Year 7 higher topic 3

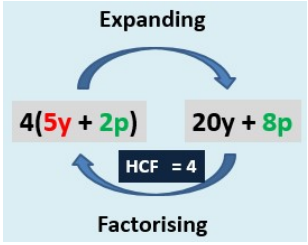
Equations, functions and formulae

What careers would use these skills?

Computer programmer, chef, builder, business owner, procurement (purchasing for a company) scientist, data analyst, meteorologist

Factorising expressions

Factorising is the opposite of expanding brackets; it puts an expression back into brackets.



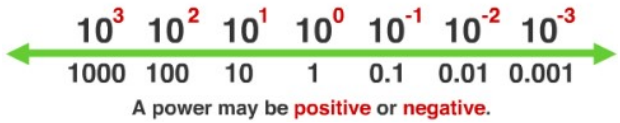
We have to find the HCF of all terms to factorise. This is what goes OUTSIDE of the brackets.

Powers

The number of times a base number is multiplied by itself, indicated by a small number to its upper-right, e.g. 10^5 = 10 x 10 x 10 x 10 x 10, read as 10 to the power of 5.

The small number is called a power, an exponent, an index or order.

Base (Power, Index or Exponent)	Read as	Expanded	Value
3^2	three squared or three to the power of two	3 x 3	9
5^3	five cubed or five to the power of three	5 x 5 x 5	125
10^4	ten to the power of four	10 x 10 x 10 x 10	10 000
4^5	four to the power of five	4 x 4 x 4 x 4 x 4	1024



A power may be positive or negative.

Simplifying (collecting like terms)

Simplifying an expression can be done by collecting like terms together.

2a + 3b - c - a + 2b + 4c

This can be simplified to

a + 5b + 3c

Be careful with negatives (apply your rules) and powers...y^2 and y are not the same therefore **cannot** be collected together.

Substitution

Replace letters with numbers.

Be careful of $5y^2$. You need to square first, then multiply by 5.

a = 3, b = 2, c = 5

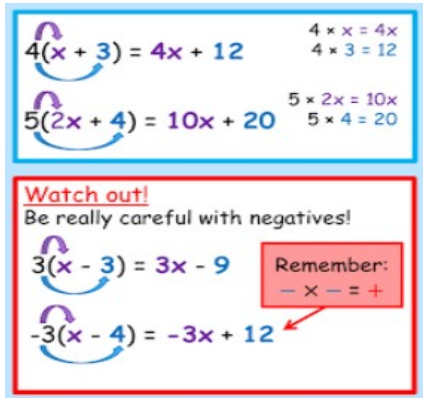
Find:

2a = 2 x 3 = 6

3a—2b = (3x3) - (2x2) = 5

Brackets

Expanding brackets means removing them in order to simplify the expression. To expand a single bracket, multiply whatever is outside the bracket by what is inside the bracket.



Writing algebraic expressions

Substitute letters for words in the question. Bob charges £3 per window and a £5 call out charge.

$$C = 3N + 5$$

Where N=number of windows and C=cost