

# GCSE MATHS EQUATIONS



## VOLUME

cuboid = length  $\times$  width  $\times$  height

prism = area of cross section  $\times$  length

cylinder =  $\pi \times \text{radius}^2 \times \text{height}$

pyramid =  $\frac{1}{3} \times \text{area of base} \times \text{height}$

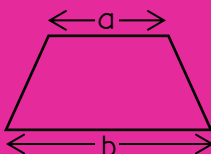
rectangle = length  $\times$  width

parallelogram = base  $\times$  height

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

trapezium =  $\frac{1}{2} \times (a+b) \times \text{height}$

## AREAS

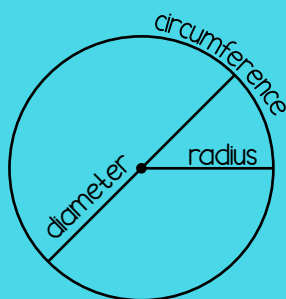


## CIRCLES

circumference =  $\pi \times \text{diameter}$

circumference =  $2\pi \times \text{radius}$

area of a circle =  $\pi \times \text{radius}^2$



## COMPOUND MEASURES

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

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

pressure =  $\frac{\text{force}}{\text{area}}$

## THE QUADRATIC EQUATION

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

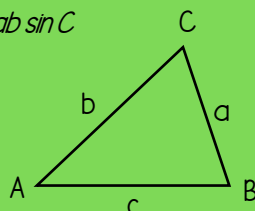
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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

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

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

## TRIGONOMETRIC FORMULAE



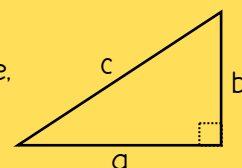
These are the equations you need to learn  
by heart for your GCSE Maths exam!

*\*Equations in italics are for higher tier only.*

## Pythagoras' Theorem

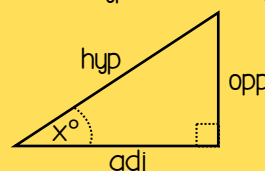
For a right-angled triangle,

$$a^2 + b^2 = c^2$$



## Trigonometric ratios

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



## PYTHAGORAS