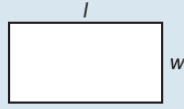


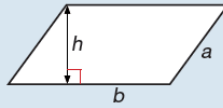
GCSE Maths Things to Remember!

Areas

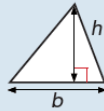
Rectangle = $l \times w$



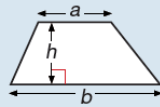
Parallelogram = $b \times h$



Triangle = $\frac{1}{2} b \times h$



Trapezium = $\frac{1}{2} (a + b)h$

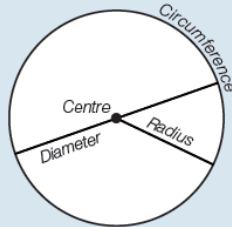


Circles

Circumference = $\pi \times \text{diameter}$, $C = \pi d$

Circumference = $2 \times \pi \times \text{radius}$, $C = 2\pi r$

Area of a circle = $\pi \times \text{radius squared}$, $A = \pi r^2$



Compound measures

Speed

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$



Density

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

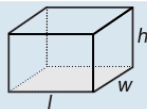


Pressure

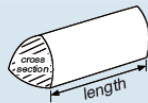
The formula for pressure does not need to be learnt, and will be given within the relevant examination questions.

Volumes

Cuboid = $l \times w \times h$



Prism = area of cross section \times length



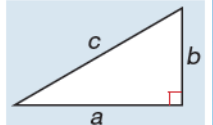
Cylinder = $\pi r^2 h$



Pythagoras

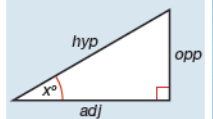
Pythagoras' Theorem

For a right-angled triangle,
 $a^2 + b^2 = c^2$



Trigonometric ratios (*new to F*)

$$\sin x^\circ = \frac{\text{opp}}{\text{hyp}}, \cos x^\circ = \frac{\text{adj}}{\text{hyp}}, \tan x^\circ = \frac{\text{opp}}{\text{adj}}$$



Adding Fractions

You Cannot:

$$\frac{2}{3} + \frac{3}{4}$$

You Can:

$$\frac{8}{12} + \frac{9}{12}$$

DENOMINATORS MUST BE THE SAME WHEN WE ADD AND SUBTRACT FRACTIONS !!!

Angle Rules

Angles on a straight line

- Angles on a straight line add up to 180°

Angles around a point

- Angles around a point add up to 360°

Angles in a Quadrilateral

- Angles in a quadrilateral (4-sided shape) add up to 360°

Angles in a Triangle

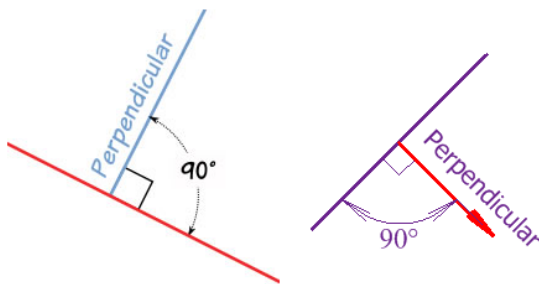
- Angles in a triangle add up to 180°

Straight Lines

Perpendicular

It just means **at right angles (90°)** to.

The red line is perpendicular to the blue line in both these cases:



Parallel

Lines are parallel if they are always the same distance apart (called "equidistant"), and will never meet. (They also point in the same direction). Just remember:

Always the same distance apart and never touching.

The red line is parallel to the blue line in both these cases:



Example 1

Example 2

Types of number

Squares: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225

Square rooting: the inverse of squaring
e.g. $\sqrt{4} = 2$

Cubes: 1, 8, 27, 64, 125

Factors: a number that divides exactly into another number
e.g. factors of 10: 1, 2, 5, 10

Multiples: numbers in the times tables
e.g. multiples of 3: 3, 6, 9, 12, 15...

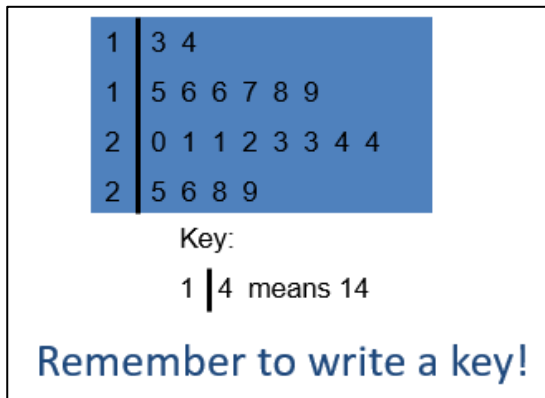
Averages and Spread

Mode	Median
<ul style="list-style-type: none">The mode is the most common or most popular thing	<ul style="list-style-type: none">The middle value when the numbers are in order
Mean	Range
$\frac{\text{sum of values}}{\text{number of values}}$	$\text{greatest value} - \text{smallest value}$

Transformations

- Reflection (2 marks)** – State reflection and line of symmetry
- Rotation (3 marks)** – State rotation, centre of rotation, **Degrees of rotation**, Direction clockwise/ anti clockwise
- Enlargement (3 marks)** – State enlargement, centre of enlargement, scale factor
- Translation (2 marks)** – State translation and vector e.g. $\begin{pmatrix} 2 \\ -4 \end{pmatrix}$

Stem and Leaf



Rounding

0.0453682
0.05 2 decimal places
0.045 2 significant figures
468.493628
468.49 2 decimal places
470 2 significant figures

Estimation

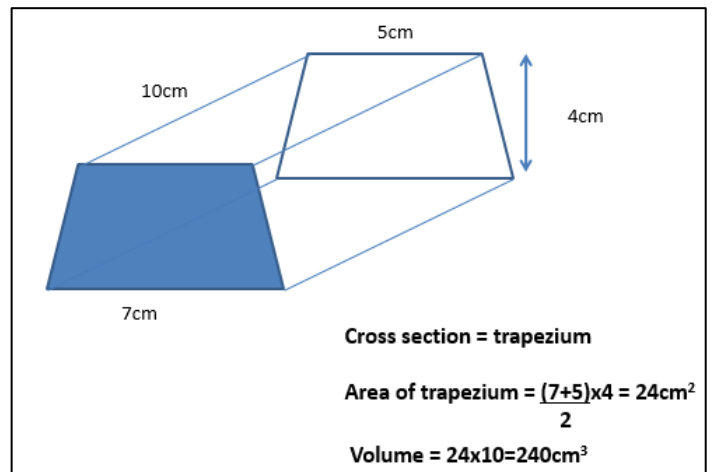
When you are asked to estimate a calculation you need to round!
e.g. Find an approximate answer to:

$$\frac{213 \times 69}{42}$$

$$\frac{200 \times 70}{40}$$

$$\frac{14000}{40} = \frac{1400}{4} = \frac{700}{2} = 350$$

Volume of a prism



Expanding brackets

$$4(d - 3) = 4d - 12$$

$$(x + 3)(x + 2) = x^2 + 5x + 6$$

Factorising expressions

$$4d - 12 = 4(d - 3)$$

$$x^2 + 5x + 6 = (x + 3)(x + 2)$$

Properties of Triangles

<p>Special Triangles: Equilateral Triangle</p> <ul style="list-style-type: none"> All the angles in an Equilateral Triangle are equal (60°) Example: 	<p>Special Triangles: Right-Angled Triangle</p> <ul style="list-style-type: none"> One angle is 90 degrees Example:
<p>Special Triangles: Isosceles Triangle</p> <ul style="list-style-type: none"> The two angles at the base are equal (the base is always the line without a stroke!) Example: 	<p>Special Triangles: Scalene Triangle</p> <ul style="list-style-type: none"> All angles and side lengths are different Example:

Names of Polygons

Number of Sides	Name of polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon/Septagon
8	Octagon
9	Nonagon
10	Decagon
11	Hendecagon
12	Dodecagon