

# Trigonometric Ratios

	0°	30°	45°	60°	90°
sin	0	1	2	3	4
cos	4	3	2	1	0

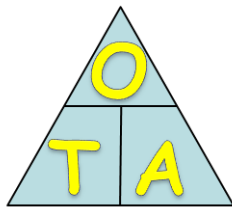
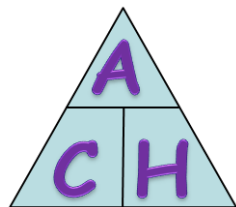
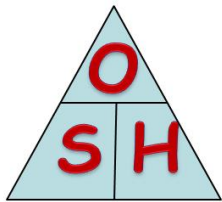
**2**

$$\tan 0^\circ = 0$$

$$\tan 30^\circ = \frac{1}{\sqrt{3}}$$

$$\tan 45^\circ = 1$$

$$\tan 60^\circ = \sqrt{3}$$



**SOH CAH TOA**

# Sine Rule

$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

# Cosine Rule

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

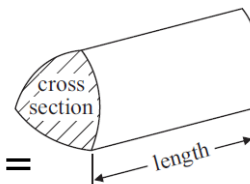
$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

# Area 2D Shapes

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

$$\text{triangle} = \frac{1}{2} ab \times \sin C$$

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



$$\text{Volume Prism} = \text{area cross section} \times \text{length}$$

# Circles

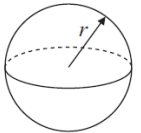
$$\text{Area} = \pi r^2$$

$$\text{Circumference} = \pi D$$

$$\text{Area Sector} = \frac{\theta}{360} \times \pi r^2$$

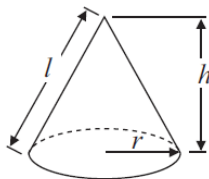
$$\text{Arc Length} = \frac{\theta}{360} \times \pi D$$

# Volume and Surface Area of Solids



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

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



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

$$\text{Surface Area Cone} = \pi r l$$

## Polygons

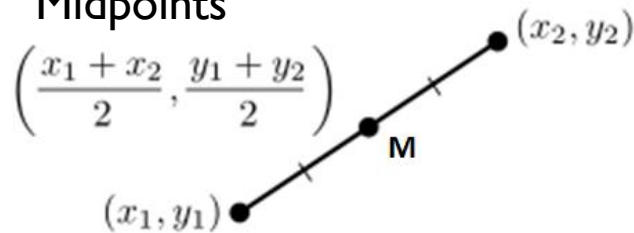
Sum Exterior Angles =  $360^\circ$

Sum Interior Angles =  $(n-2) \times 180$

## Quadratic Formula

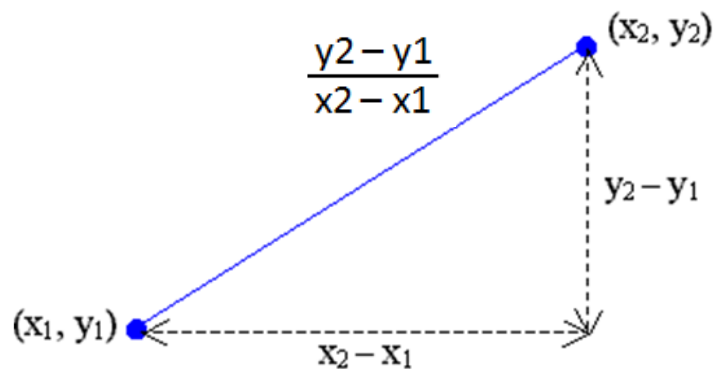
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

## Midpoints

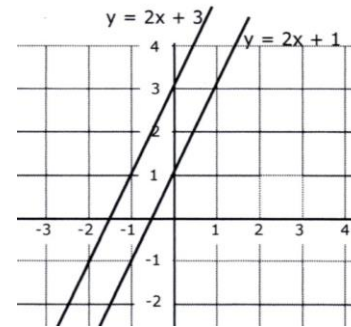


## Gradients

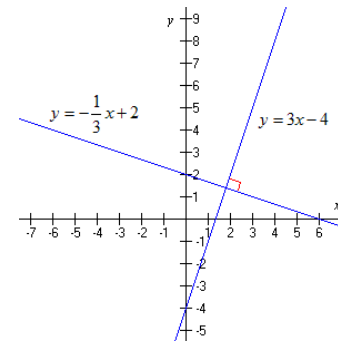
Gradient of a line =  $\frac{\text{change in the y direction}}{\text{change in the x direction}}$



## Straight Lines



Parallel Lines have the same gradient



Perpendicular Lines

$$m_1 = -\frac{1}{m_2}$$

## Standard Form

$$12 \times 10^8 = 1.2 \times 10^9$$

$$0.5 \times 10^9 = 5 \times 10^8$$

$\div 10$  +1 power  
 $\times 10$  -1 power

## Compound Interest

(multiplier)<sup>no. years</sup> x Original Amount

£4000 is invested at 2% for 3 years

$$(1.02)^3 \times £4000$$