Excel 365 Advanced

Sample manual - first two chapters

Wise Owl Training

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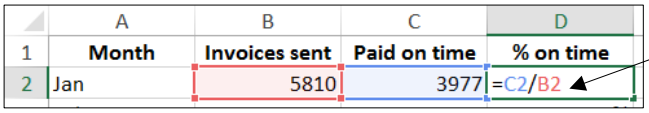
CHAPTER 1 - FORMULAE AND FUNCTIONS

1.1 Basic Formulae

You can type a *formula* into a cell to calculate a new value based on data you've already entered:



All formulae begin with an = sign. This takes the value in cell **C2**, and divides it by the value in cell **B2**.

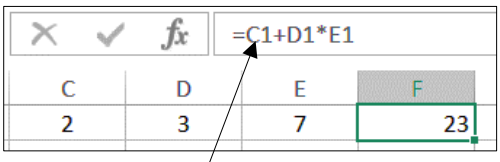
Operators

Operators are the symbols that tell Excel to add, subtract, etc. The common ones used are:

Symbol	What it means	Example	Result (if B2 = 5 and C2 = 2)
+	To add	= B2 + C2	7
-	To subtract	= B2 - C2	3
*	To multiply	= B2 * C2	10
/	To divide	= B2 / C2	2.5
^	To take to the power of	= B2 ^ C2	25 (ie 5^2)
&	Concatenation (joining)	= B2 & C2	52 (ie 5 and 2 joined together)

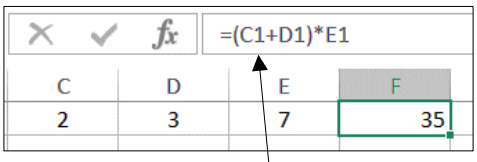
Brackets in Formulae

Brackets force Excel to calculate some parts of a formulae first (in Excel multiplication/division normally occur before addition/subtraction, but you can override this). For example:



Without brackets

2 plus 3 times 7 = 2 plus 21 = 23



With brackets

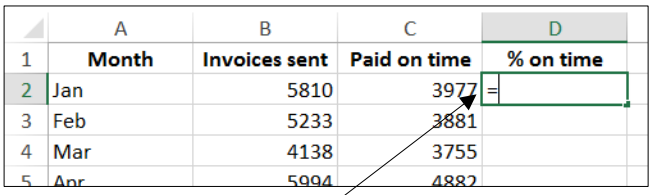
(2 plus 3) times 7 = 5 times 7 = 35

Remember your **BODMAS**! *This natty acronym gives the order in which calculation rules are applied, as shown on the right.*

B rackets
O ver
D ivision
M ultiplication
A ddition
S ubtraction

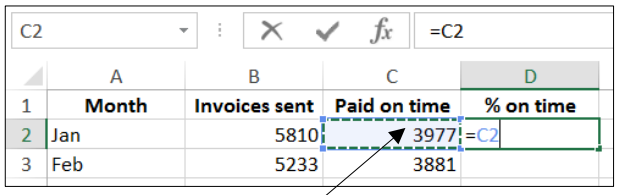
1.2 Creating Formulae

Here's how to create a typical formula, such as the one shown on the previous page:



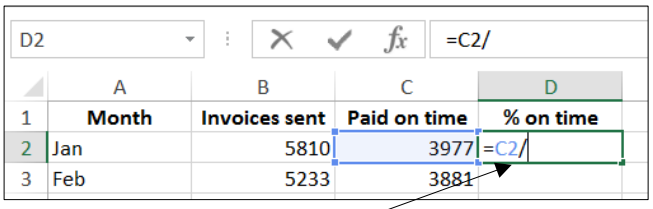
	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	=
3	Feb	5233	3881	
4	Mar	4138	3755	
5	Apr	5994	4882	

a) Click in the cell where you want to put your answer, and type an = sign to begin your formula.



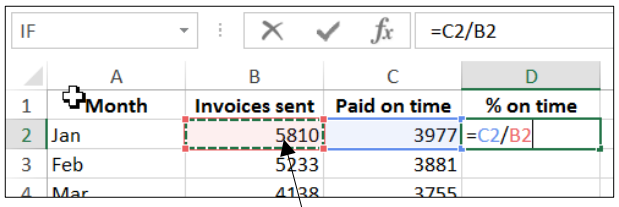
	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	=C2
3	Feb	5233	3881	

b) Click on the first cell to use in your calculation, or type in its cell reference (here it's **C2**).



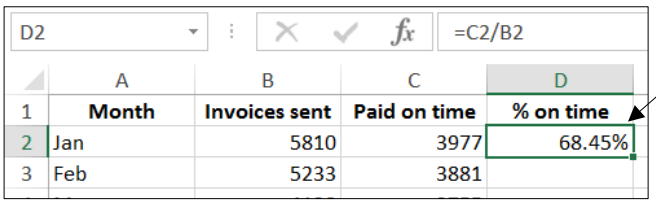
	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	=C2/
3	Feb	5233	3881	

c) Type in an operator (here we type / to show we want to divide by something).



	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	=C2/B2
3	Feb	5233	3881	
4	Mar	4138	3755	

d) Click on the next cell that you want to reference, or type in the cell address (here it's **B2**).

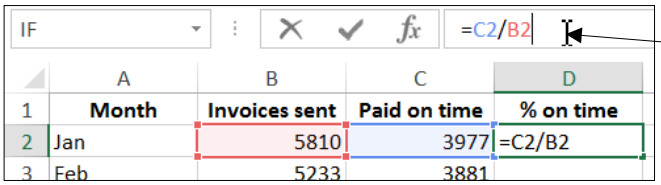


	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	68.45%
3	Feb	5233	3881	

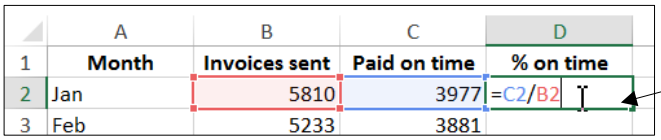
e) Press Enter or click on the tick symbol to confirm your formula (here we've also formatted the cell containing the answer, so that it appears as 68.45% rather than 0.6845).

1.3 Editing Formulae

After you've created a formula, you can edit it in a couple of ways:



Either click on the cell, then click in this formula bar to make changes to the formula it contains …



… or double-click in the cell to change the formula within the cell (you can also press F2 to do this).

Whichever method you choose, press ↵ when you've finished to save your changes, or Esc to cancel them, or click on one of the tools shown below:

Cancel your changes

Save your changes

1.4 Copying Formulae

When you copy a formula containing cell references to other cells, Excel will automatically update the cell references.

This key feature of spreadsheets is called relative cell referencing*, and is explained in more detail overleaf.*

The Easiest Way to Copy a Formula

You can copy any formula up, down, left or right. Here's an example of copying a formula down.

	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	68.45%
3	Feb	5233	3881	
4	Mar	4138	3755	
5	Apr	5994	4882	
6	May	6006	4125	

In this example we want to copy this formula down to work for the other four months too.

To copy this formula down:

	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	68.45%
3	Feb	5233	3881	
4	Mar	4138	3755	
5	Apr	5994	4882	
6	May	6006	4125	

a) Position the mouse button at the bottom right corner of the cell that you want to copy, so that it turns into what's called the **AutoFill** handle (a black cross).

	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	68.45%
3	Feb	5233	3881	
4	Mar	4138	3755	
5	Apr	5994	4882	
6	May	6006	4125	
7				

b) Click and drag down to highlight the cells beneath – when you release the mouse button, Excel will copy the formula down.

	C	D
	l on time	% on time
	3977	68.45%
	3881	74.16%
	3755	90.74%
	4882	81.45%
	4125	68.68%

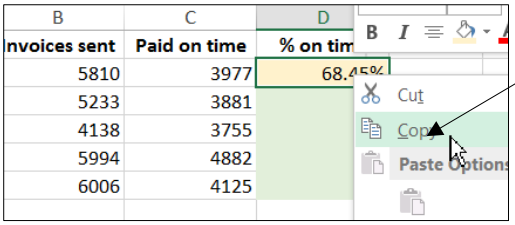
c) The formula give different numbers because they're referring to different cells, as can be seen from looking at the bottom figure of 68.68%.

	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	68.45%
3	Feb	5233	3881	74.16%
4	Mar	4138	3755	90.74%
5	Apr	5994	4882	81.45%
6	May	6006	4125	=C6/B6
7				

Actually, an even easier way to copy a formula down is to double-click when you get the AutoFill handle. Excel will then copy the formula down almost by magic, using the column immediately to the left to determine how far to go. Note that this only works when copying down (you can't use it to copy up, right or left).

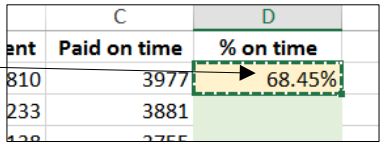
Other Ways to Copy a Formula

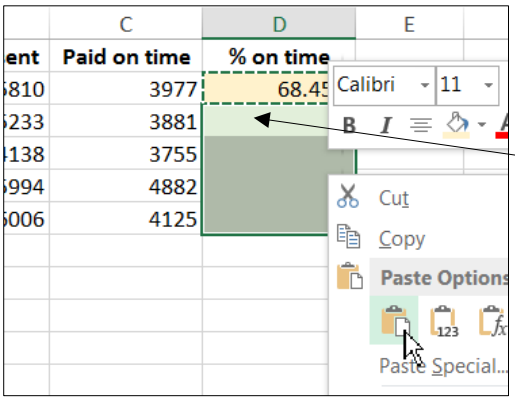
You can, of course, use all of the standard Windows ways to copy formulae too!



a) Right-click on the cell that you want to copy and choose **Copy** (or press **Ctrl** + **C**, or click on the Copy tool on the **HOME** tab of the ribbon).

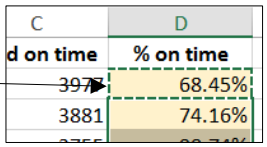
b) The cell or cells that you are copying will get a jazzy line round them!





c) Right-click on the cells which you want to paste the formula onto, and choose the tool shown (or press **Ctrl** + **V**, or click on the tool shown on the right on the **HOME** tab of the ribbon).

d) Press **Esc** to clear these dashed lines if they are annoying you (although they're harmless!).



How Relative Cell Referencing Works

When you copy a formula, Excel uses *relative cell referencing*:

	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	=C2/B2
3	Feb	5233	3881	74.16%
4	Mar	4138	3755	90.74%
5	Apr	5994	4882	81.45%
6	May	6006	4125	68.68%

The original formula is read by Excel as: "take the cell one to the left on the same row, and divide it by the cell two to the left on the same row".

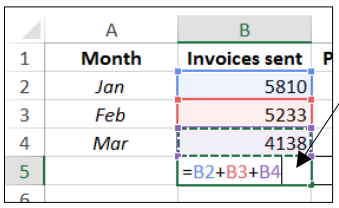
	A	B	C	D
1	Month	Invoices sent	Paid on time	% on time
2	Jan	5810	3977	68.45%
3	Feb	5233	3881	74.16%
4	Mar	4138	3755	90.74%
5	Apr	5994	4882	81.45%
6	May	6006	4125	=C6/B6

The copied formulae all do exactly the same thing, but give different results because they refer to cells on different rows!

There is a way in Excel to turn this behaviour off and use absolute *referencing instead (this is covered in a later courseware chapter, including examples showing why you'd want to do this).*

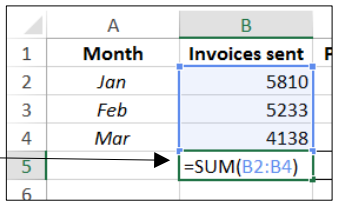
1.5 Functions

A *function* can be used in a formula to perform specialised calculations. Here's an example:



You could calculate the total for this column by adding each individual cell together …

… but it's more efficient to use the **SUM** function, which will add together all of the values in a range of cells.



There are hundreds of functions in Excel, covering everything from summing cells through to advanced financial, statistical and mathematical calculations.

Basic Functions

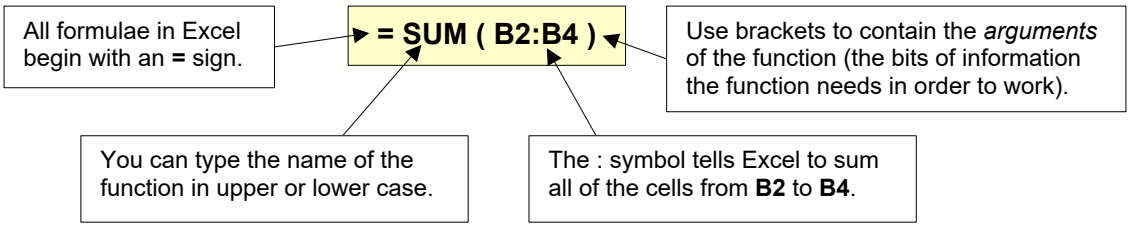
Here are four of the most commonly used functions in Excel:

	A	B	C
1	**Month**	**Sales**	
2	Jan	5810	
3	Feb	5233	
4	Mar	4138	
5			
6		*Month 1-3 statistics*	
8		**Result**	**Formula**
9	*Total*	15,181.00	=SUM(B2:B4)
10	*Average*	5,060.33	=AVERAGE(B2:B4)
11	*Maximum*	5810	=MAX(B2:B4)
12	*Minimum*	4138	=MIN(B2:B4)

Here we've used four functions to work out the sum and average of the 3 sales figures for **Jan**, **Feb** and **Mar**, and also the highest and lowest of them.

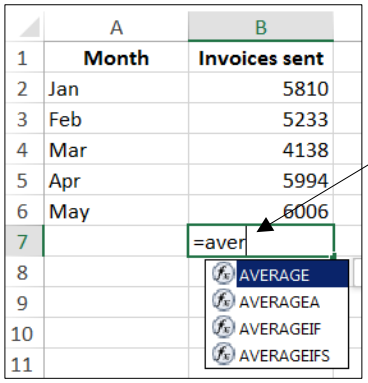
Structure of a Function

All Excel functions have the same structure:

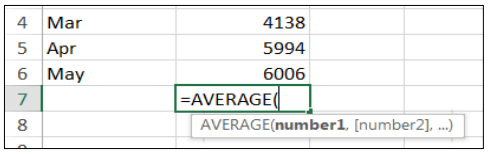


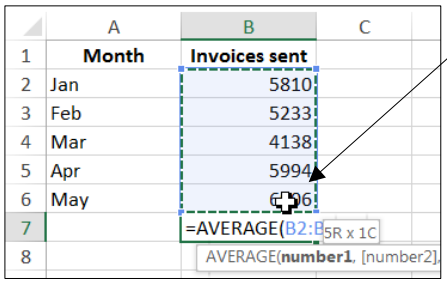
Typing a Function

If you know the name of the function that you want to use, you can type it into a cell:



a) Type = followed by the name of the function you want to use. When you've identified it sufficiently, you can either press the ⇆ key, or alternatively double-click on the function name to select it (to save yourself typing) to get:

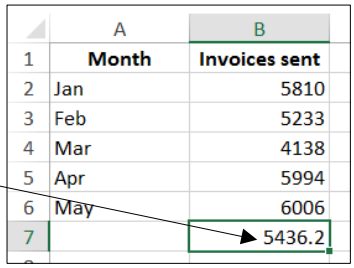




b) Select the cells which you want to be the argument for your function (here the cells whose average we want to calculate).

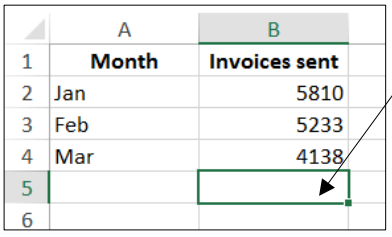
c) Press ↵ to create your formula (Excel will fill in the last closing bracket for you) to get:

=AVERAGE(B2:B6)

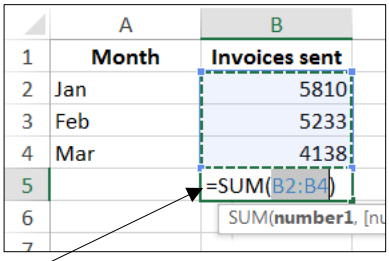


Using AutoSum to Create Quick Totals, Averages, Etc.

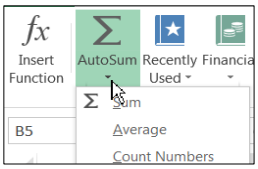
For the basic functions of summing, averaging, counting and taking the maximum or minimum value in a range, use the ∑ AutoSum tool to speed things up:

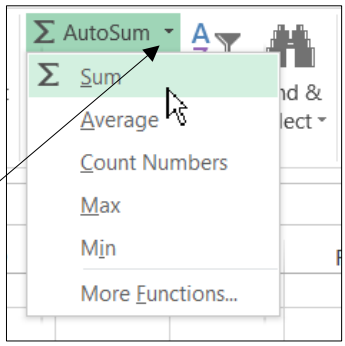


a) Click on the cell where you want the answer to go (here we'll calculate the total invoices sent for January through to March).



b) Click on this arrow on the Home tab to choose a different function (or just click on the ∑ AutoSum tool if you just want to create a total). Note that you can also find this tool on the Formulas tab:

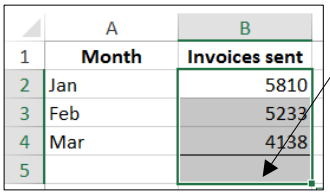




c) Excel will guess what you want to sum (or average, or count, etc.) – usually this will be the block of numbers directly above or to the left of the current cell. If Excel has guessed correctly, press ↵ to confirm the formula; otherwise select the block of cells you did want to work with, or press Esc to cancel your formula.

The Quickest Way to Sum

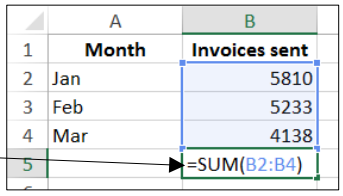
People sum so frequently in Excel that there is a short-cut key devoted to it:



	A	B
1	Month	Invoices sent
2	Jan	5810
3	Feb	5233
4	Mar	4138
5		

a) Select the block of cells you want to sum and the blank cell where the answer should go.

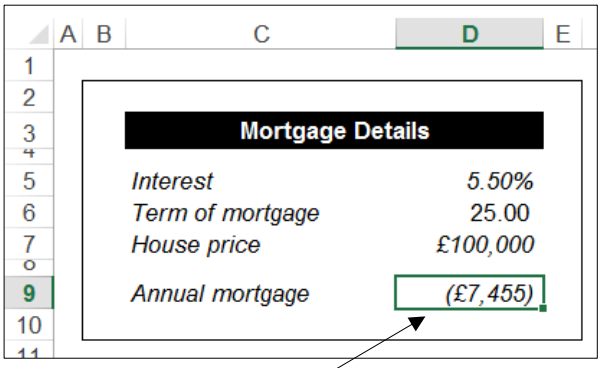
b) Type **Alt** + = to put the sum formula into the blank cell.



	A	B
1	Month	Invoices sent
2	Jan	5810
3	Feb	5233
4	Mar	4138
5		=SUM(B2:B4)

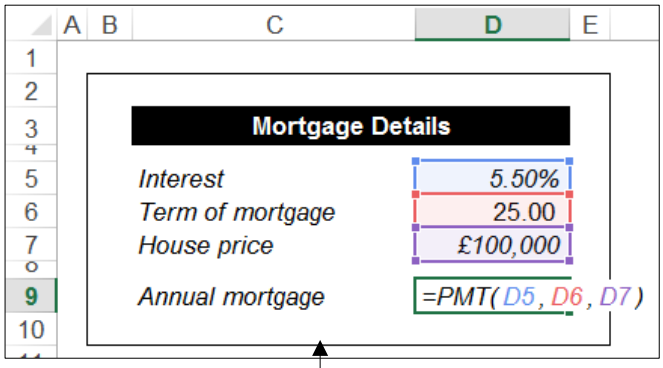
The Function Wizard

The best way to choose a function in Excel is to use the *function wizard*. To show how to use this, consider this example:



Mortgage Details	
Interest	*5.50%*
Term of mortgage	25.00
House price	*£100,000*
Annual mortgage	*(£7,455)*

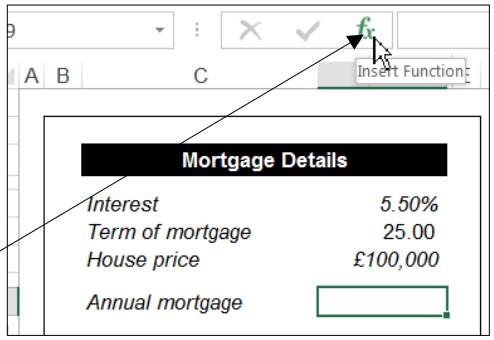
We want to work out the annual mortgage on a £100,000 broom cupboard in London, given a 25 year term and an interest rate of 5.5%.



Mortgage Details	
Interest	*5.50%*
Term of mortgage	25.00
House price	*£100,000*
Annual mortgage	*=PMT(D5, D6, D7)*

As always in Excel, there's an app for this (although in Excel they're called functions, not apps). Here we'll use the **PMT** function (which stands for **PayMenT**, before you ask).

You're unlikely to be able to guess that this function exists, so here's how to find it (or any other function for that matter). First invoke the wizard:



Click on the cell where you want your answer to go, then click on this tool (or press ⇧ + **F3** to invoke the function wizard).

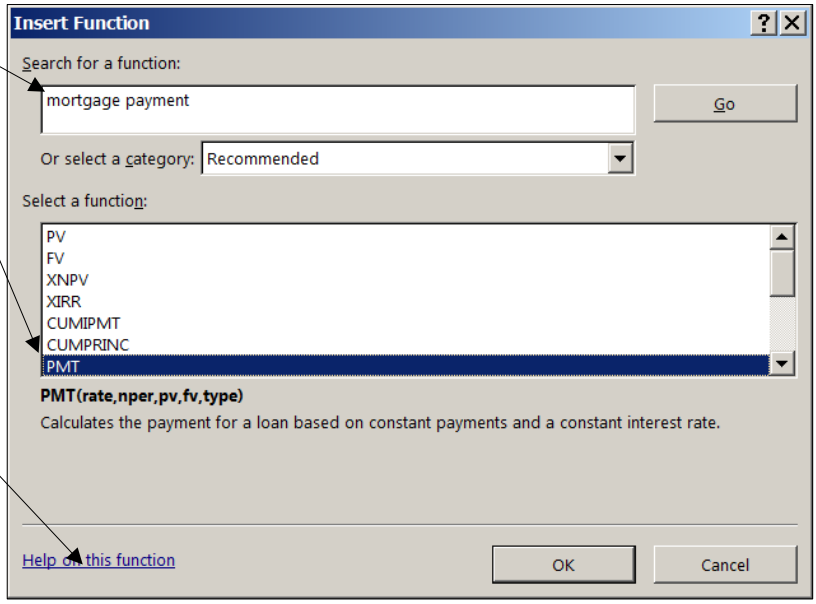
You can now choose which function you want to work with:

a) Type in a description of what you want to do, and press ↵.

b) See if you can find a function which looks like it will help in the list presented to you.

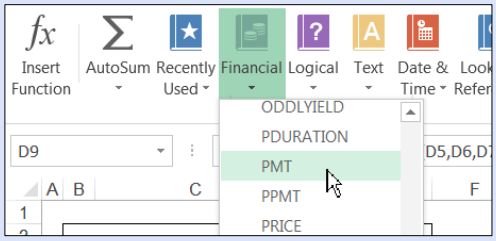
c) Click on this link to get excellent help on this function – here's how the **PMT** function help starts:

> **PMT function**
>
> **PMT**, one of the financial functions, calculates the payment for a loan based on constant payments and a constant interest rate.

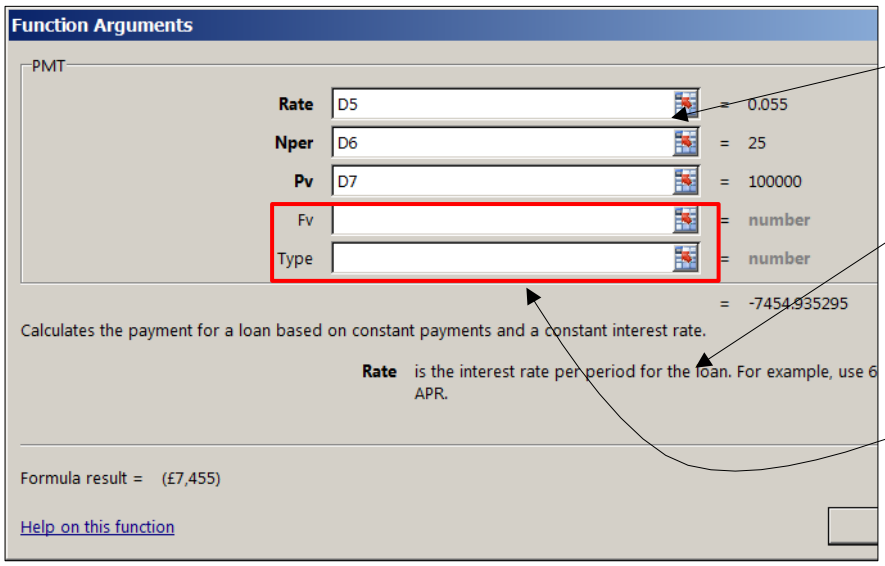


Wise Owl's Hint

*If you know which category of function you're looking for, it can sometimes be quicker to find it using the **FORMULA** tab of the ribbon.*



Finally, select OK in the above dialog box. You can now complete your function:



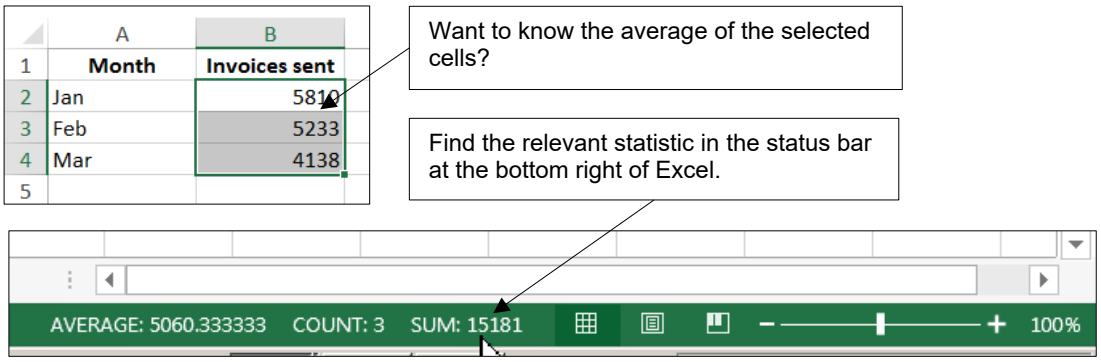
a) Click on these red blobs to choose a cell for each argument.

b) When you click in an argument, Excel tells you how it should be used.

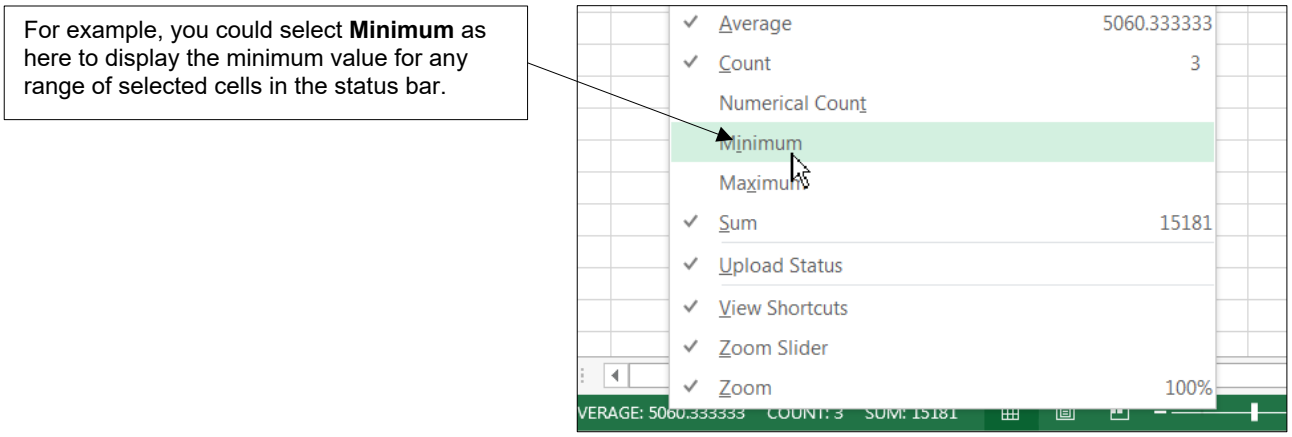
c) Arguments shown in faint type (not bold) are optional. For this function you can miss them out and they will take sensible values, although this isn't always the case in Excel!

1.6 Status Bar Calculations

A quick way to view the results of formulae is to use the status bar:



You can right-click on the status bar to change the statistics displayed:



CHAPTER 2 - MOVING AND SELECTING IN EXCEL

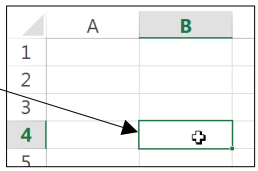
2.1 Moving Around in Excel

To be able to use the different parts of a workbook, you need to be able to move to them. You can move around a workbook using the mouse or keyboard, or by changing the viewing scale.

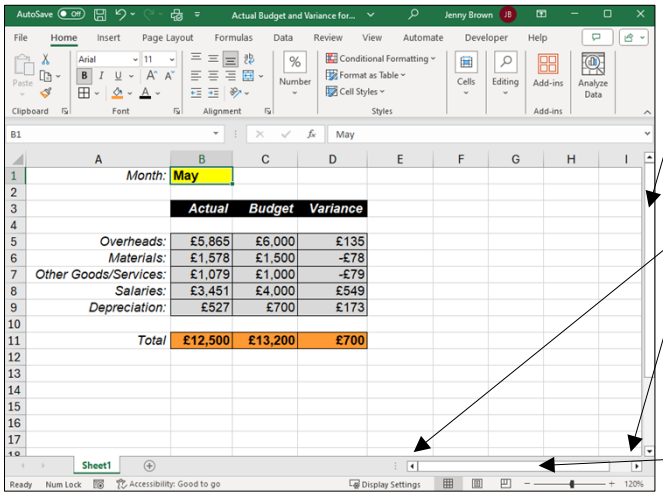
Using the Mouse to Move Around

You can move to any cell on the worksheet, simply by clicking the ✥ shaped mouse on the required cell.

Once you've clicked on the required cell, it becomes the *currently selected cell* – denoted by the box around the cell.



If you can't see the cell you want to move to on the screen then you can use the *scroll bars* to move further down and/or further across the worksheet:



Click and drag on this scroll bar to move further down. Hold down ⇧ to move more quickly.

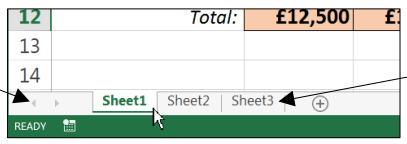
You can click the arrows at either end of a scroll bar to move one row or column at a time. You can also click and hold the mouse button to move more quickly.

Click and drag on this scroll bar to move further across. Hold down ⇧ to move more quickly.

If you have a mouse with a "scroll wheel", you can use it to scroll up and down on a worksheet.

You can also use the mouse to move to different worksheets:

You can use these arrows to view worksheet tabs that are not currently viewable.



To move to a different worksheet – just click on the tab.

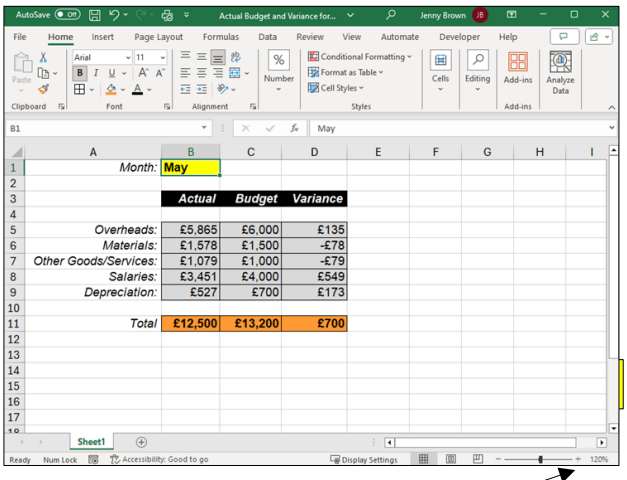
Keyboard Shortcuts for Moving Around

There are many keyboard shortcuts that you can use to quickly move around a workbook. The table below summarises the main ones:

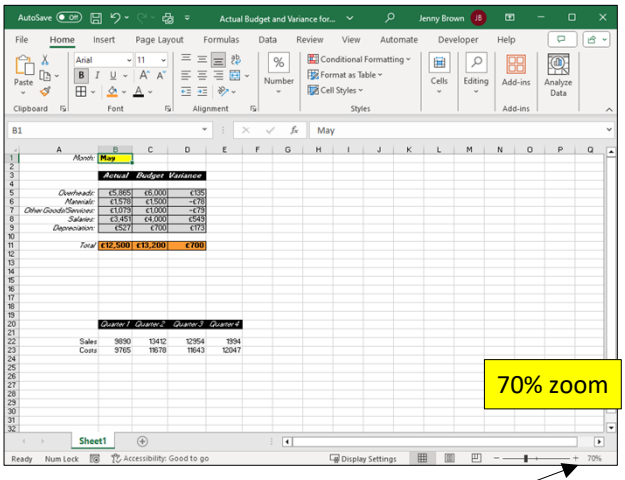
Key(s)	What they do
→, ←, ↓, ↑	Moves the cursor one cell in the appropriate direction
Ctrl + ↑, Ctrl + ↓ Ctrl + ←, Ctrl + →	Moves the cursor to the appropriate end of the currently selected block of cells
Home	Moves the cursor to the first column of the current row
Ctrl + Home	Moves the cursor to the first cell of the sheet (**A1**)
Ctrl + End	Moves the cursor to the bottom right corner of your sheet
Page Down, Page Up	Goes one "screen" down or up
Alt + Page Down	Goes one "screen" right
Alt + Page Up	Goes one "screen" left
F5	Lets you choose a cell reference to go to, then type ↵
Ctrl + Page Down	Go to the next worksheet in the workbook
Ctrl + Page Up	Go to the previous worksheet in the workbook

Zooming the View

You can see more of your worksheet in the same screen area by using the zoom control tool to zoom out (or in):



Click and drag the slider or use **+** / **–** to zoom in/out.

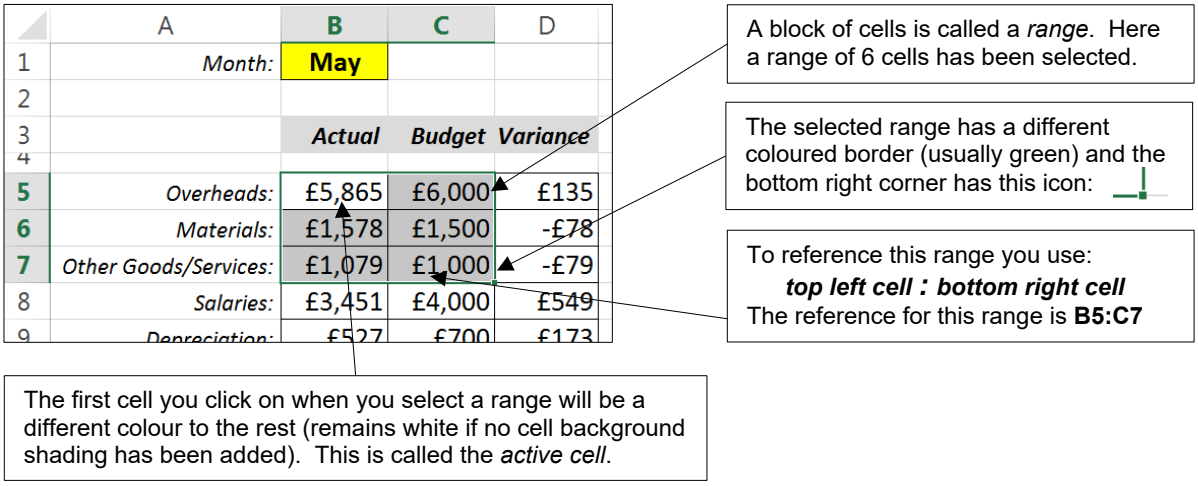


Here zoom has been set to 70% to see more.

If you have a mouse with a "scroll wheel", you can hold Ctrl *and scroll the wheel to zoom in and out.*

2.2 Selecting Cells

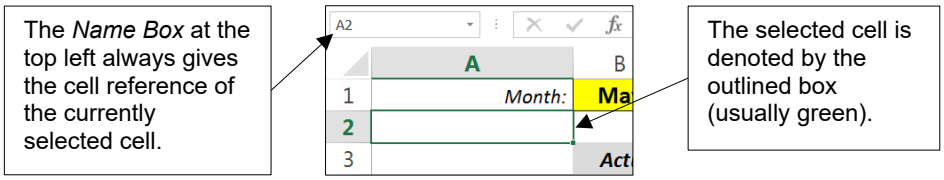
Just about everything you do in Excel requires you to first select the cell or cells that you want to make the changes to.



Selecting Single Cells

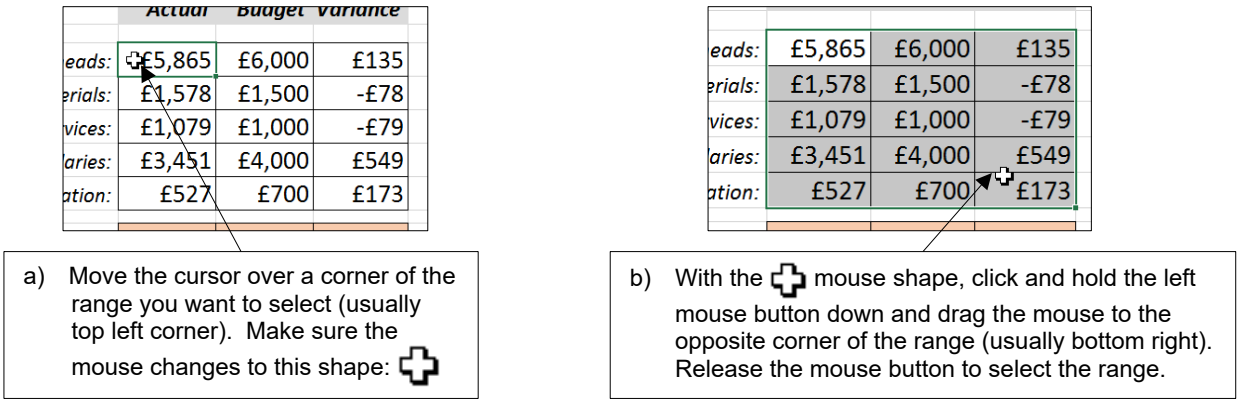
To select a single cell:

- Simply click the mouse shape on the required cell; or
- Press any cursor movement key like →, ←, ↓ or ↑ until you reach the desired cell.



Selecting a Range of Cells

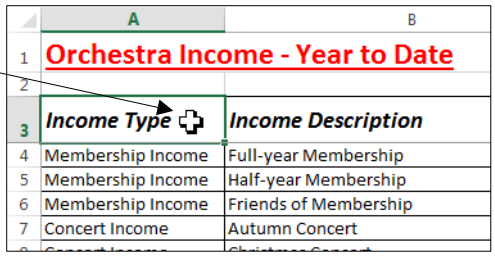
The easiest way to select a range is by simply clicking and dragging with the mouse:



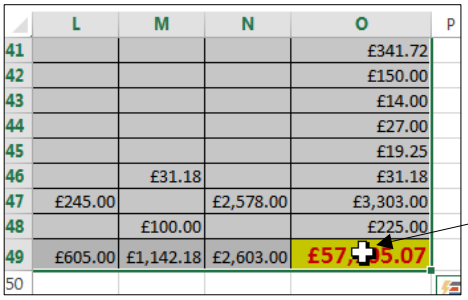
Selecting a Large Range of Cells

It is often tricky to select a large range by dragging the mouse, so instead you can use the ⇧ key as shown below:

a) Start by selecting/clicking just the top left cell in the range.



	A	B
1	**Orchestra Income - Year to Date**	
2		
3	***Income Type***	***Income Description***
4	Membership Income	Full-year Membership
5	Membership Income	Half-year Membership
6	Membership Income	Friends of Membership
7	Concert Income	Autumn Concert



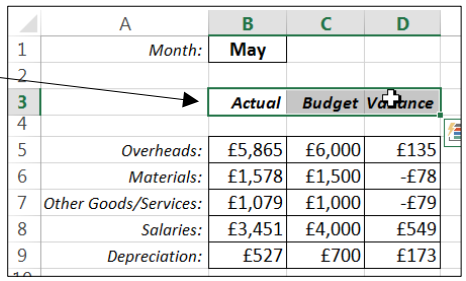
	L	M	N	O
41				£341.72
42				£150.00
43				£14.00
44				£27.00
45				£19.25
46		£31.18		£31.18
47	£245.00		£2,578.00	£3,303.00
48		£100.00		£225.00
49	£605.00	£1,142.18	£2,603.00	£57[illegible]5.07
50				

b) Use the scroll bars to find the bottom right corner of your range. Hold down the ⇧ key and click on this bottom right cell to select the entire range.

Selecting Multiple Ranges

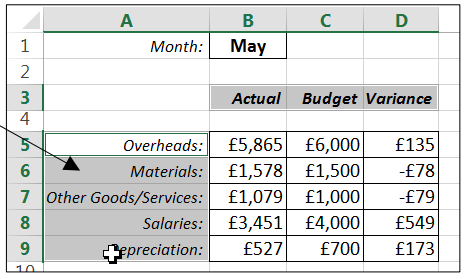
You can select several separate ranges by holding down the Ctrl key for each range you want to add whilst you click and drag the extra ranges.

a) Select the first range by clicking and dragging as normal.



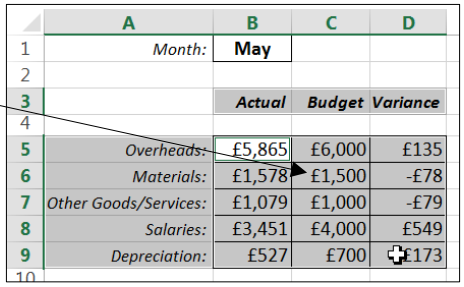
	A	B	C	D
1	*Month:*	**May**		
2				
3		***Actual***	***Budget***	***Variance***
4				
5	*Overheads:*	£5,865	£6,000	£135
6	*Materials:*	£1,578	£1,500	-£78
7	*Other Goods/Services:*	£1,079	£1,000	-£79
8	*Salaries:*	£3,451	£4,000	£549
9	*Depreciation:*	£527	£700	£173

b) Hold down the Ctrl key while you click and drag the second range.



	A	B	C	D
1	*Month:*	**May**		
2				
3		***Actual***	***Budget***	***Variance***
4				
5	*Overheads:*	£5,865	£6,000	£135
6	*Materials:*	£1,578	£1,500	-£78
7	*Other Goods/Services:*	£1,079	£1,000	-£79
8	*Salaries:*	£3,451	£4,000	£549
9	*Depreciation:*	£527	£700	£173

c) Continue holding down the Ctrl key while you select more ranges until you have selected them all.

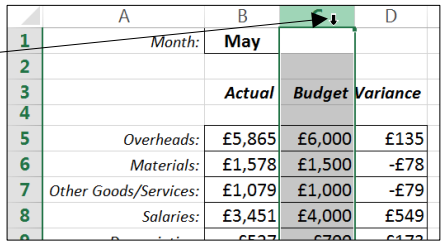


	A	B	C	D
1	*Month:*	**May**		
2				
3		***Actual***	***Budget***	***Variance***
4				
5	*Overheads:*	£5,865	£6,000	£135
6	*Materials:*	£1,578	£1,500	-£78
7	*Other Goods/Services:*	£1,079	£1,000	-£79
8	*Salaries:*	£3,451	£4,000	£549
9	*Depreciation:*	£527	£700	£173

Selecting Entire Rows and Columns

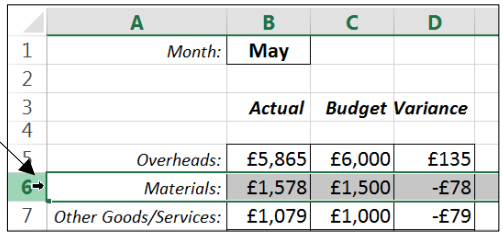
You can easily select entire rows and columns by clicking the row numbers or column letters.

To select a column, move the mouse over the column letter so that it changes shape to this ⇩ and then click to select that column.



	A	B	C	D
1	Month:	May		
2				
3		Actual	Budget	Variance
4				
5	Overheads:	£5,865	£6,000	£135
6	Materials:	£1,578	£1,500	-£78
7	Other Goods/Services:	£1,079	£1,000	-£79
8	Salaries:	£3,451	£4,000	£549

To select a row, move the mouse over the row number so that it changes shape to this ⇨ and then click to select that row.



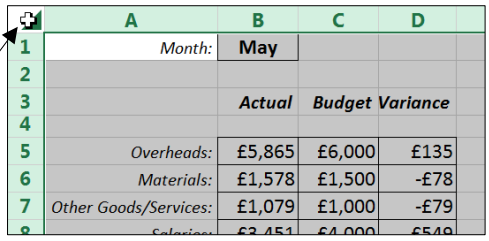
	A	B	C	D
1	Month:	May		
2				
3		Actual	Budget	Variance
4				
5	Overheads:	£5,865	£6,000	£135
6	Materials:	£1,578	£1,500	-£78
7	Other Goods/Services:	£1,079	£1,000	-£79

To select multiple adjacent rows/columns, click and drag across the column letters/row numbers. To select multiple non-adjacent rows/columns, hold down Ctrl while you click on the column letter/row number.

Selecting an Entire Worksheet

You can select every cell on a worksheet (including all the blank cells) by clicking at the top left corner:

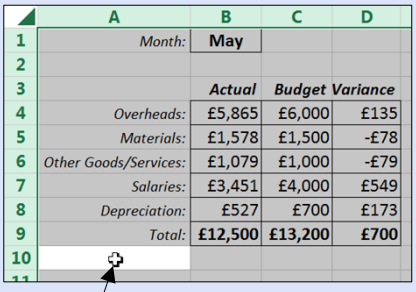
Click here to select the entire worksheet.



	A	B	C	D
1	Month:	May		
2				
3		Actual	Budget	Variance
4				
5	Overheads:	£5,865	£6,000	£135
6	Materials:	£1,578	£1,500	-£78
7	Other Goods/Services:	£1,079	£1,000	-£79

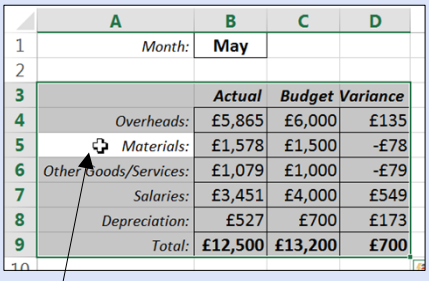
Wise Owl's Hint

You can also press Ctrl + A to select either the entire worksheet or the current region of data:



	A	B	C	D
1	Month:	May		
2				
3		Actual	Budget	Variance
4	Overheads:	£5,865	£6,000	£135
5	Materials:	£1,578	£1,500	-£78
6	Other Goods/Services:	£1,079	£1,000	-£79
7	Salaries:	£3,451	£4,000	£549
8	Depreciation:	£527	£700	£173
9	Total:	£12,500	£13,200	£700
10				

If you press Ctrl + A here, Excel selects the entire worksheet.

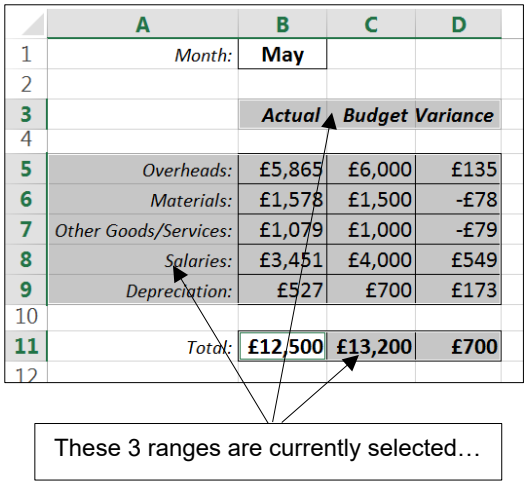


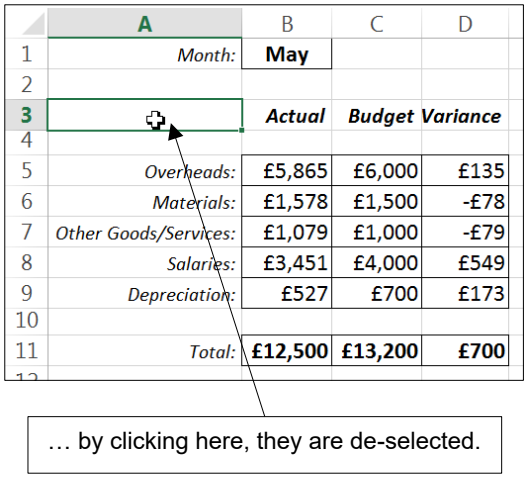
	A	B	C	D
1	Month:	May		
2				
3		Actual	Budget	Variance
4	Overheads:	£5,865	£6,000	£135
5	Materials:	£1,578	£1,500	-£78
6	Other Goods/Services:	£1,079	£1,000	-£79
7	Salaries:	£3,451	£4,000	£549
8	Depreciation:	£527	£700	£173
9	Total:	£12,500	£13,200	£700

If you press Ctrl + A here, Excel looks for surrounding blank cells and selects the "used" cells area.

De-Selecting Cells

To de-select, all you have to do is click the mouse on a different worksheet cell or press one of the cursor movement keys like →, ←, ↓ or ↑ to move to a different cell.





Using the Keyboard to Select Cells

There are many keyboard shortcuts for selecting cells. The table below summarises the main ones:

Key(s)	What they do
⇧ + *any of the arrow keys*	Extends the current selection one row or column in the appropriate direction.
Ctrl + ⇧ + *any of the arrow keys*	Selects from the active cell to the end of the current region of cells in the appropriate direction.
Ctrl + Space Bar	Selects an entire column.
⇧ + Space Bar	Selects an entire row.
Ctrl + **A**	Selects all the cells in the current region – if you have a cell selected within a block of data this will select the whole block of data, otherwise it will select all the cells on the worksheet.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What we do!

		Basic training	Advanced training	Systems / consultancy
Office	Microsoft Excel			
	VBA macros			
	Office Scripts			
	Microsoft Access			
Power BI, etc	Power BI and DAX			
	Power Apps			
	Power Automate (both)			
SQL Server	SQL			
	Reporting Services			
	Report Builder			
	Integration Services			
	Analysis Services			
Coding	Visual C#			
	VB programming			
	MySQL			
	Python			


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