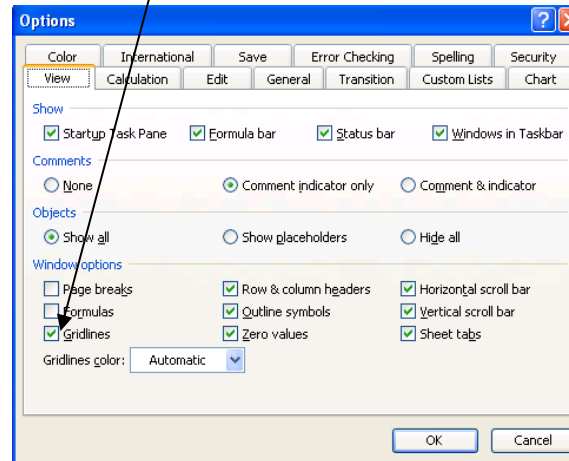
HOW TO DISPLAY FORMULAE

To display the formulae that you have entered, instead of the results, do the following:

- Select Tools from the Main Menu
- Select Options



The following dialogue box will be displayed. You should click in the formula box so that a tick is entered

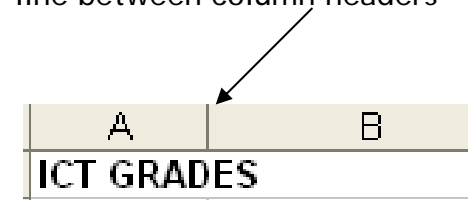


! Remove the tick to hide the formula.

RESIZING COLUMNS TO DISPLAY DATA

You should always make sure that column widths are wide enough so that all words or numbers fit into each cell.

Position the pointer so that it is on the line between column headers



The pointer will change to a double-headed arrow.

Press the left mouse button and hold it down while you drag to the right. The column will become wider, making it wide enough to fit all its contents.

Alternatively, when you are pointing between the column headers and the pointer has changed to a double-headed arrow, you can double-click. The column automatically widens so that all contents of the cell will fit.

MODELLING : TASK 1

You may:

- Guide teachers or students to access this resource from the teach-ict.com site
- Print out enough copies to use during the lesson

You may not:

- Adapt or build on this work
- Save this resource to a school network or VLE
- Republish this resource on the internet

A subscription will enable you to access an editable version, without the watermark and save it on your protected network or VLE