GCSE (9-1) Maths Revision Poster

New Content to Foundation Tier Only #2 of 2

Pearson Revise

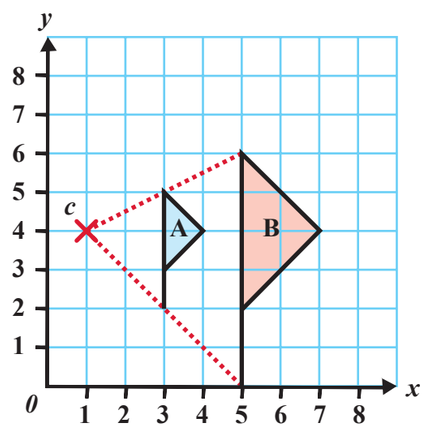
Enlargements with a fractional scale — G7

Any enlargement has a **scale factor** and a **centre of enlargement**.

Here:

- **B** is and enlargement of **A** with centre **(1, 4)** and a scale factor of **2**.
- **A** is and enlargement of **B** with centre **(1, 4)** and a scale factor of **½**.

If the scale factor is between 0 and 1 (a **fraction**) the image will get **smaller**.



Lengths of arcs and areas of sectors of circles — G18

Area of a circle = πr^2

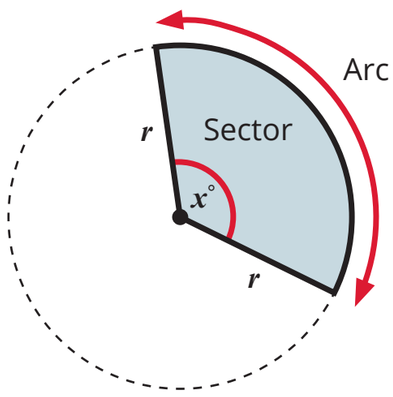
Circumference of a circle = $2\pi r$

So...

You can find the area of a sector or the length of an arc by using the following formulae:

Area of sector = $\frac{x}{360} \times \pi r^2$

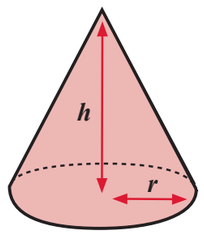
Arc length = $\frac{x}{360} \times 2\pi r$



Area and volume formulae — G17

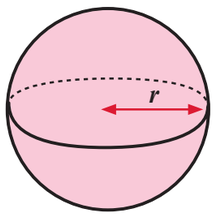
For 3D shapes: You will be given these formulae if needed.

1 Cone



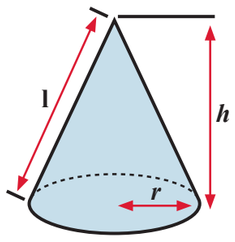
$V = \frac{1}{3}\pi r^2 h$

2 Sphere



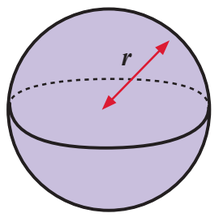
$V = \frac{4}{3}$ $V = \pi r^3$

3 Curved surface area of a cone



πrl

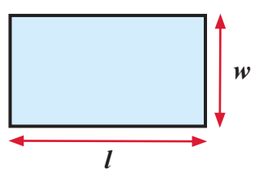
4 Curved surface area of a sphere



$4\pi r^2$

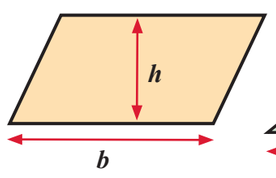
For 2D shapes: You will need to know these formulae.

1 Rectangle



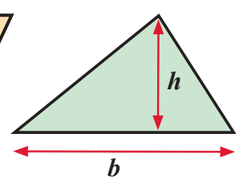
$A = lw$

2 Parallelogram



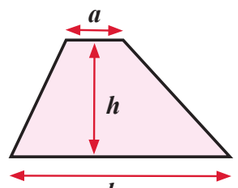
$A = bh$

3 Triangle



$A = \frac{1}{2}bh$

4 Trapezium



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

Congruence and similarity — G5

Similar shapes are an **enlargement** of each other. **Corresponding** angles are the same and corresponding sides are in the same ratio.

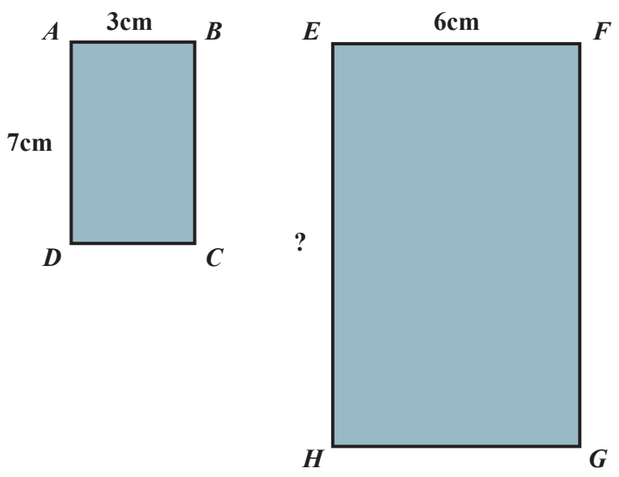
To show two shapes are similar, show that corresponding angles are the same and that corresponding sides are in the same ratio.

Congruent shapes are the **same size** and the **same shape** (they may have been rotated).

- You can use ratios to work out missing sides in similar shapes.

$$\frac{EF}{AB} = \frac{6}{3} = 2$$

So $EH = 2 \times AD = 2 \times 7 = 14\text{cm}$



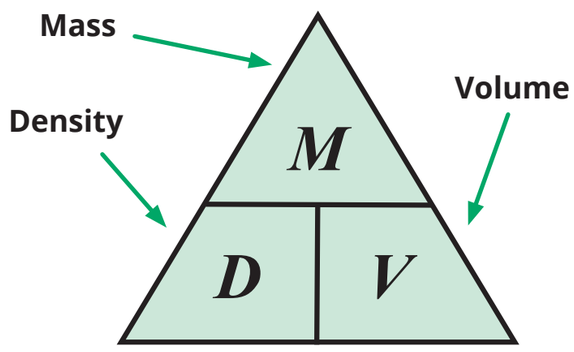
Density — R1/R11

The density of something is its **mass** per **unit volume**.

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

So, the mass of an object with a **density** of **4.5 grams/cm³** and a volume of **4cm³** can be found by working out

4.5 × 4 = 18 grams



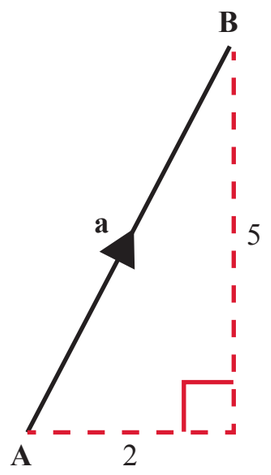
Vectors — G24/G25

A vector has a **magnitude** (or size) and a **direction**.

This vector can be written as

$\mathbf{a}$, $\overrightarrow{AB}$ or $\begin{pmatrix}2\\5\end{pmatrix}$

You can **multiply** a vector by a number. The new vector has a different length but the same direction. $-\mathbf{a}$ is the same length as $\mathbf{a}$, but the opposite direction.



Vectors can be added solve problems

$\mathbf{b} = \begin{pmatrix}4\\5\end{pmatrix}$ $\mathbf{c} = \begin{pmatrix}3\\2\end{pmatrix}$

To work out $\mathbf{b} + \mathbf{c}$ add the vectors together

$$\begin{pmatrix}4\\5\end{pmatrix} + \begin{pmatrix}3\\2\end{pmatrix} = \begin{pmatrix}7\\7\end{pmatrix}$$

Tree diagrams — P6/P8

A **tree diagram** is a way of showing a sequence of events. They can be used to find the **probability** of all the possible **outcomes**.

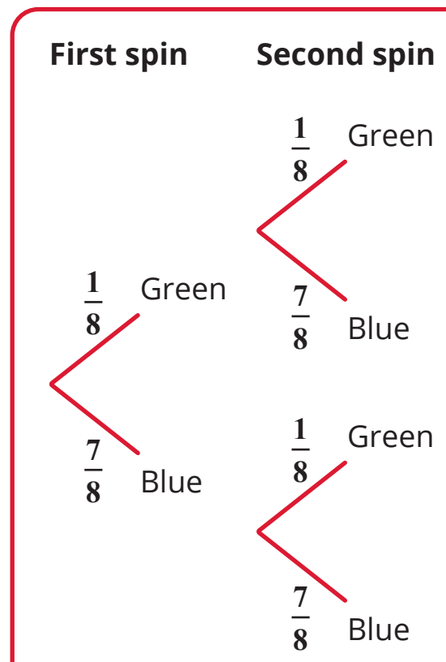
For each pair of branches, the probabilities add up to 1.

MULITIPLY ALONG THE BRANCHES

ADD UP THE OUTCOMES

So the probability of getting green then blue is

$\frac{1}{8} \times \frac{7}{8} = \frac{7}{64}$



G Geometry **R** Ratio **P** Probability