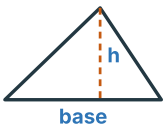


1 Given in Your Exam

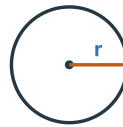
These formulas are printed on the list of formulas in every Cambridge IGCSE Core paper. You don't need to memorise them, but you do need to know when and how to use each one.



Area of a Triangle

$$A = \frac{1}{2} \times \text{base} \times \text{height}$$

The height is perpendicular to the base



Area of a Circle

$$A = \pi r^2$$

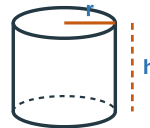
r is the radius



Circumference of a Circle

$$C = 2\pi r = \pi d$$

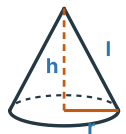
r is the radius, d is the diameter



Curved Surface Area of a Cylinder

$$A = 2\pi rh$$

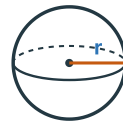
r is the radius, h is the height



Curved Surface Area of a Cone

$$A = \pi rl$$

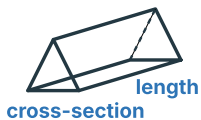
l is the slant height



Surface Area of a Sphere

$$A = 4\pi r^2$$

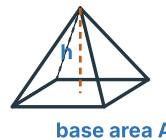
r is the radius



Volume of a Prism

$$V = \text{area of cross-section} \times \text{length}$$

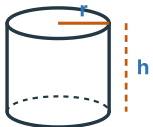
Works for any prism, including a cylinder



Volume of a Pyramid

$$V = \frac{1}{3} \times \text{base area} \times h$$

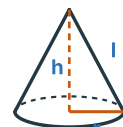
h is the perpendicular height



Volume of a Cylinder

$$V = \pi r^2 h$$

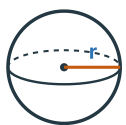
r is the radius, h is the height



Volume of a Cone

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

h is the perpendicular height



Volume of a Sphere

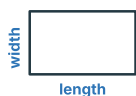
$$V = \frac{4}{3} \pi r^3$$

r is the radius

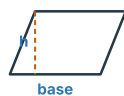
2 Learn These by Heart

These are **not** given in the exam. Students lose marks on them every year, so learn them until you can write them from memory.

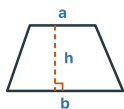
SHAPE AND SPACE



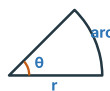
Area of a Rectangle
 $A = \text{length} \times \text{width}$



Area of a Parallelogram
 $A = \text{base} \times \text{perpendicular height}$



Area of a Trapezium
 $A = \frac{1}{2}(a + b)h$
 a and b are the parallel sides, h is the perpendicular height

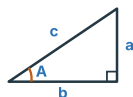


Arc Length and Sector Area
 $\text{Arc} = \frac{\theta}{360} \times 2\pi r$
 $\text{Sector} = \frac{\theta}{360} \times \pi r^2$
 θ is the angle at the centre

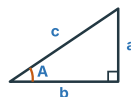


Angles in Polygons
 Interior angles add to $(n - 2) \times 180^\circ$
 Exterior angles add to 360°
 n is the number of sides; a triangle is 180° , a quadrilateral 360°

TRIGONOMETRY



Pythagoras' Theorem
 $a^2 + b^2 = c^2$
 In a right-angled triangle, c is the hypotenuse



Trigonometric Ratios
 $\sin A = \frac{a}{c}$
 $\cos A = \frac{b}{c}$
 $\tan A = \frac{a}{b}$
 SOH CAH TOA: a is opposite A, b is adjacent to A, c is the hypotenuse

NUMBER AND MEASURES



Speed, Distance and Time
 $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$
 Cover the one you want in the triangle

Percentage Change
 $\% \text{ change} = \frac{\text{change}}{\text{original}} \times 100$
 Use the original amount, not the new one

Simple Interest

$$\text{Interest} = P \times \frac{r}{100} \times n$$

P is the amount, r is the % rate, n is the number of years

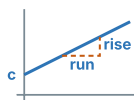


Compound Interest

$$\text{Total} = P(1 + \frac{r}{100})^n$$

P is the amount invested, r is the % rate per period, n is the number of periods

ALGEBRA



Straight-Line Graphs

$$y = mx + c$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

m is the gradient, c is the y-intercept

Laws of Indices

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

$$(a^m)^n = a^{mn}$$

$$a^0 = 1$$

$$a^{-n} = \frac{1}{a^n}$$

STATISTICS AND PROBABILITY

Mean

$$\text{Mean} = \frac{\text{total of the values}}{\text{number of values}}$$

From a table: $\Sigma fx \div \Sigma f$ (Σ means "add up")

Probability Basics

$$P(\text{not } A) = 1 - P(A)$$

$$\text{Expected number} = P(A) \times \text{number of trials}$$

Write It First

Write the formula down before you substitute. You can earn a method mark even if the answer goes wrong.

Check the Units

Make sure every length is in the same unit before you use a formula.

Test Yourself

Cover the right-hand side of each card and try to write the formula from memory.

Need Help Using These Formulas?

Book a free 90-minute lesson and I'll show your child exactly when and how to use each one.

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