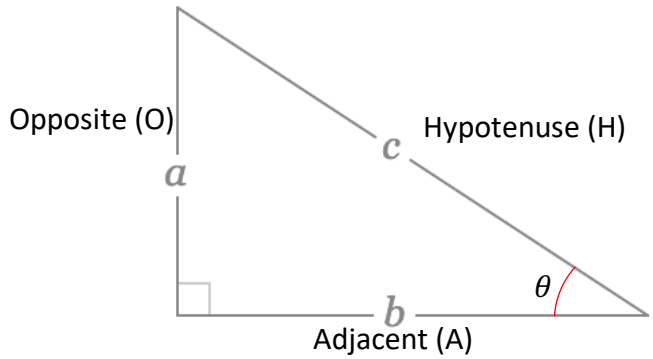
Right-Angled Triangle	
Area of Triangle	$1/2 \times base \times height$
Pythagoras' Theorem	$a^2 + b^2 = c^2$
Trigonometry TOA CAH SOH (Right-Angled Triangle)	
$\tan\theta = \frac{O}{A}$	
$\cos\theta = \frac{A}{H}$	
$\sin\theta = \frac{O}{H}$	
Non-Right-Angled Triangle (Given)	
Area of Triangle	$\frac{1}{2}ab\sin c$
Sine Rule	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ or vice versa
Cosine Rule	$a^2 = b^2 + c^2 - 2bc\cos A$
Straight-Line Graphs	
Gradient of Line	$\frac{y_2 - y_1}{x_2 - x_1}$
Length of Line	$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
$y = mx + c$	m = gradient c = y-intercept
Acute, Obtuse and Reflex Angles	
Acute Angle	$0° < \theta < 90°$
Obtuse Angle	$90° < \theta < 180°$
Reflex Angle	$180° < \theta < 360°$
Bearings	
Bearings always have up to hundreds place → $030°$	

Standard Form

Powers of 10	Name	SI Prefix	Symbol
10^{-12}	Trillionth	Pico-	p
10^{-9}	Billionth	Nano-	n
10^{-6}	Millionth	Micro-	μ
10^{-3}	Thousandth	Milli-	m
10^{0}	One		
10^{3}	Thousand	Kilo-	k
10^{6}	Million	Mega-	M
10^{9}	Billion	Giga-	G
10^{12}	Trillion	Tera-	T

Completing the Square

$ax^2 + bx + c$	$a(x^2 + \frac{b}{a}x + \frac{c}{a})$	$a\left[(x + \frac{b}{2a})^2 - \left(\frac{b}{2a}\right)^2 + \frac{c}{a}\right]$	$a(x+h)^2 + k$ $a(x-h)^2 + k$
Coefficient of x^2 must be +1			
$ax^2 - bx + c$	$a(x^2 - \frac{b}{a}x + \frac{c}{a})$	$a\left[(x - \frac{b}{2a})^2 - \left(\frac{b}{2a}\right)^2 + \frac{c}{a}\right]$	
Turning point $= (-h, k)$			

Interest

Simple Interest	$Interest = Principal \times \frac{Rate}{100} \times Number\ of\ Times$
Compound Interest (Given)	$Total\ amount = Principal\left(1 + \frac{Rate}{100}\right)^{Number\ of\ Times}$

Congruent Triangles

Proof	Explanation
SSS (Side-Side-Side)	All three corresponding sides are equal
ASA (Angle-Side-Angle)	Two corresponding angles and the line between them are equal
SAS (Side-Angle-Side)	Two corresponding sides and the angle between them are equal
RHS (Right-angled Triangle, Hypotenuse, Side)	Right-angled triangle, when hypotenuse and one corresponding side are equal

Similar Triangles

Proofs	
1	Two corresponding angles are equal
2	Ratio of three corresponding sides are equal
3	Ratio of 2 corresponding sides and the angle between them are equal

Similar Figures

Length	$1:5$
Area	$1:5^2 \rightarrow 1:25$
Volume / Mass	$1:5^3 \rightarrow 1:125$

Arc Length and Sector Area

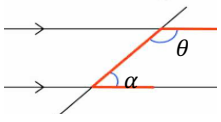
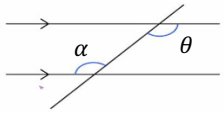
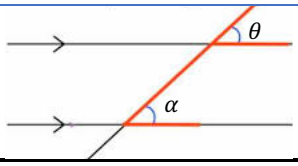
	Degree	Radian (given)
Arc Length	$\frac{\theta°}{360}° \times 2\pi r$	$r\theta$
Sector Area	$\frac{\theta°}{360°} \times \pi r^2$	$\frac{1}{2}r^2\theta$

Conversion of Degrees to Radian

$\pi\ rad = 180°$

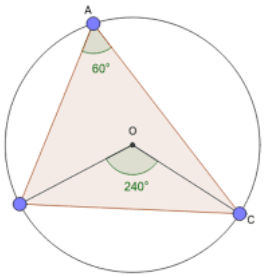
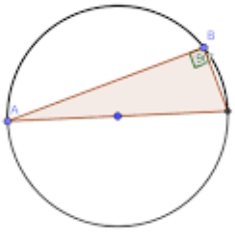
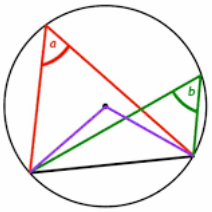
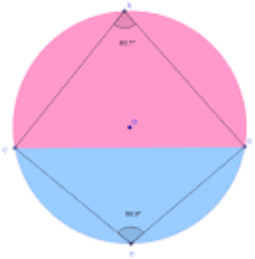
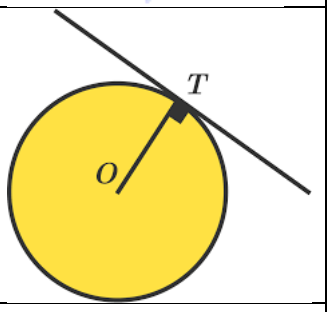
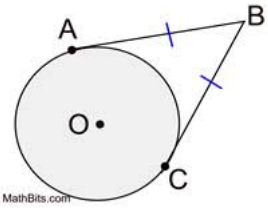
Degrees to Radian	$\frac{\theta°}{180°} \times \pi\ rad$
Radian to Degrees	$\frac{\theta\ rad}{\pi\ rad} \times 180°$

Angle Properties

Property	Abbreviation	Example
Parallel Lines		
$Sum\ of\ co-interior\ angles = 180°$	(co-int ∠s)	
$Alternate\ angles\ are\ equal$	(alt ∠s)	
$Corresponding\ angles\ are\ equal$	(Corresp ∠s)	
Polygon		
Sum of interior angles in a polygon $= (n-2) \times 180°$		
Sum of exterior angles in a polygon $= 360°$		

Chords of Circle	
Perpendicular bisector of a chord of a circle passes through the centre of the circle	(⊥ bisector of chord)
Perpendicular line from centre of circle to a chord bisects the chord	(⊥ from centre bisects chord)
Equal chords of a circle are equidistant from the centre of the circle	(⊥ Equal chords, equidistant from centre)

Properties of Circle

Property	Short form	Example
Angle at centre = 2 x Angle at circumference	(∠ at centre = 2 ∠ at circumference)	
Angle in a semicircle is a right angle	(∠ in a semicircle)	
Angles in the same segment are equal	(∠s in the same segment)	
Sum of angles in the opposite segments is $180°$	(∠s in opp. segments)	
Tangent to circle is perpendicular to radius	(tangent ⊥ to radius)	
Tangents from external point are equal	(tangents from ext. points)	
Line joining exterior point and centre of circle bisects angle between tangents (OB bisects ∠ABC)		