

1) Times Tables

$9 \times 1 = 9$

$9 \times 2 = 18$

$9 \times 3 = 27$

$9 \times 4 = 36$

$9 \times 5 = 45$

$9 \times 6 = 54$

$9 \times 7 = 63$

$9 \times 8 = 72$

$9 \times 9 = 81$

$9 \times 10 = 90$

$9 \times 11 = 99$

$9 \times 12 = 108$

2) form equations and expand

Expression contains symbols such as numbers, letters and operators. E.g $7 + 3$, $a^2 + b^2$

Product is the result of multiplying one number with another

Terms are either single numbers, letters or a variable or the product of numbers and variables. E.g 5 , b , $-7c$, a^2

Variable is a quantity that can take a range of values. We often use a letter to represent it such x , y , z etc

Coefficient is the factor of an algebraic term. Eg $4y$, 4 in the numerical coefficient.

When we **simplify** an expression we write it in its most compact form e.g $2x + 3x$ simplifies to $5x$

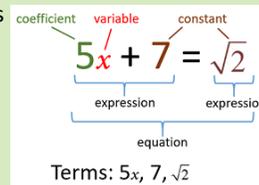
Substitute is where you replace numbers into an algebraic expression.

Eg if $y = 2$ then substituting into $5y$ becomes $5 \times 2 = 10$

To **Expand** means to multiply each term in the bracket by the expression outside the bracket

Identity is an equation that holds true for all values of the variable.

The symbol is \equiv



3) Factorise and Solve

Factors are when a number can be expressed as a product of two numbers. Eg factors of 12 are $1, 2, 3, 4, 6$ and 12 because $1 \times 12 = 12$, $2 \times 6 = 12$ etc

Highest common factor is the largest factor of two or more terms. Also known as HCF

When you **Factorise** an expression you express it as a product involving the HCF of the terms.

Unlike terms are terms which cannot be collected together and simplified. Eg $3x$ and $4y$ are not like terms.

Binomial is the sum or difference of two terms eg $(x + 5)$

Quadratic is an expression where the highest power of the variable is 2 eg $3x^2 + 5x$, $x^2 + 5x + 6$

Equation is a statement that two things are equal, it contains expressions on both sides of the equal sign. e.g. $5 = 2x + 1$

When we **solve** an equation we find the value of the unknown

e.g. solve $x + 5 = 8$ answer $x = 3$

In the above example $x = 3$ is the **solution** (answer)

4) Inequalities

Inequality is when one quantity is not equal to another.

\neq means not equal \leq less than or equal to
 $<$ less than \geq greater than or equal to
 $>$ more than

A **solution set** is a set of all the solutions to an equation

Unknown is another word for a variable, a value we don't know yet. The Unknown has one distinct value

Equivalent \equiv means of equal value

e.g $2x + 3x \equiv 5x$ is true for all values of x

5) Indices

The **Index** of a number tells you how many times to multiply the number by itself

e.g. y^3 means $y \times y \times y$.

We say y^3 as "y to the **power** of 3" or y **cubed**

Indices is the plural of index

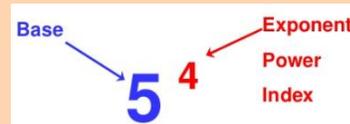
Exponent is another word for index

The **base** is the number that is being powered

The **numerator** is the top number in a fraction.

It tells us how many parts we have

The **denominator** is the bottom number in a fraction. It shows how many parts the item has been split into



6) Sequence

A **Sequence** is a succession of terms formed according to a rule **Terms** are the numbers in a sequence

Term to term rule lets you find the next term in a sequence if you know the previous term

Difference is the numerical difference between two numbers e.g. difference in between 8 and 5 is $8 - 5 = 3$

A **linear sequence** is a number pattern which increases (or decreases) by the same amount each time. The amount it increases or decreases by is known as the **common difference**. E.g $4, 7, 10, 13, \dots$ and $15, 11, 7, 3, \dots$

A **non-linear sequence** is a number pattern which does not increase (or decrease) by the same amount

Ascending means to go up

Descending means to go down

