

Formulas make a spreadsheet application a very powerful tool. They are mathematical sums that can be used to:

- Carry out additions, subtractions, multiplications and divisions (using the +, -, * and / symbols).
- Find the total of a group of numbers (using the SUM function).
- Find the average, maximum or minimum of a set of numbers (using the AVERAGE, MAX and MIN functions).

(Note that the word 'Formulae' is often written as the plural of 'formula', but to be consistent with Excel we have used the US spelling 'Formulas').

| | A | B | C | D |
|---|-------------------|---------|---------|---|
| 1 | Bicycle Inventory | | | |
| 2 | | | | |
| 3 | Colour | Store 1 | Store 2 | |
| 4 | Red | 25 | 9 | |
| 5 | Blue | 45 | 17 | |
| 6 | Green | 30 | 14 | |
| 7 | Black | 28 | 11 | |
| 8 | Silver | 42 | 15 | |
| 9 | | | | |

Task 1 – Questions

Use the spreadsheet shown above-right to answer these questions.

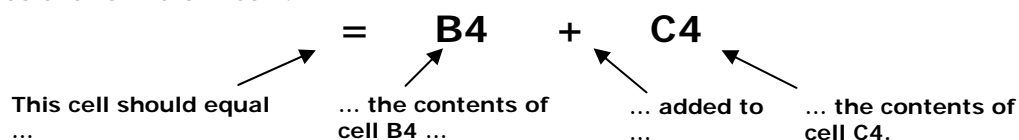
- How many bicycles are there altogether in Store 2? _____ (Sum of range C4:C8)
- How many red bicycles altogether in both stores? _____ (Sum of range B4:C4)
- How many bicycles are there in total? _____ (Sum of range B4:C8)

Spreadsheets make calculations like this much easier!

Task 2 – Addition

- Open the file 'Excel Basics – Bicycle' in the application 'Microsoft Excel' (or copy from above).
- To find the total number of red bicycles, make cell **D4** the active cell and type the formula '**=B4+C4**'. Press 'Enter'.

What does the formula mean?



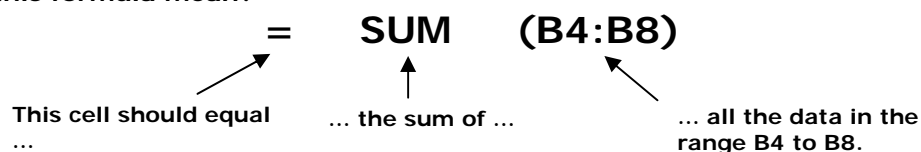
- Repeat this task for the other colours of bicycle.

Task 3 – SUM

The addition method in Task 2 is fine for adding 2 or 3 numbers together, but adding 20 numbers would mean typing a very long formula (**=B4+C4+D4+E4+F4...**). To perform this calculation quickly we use the '**SUM**' function. We will use the SUM function to add up the **number of bicycles** in each store.

- To find the total number of bicycles in **store 1**, click on cell **B9** to make it the active cell and type the formula '**=SUM(B4:B8)**'. Press 'Enter'.

What does this formula mean?



- b. Repeat this task for Store 2 and the column containing the totals calculated in Task 2. Add the heading 'Total' to cells **D3** and **A9**. The spreadsheet should now look like the one on the right.
- c. Check your answers to **questions a, b and c in Task 1** by looking at the appropriate totals in the spreadsheet.
- d. Save your file as '**EB – Bicycle 2**'. We will use your old file in the next section.

| | A | B | C | D | E |
|----|-------------------|---------|---------|-------|---|
| 1 | Bicycle Inventory | | | | |
| 2 | | | | | |
| 3 | Colour | Store 1 | Store 2 | Total | |
| 4 | Red | 25 | 9 | 34 | |
| 5 | Blue | 45 | 17 | 62 | |
| 6 | Green | 30 | 14 | 44 | |
| 7 | Black | 28 | 11 | 39 | |
| 8 | Silver | 42 | 15 | 57 | |
| 9 | Total | 170 | 66 | 236 | |
| 10 | | | | | |

Task 4 – Other Operators

We used the '+' symbol in the task above for and addition sum. The other common operators are:

Subtract - (e.g. =B1-A1)

Multiply * (e.g. =B2*A2)

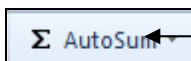
Divide / (e.g. =B3/A3)

Write out the formulas needed to produce the calculations below. Remember that all formulas must begin with an equals sign.

- a. Add the contents of cells C1 and C2 together
- b. Sum the contents of the cells in the range A2 to A9
- c. Multiply the data in cell B3 by the data in B7
- d. Divide the data in cell C4 by the data in cell C2
- e. Subtract the data in cell F3 from the data in F2
- f. Add the contents of cells B1 and B2, then subtract B3

Task 5 – AutoSum

- a. So far, we have typed all the formulas into the cells. Although it is important that you are able to do this, there are quicker ways of achieving the same result. Click on cell 'D9' and press the 'Delete' key. The formula will be removed from the cell.
- b. Make sure the 'Home' tab is open and click on the 'AutoSum' icon (it is at the right-hand end of the ribbon).



Click on the main part of the icon rather than the arrow to the right.

- c. Excel will predict that you want to sum the numbers in the range **D4:D8**. It has also put a dashed border around this range. As it has predicted correctly, simply press the 'Enter' key to accept the formula.

Note: If the prediction was not correct, you can select a range yourself with the mouse then press 'Enter'.

| | A | B | C | D | E | F |
|----|-------------------|---------|---------|-------------|---|---|
| 1 | Bicycle Inventory | | | | | |
| 2 | | | | | | |
| 3 | Colour | Store 1 | Store 2 | Total | | |
| 4 | Red | 25 | 9 | 34 | | |
| 5 | Blue | 45 | 17 | 62 | | |
| 6 | Green | 30 | 14 | 44 | | |
| 7 | Black | 28 | 11 | 39 | | |
| 8 | Silver | 42 | 15 | 57 | | |
| 9 | Total | 170 | 66 | =SUM(D4:D8) | | |
| 10 | | | | | | |
| 11 | | | | | | |

- d. Close your file. You do not need to save the changes.



Task 1 – Questions

- d. How many bicycles are there altogether in Store 2? **66** (Sum of range C4:C8)
- e. How many red bicycles altogether in both stores? **34** (Sum of range B4:C4)
- f. How many bicycles are there in total? **236** (Sum of range B4:C8)

Task 4 – Other Operators

We used the '+' symbol in the task above for an addition sum. The other common operators are:

Subtract - (e.g. =B1-A1)

Multiply * (e.g. =B2*A2)

Divide / (e.g. =B3/A3)

Write out the formulas needed to produce the calculations below:

- g. Add the contents of cells C1 and C2 together **=C1+C2**
- h. Sum the contents of the cells in the range A2 to A9 **=SUM(A2:A9)**
- i. Multiply the data in cell B3 by the data in B7 **=B3*B7**
- j. Divide the data in cell C4 by the data in cell C2 **=C4/C2**
- k. Subtract the data in cell F3 from the data in F2 **=F2-F3**
- l. Add the contents of cells B1 and B2, then subtract B3 **=B1+B2-B3**