

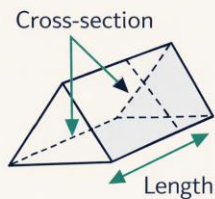
Formulas in the Exams

GCSE Maths uses plenty of formulas, and things get much easier when you start from the right one. This premium quick sheet has been prepared by Sir Faraz Hassan, founder of igcsegcsemaths.com, to help you revise the key exam formulas with confidence.

The formulas will be provided in your exam as part of the official formula sheet.

Volume of Prism:

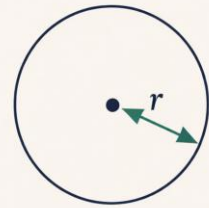
Volume = (area of cross-section) $\times$ length



Circles:

Circumference = $2\pi r$

Area = πr^2



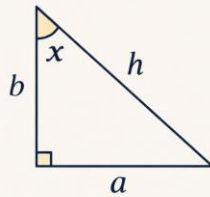
Trigonometric ratios:

$$\sin x = \frac{a}{h}$$

$$\cos x = \frac{b}{h}$$

$$\tan x = \frac{a}{b}$$

where h is the hypotenuse.



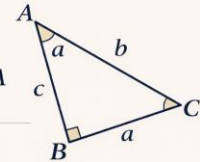
For any triangle ABC:

Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine rule: $a^2 = b^2 + c^2 - 2bc \cos A$

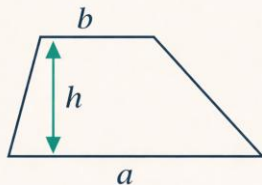
Cosine rule: $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} ab \sin C$



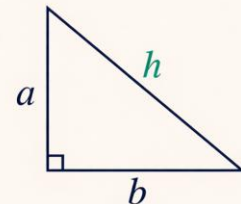
Area of trapezium:

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



Pythagoras' theorem:

$$a^2 + b^2 = h^2$$



The Quadratic Formula:

The solutions of $ax^2 + bx + c = 0$, where $a \neq 0$, are:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Compound Interest:

The total accrued, P_n , after n periods is:

$$P_n = P_0 \times \left(\frac{r}{100}\right)^n$$

where P_0 is the initial amount and r is the percentage rate of change.

Some formulas will only be provided when a particular exam question requires them.

Probability:

$P(A)$ and $P(B)$ are the probabilities of events A and B respectively.

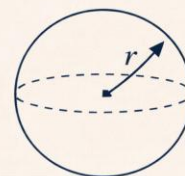
$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

Spheres:

For a sphere with radius r :

$$\text{Volume} = \frac{4}{3} \pi r^3$$

$$\text{Surface area} = 4\pi r^2$$



Pressure:

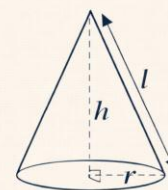
$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

Cones:

For a cone with base radius r , slant height l and perpendicular height h :

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

$$\text{Curved surface area} = \pi r l$$



It's worth learning these final formulas, as they may not be provided in the exam.

Compound Measures:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad \text{Density} = \frac{\text{Mass}}{\text{Volume}}$$