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Excel 8
Cell Referencing

Relative Cell Referencing
Absolute Cell Referencing

Develop Your Skills

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Excel 8 - Cell Referencing

Exercise 1 - Relative Cell Referencing

Knowledge:

Rather than recreate a new formula for every set of data, a formula can be copied across a range of cells, the formulas change automatically. The calculation is performed on cells in the positions relative to those copied.

e.g., B2+B3 becomes C2+C3 then D2+D3

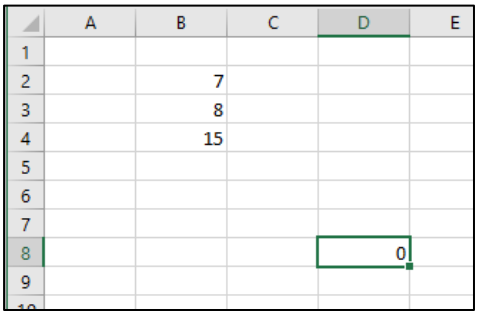
The formulas can be copied to any cells in any position on a worksheet.

***Note:** Essentially a **Relative Reference** is where a formula is moved and it automatically includes the relative cells to its position on the worksheet.*

Activity:

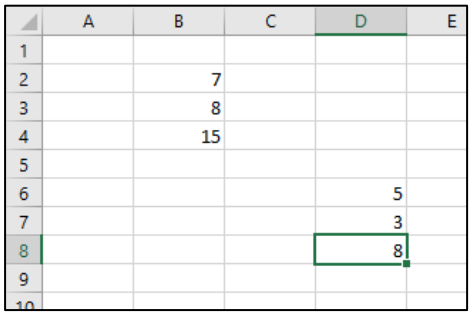
1. Start a new workbook.
2. In cell **B2** enter **7** and in **B3** enter **8**.
3. In cell B4 create a formula **=B2+B3** to add the two numbers.
4. Click on cell B4 and click the Copy button.

5. Move to cell D8 and press **<Enter>** to paste the copy. The result 0 is displayed.



	A	B	C	D	E
1					
2		7			
3		8			
4		15			
5					
6					
7					
8				0	
9					

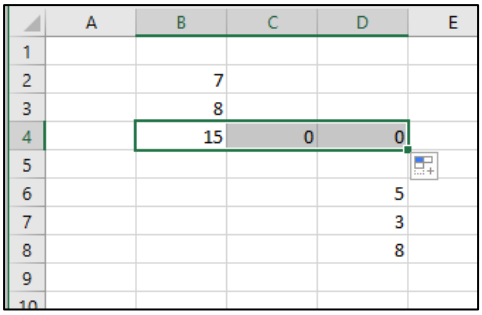
6. The formula is copied and adds the cells relative to the formula, i.e. the two cells directly above. Enter 5 and 3 into cells D6 and D7.



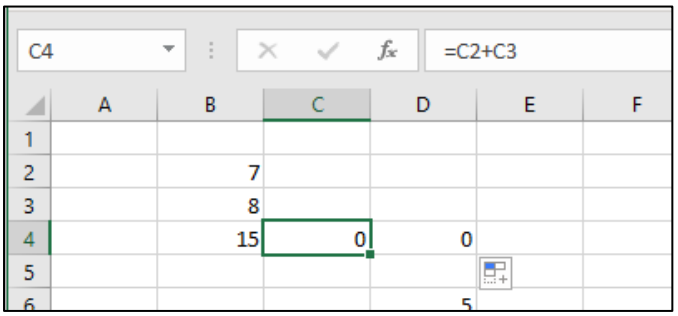
	A	B	C	D	E
1					
2		7			
3		8			
4		15			
5					
6				5	
7				3	
8				8	
9					

Exercise 1 - Relative Cell Referencing - Cont…

6. Click on cell **B4** and drag its **Fill Handle** across three columns. The results are displayed as 0.



7. Examine the formulas in cells **C4**, **D4** and **E4**.



8. Enter numbers into the two cells above the three formulas to see if they work.
9. All formulas copied are **relative** whether using **Copy** or the **Fill Handle**.
10. Close the workbook without saving.

Exercise 2 - Absolute Cell Referencing

Knowledge:

Sometimes, you may wish to use a fixed cell address in a formula and refer to the same cell when the formula is copied. To stop the formula changing automatically, cell references included in it can be fixed. This is known as an **Absolute Cell Reference**.

To fix a cell as **Absolute**, the **$** symbol must be added to the cell references. The **$** symbol is typed in as the cell reference is written. Cells may be defined as having absolute columns, rows or, more commonly, both.

***Tip:** The function key **<F4>** may be used after entering a cell reference to change the reference to absolute. Repeated use of the **<F4>** key changes to mixed addressing, **e.g., B15** (relative), **B15** (absolute), **B$15** (mixed, fixed row), **$B15** (mixed, fixed column).*

A good example of when Absolute referencing is used would be for fixed costs like standing orders, tax rates, VAT rate, etc.

Activity:

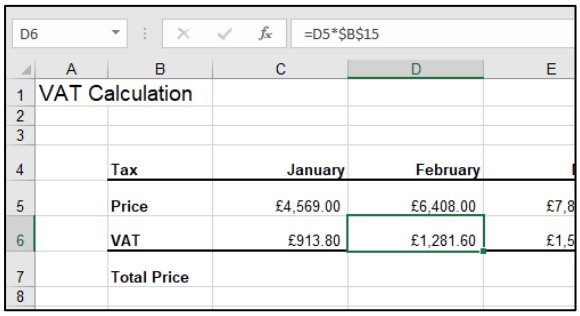
1. Open the workbook **VAT.** Note that cell **B15** contains the VAT rate of **0.2** which effectively acts as 20%

2. Move into cell **C6** and enter the formula for the VAT (Price multiplied by the VAT Rate, i.e. **=C5*B15**).

3. Drag this formula across into **D6** and **E6**. The resulting VAT is zero. Check the formulas in **D6** and **E6** to find the problem. It has been caused by relative addressing. The **VAT Rate** is fixed, and the formulas have automatically changed to reference cells that are empty, e.g. the cells **C15** and **D15**.

4. In cell **C6**, enter the formula **=C5*B15**. The **$** symbols fix this cell as absolute.

5. Copy the formula across the next two columns. View the contents of **D6** to see if the formula still uses **B15** for the **VAT Rate**.



6. Complete the **Total Price** row by adding the **Price** and **VAT**.

7. Save the workbook as **VAT2** and close it.

Develop Your Skills - Cell Referencing

Knowledge:

Work through this exercise to ensure you've understood the previous exercises

Activity:

1. Open the workbook **Company**. The overheads in row **9** have been entered into each cell. Changing the overheads means each cell has to be changed.

2. To set up an absolute reference, in cell **A17** type **Overheads** and in cell **B17** enter **4980**.

3. In **B9** type = and click on cell **B17**, press **<F4>** and then **<Enter>.** The formula now uses an absolute reference.

4. What is the formula in **B9**?

5. Use the **Fill Handle** to copy the formula across the row to cell **M9**.

6. To change the **Overheads** for the entire row, just change **B17**. Enter **4850** in **B17**.

7. Do all the entries in the row change to **4850**?

8. Save the workbook as **company2** and then close it.

Summary: *We now know that a* ***Relative Reference*** *is where a formula is moved, and it automatically includes the relative cells to its position on the worksheet.*
An ***Absolute Reference*** *is where a* ***$*** *symbol is used to fix the row or column or both in a formula so the same data can be applied in the formula elsewhere.*