Rearranging formulae

Sometimes, to find out the information that we want, we need to change a formula before we can use it. This is called rearranging the formula or making a variable the subject of the formula.

To do this, pupils need an understanding of inverse operations. Addition is the inverse of subtraction and multiplication is the inverse of division.

We also need to ensure that we keep both sides of the formula "balanced" or equal, by ensuring any changes we make to the formula are made on both sides of the equals symbol.

E.g. The formula to temp temperature in degrees Fahrenheit when you know the temperature in degrees Celsius is:

$$F = \frac{9}{5}C + 32$$

But, if we knew the temperature in degrees Fahrenheit and wanted the temperature in degrees Celsius we would have to rearrange this formula.

$$F = \frac{9}{5}C + 32$$ ← We need C to be the subject of the formula, so we need to isolate it

$$F - 32 = \frac{9}{5}C$$ ← Firstly we subtract 32 from both sides as this is the inverse of add

$$5(F - 32) = 9C$$ ← Then we multiply by 5 on both sides as this is the inverse of divide by 5

$$\frac{5(F - 32)}{9} = C$$ ← Finally we divide by 9 on both sides as this is the inverse of multiply

Now that we have a formula where C is the subject (is isolated) we can use this formula to carry out calculations to find the temperature in degrees Celsius when we know the temperature in degree Fahrenheit.

Video: https://youtu.be/8U9u_itcs7k (Changing the subject)