## Working with formulas

### Evaluating simple formulas (using a formula to find a value)

This is the formula for working out the perimeter of a rectangle:

**P = 2L + 2W**

In this formula letters are used to stand for values:

| **P** stands for **p**erimeter | **L** stands for **l**ength | **W** stands for **w**idth |
| --- | --- | --- |

If you know the values of length and width you can use the formula to work out perimeter.

Values are put into the formula - this is called **substitution**. It helps if you think about what the formula means in words. For example:

Find the perimeter of a rectangle with **length 8 cm** and **width 3 cm**.

P (**perimeter**) = 2L (this means 2 **× value of length**) + 2W (this means 2 **× value of width**)

Perimeter = (2 × **8**) + (2 × **3**) = 16 + 6 = 22 cm.

### Changing word problems into symbols and numbers

Changing word problems into symbols and numbers involves the opposite of the example above. Here you try to solve a problem by writing it as an equation or formula. For example:

I had some money in my purse when I went out. I spent £5 while I was out and then found I had £7 left. How much money did I have to start with?

Start by using a letter to stand for the value you don't know (how much money you started with).

As it's **m**oney you could use **M** to stand for its value. Think through what happened and start to write it as symbols:

I started with some money (M). I spent £5 (take away 5). I am left with £7.
The formula is: **M -5 = 7**

Now work with a partner to think of some problems and turn them into formulas.