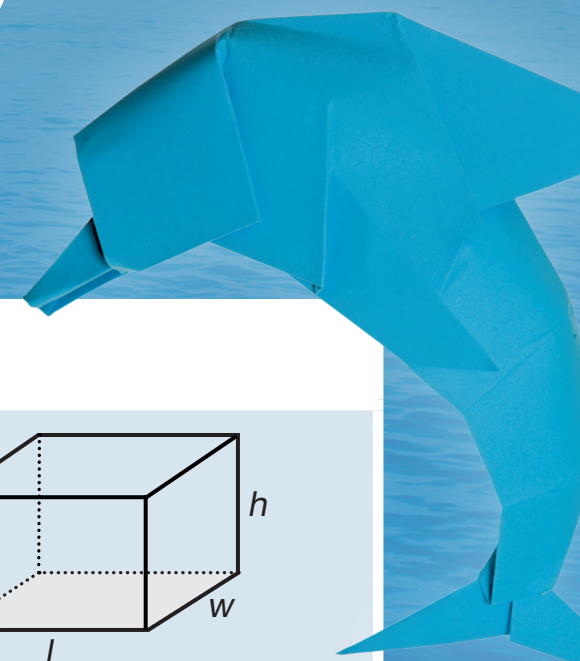# Edexcel GCSE (9-1) Maths: need-to-know formulae

www.edexcel.com/gcsemathsformulae

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 = $\pi \times$ diameter, $C = \pi d$

Circumference = $2 \times \pi \times$ radius, $C = 2\pi r$

Area of a circle = $\pi \times$ radius squared $A = \pi r^2$

Pythagoras

Pythagoras' Theorem

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

Trigonometric ratios (*new to F*)

$\sin x° = \dfrac{\text{opp}}{\text{hyp}}$, $\cos x° = \dfrac{\text{adj}}{\text{hyp}}$, $\tan x° = \dfrac{\text{opp}}{\text{adj}}$

Quadratic equations

The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$,
where $a \neq 0$, are given by $x = \dfrac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$

Volumes

Cuboid = $l \times w \times h$

Prism = area of cross section × length

Cylinder = $\pi r^2 h$

Volume of pyramid = $\frac{1}{3} \times$ area of base × h

Compound measures

Speed

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

Density

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

Pressure

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

Trigonometric formulae

Sine Rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

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

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

Foundation tier formulae   Higher tier formulae