

The maths equations/formulae used in this poster represent material studied during secondary education. The content for this poster was proposed by mathematics education charity MEI.

#### Perimeter, area, surface area and volume formulae

Where  $\boldsymbol{a}$  and  $\boldsymbol{b}$  are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium = 
$$\frac{1}{2}(a+b)h$$

Volume of \_\_\_\_\_ area of cross section x length a prism

Where *r* is the radius of the sphere or cone,  $\boldsymbol{l}$  is the slant height of a cone and h is the perpendicular height of a cone:

#### Curved surface area of a cone = $\pi rl$

Surface area of a sphere =  $4\pi r^2$ 

Volume of a sphere =  $\frac{4}{3}\pi r^3$ Volume of a cone =  $\frac{1}{3}\pi r^2 h$ 

#### **Pythagoras's theorem**

In any right-angled triangle where a, b and care the length of the sides and *c* is the hypotenuse:



#### **Compound interest**

Where  $\boldsymbol{P}$  is the principal amount, *r* is the interest rate over a given period and *n* is number of times that the interest is compounded:

#### Total acc

## The quadratic formula

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

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

## Circumference and area of a circle

Where  $\boldsymbol{r}$  is the radius and  $\boldsymbol{d}$  is the diameter:

# Circumference of a circle = $2\pi r = \pi d$ Area of a circle = $\pi r^2$

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# **Trigonometric formulae**

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

$$\int \frac{c}{\sqrt{A}}$$

$$b$$

$$crued = P\left(1+\frac{r}{100}\right)^{n}$$
**Kinematics formulae**
Where *a* is constant acceleration, *u* is initial velocity, *v* is final velocity, *s* is displacement from the position when *t* = 0 and *t* is time taken:  

$$v = u + at$$

$$s = ut + \frac{1}{2} at^2$$

Mathematics Education 

In any right-angled triangle **ABC** where  $\boldsymbol{a}$  is the opposite,  $\boldsymbol{b}$  is the adjacent and *c* is the hypotenuse:

$$\sin A = \frac{a}{c}$$
,  $\cos A = \frac{b}{c}$ ,  $\tan A = \frac{a}{b}$ 

In any triangle **ABC** where a, b and care the length of the sides

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

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



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## **Probability**

Where P(A) is the probability of outcome A and  $\mathbf{P}(\mathbf{B})$  is the probability of outcome  $\mathbf{B}$ :

P(A or B) = P(A) + P(B) - P(A and B)P(A and B) = P(A given B) P(B)

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