

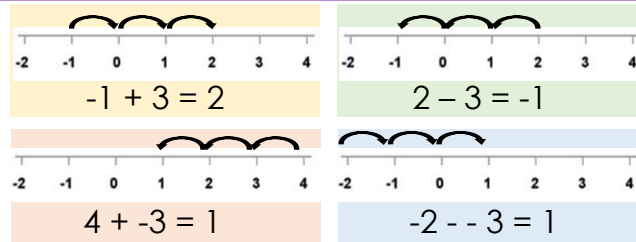
Maths Knowledge Organiser

Year 7 Expressions, functions and formula



Negative numbers

Use a number line to help
 Adding a negative → Subtract
 Subtracting a negative → Add



Algebra notations

We should write algebra correctly:

$$5 \times a = 5a$$

$$3 \div b = \frac{3}{b}$$

$$a \times a = a^2$$

Simplify by collecting like terms

Like terms are terms who's variable (letter) are the same

These are like terms → e $5e$ $-3e$ $\frac{2}{3}e$

These are **not** like terms → $6t$ t^2 $5ty$ $8y$

To simply identify and collect

$$4a + 7b - a - 3b \equiv 3a + 4b$$

$$5a^2 - 3a - 4 + a \equiv 5a^2 - 2a - 4$$

Substitution

Means to swop a unknown (letter) for a numerical value.

If $a = 4$ $b = -2$ and $c = 0.5$

$$7a = 7 \times (4) = 28$$

$$a + b = 4 + -2 = 2$$

$$abc = 4 \times -2 \times 0.5 = -4$$

Expanding single brackets

This is the process to remove brackets by multiplying – use the grid method to help

$$5r(3r - 6) \rightarrow$$

$$= 15r^2 - 30r$$

×	$3r$	-6
$5r$	$15r^2$	$-30r$

Factorising – single bracket

This is the process to putting brackets into expressions, find the highest common factors first

HCF of $6x$ and 10 is 2

HCF of $12x$ and $4xy$ is $4x$

HCF of $10t^2$ and $15tr$ is $5t$

Place the HCF on the outside and divide to calculate inside

$$10t^2 + 15t = 5t(2t + 3)$$

$$12x + 4xy = 4x(3 + y)$$

$$5(x + 7) + 2(3x - 5) = 5x + 35 + 6x - 10 = 11x + 25$$

Expanding double brackets

This is the process to remove brackets by multiplying – use the grid method to help

$$3x + 2)(2x - 5) \rightarrow$$

$$= 6x^2 - 11x - 10$$

×	$2x$	-5
$3x$	$6x^2$	$-15x$
$+2$	$+4x$	-10