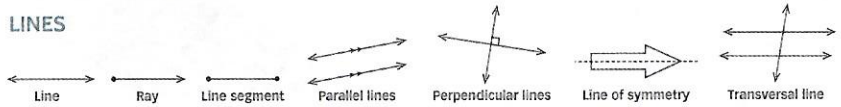
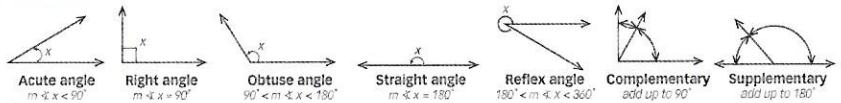
Geometry

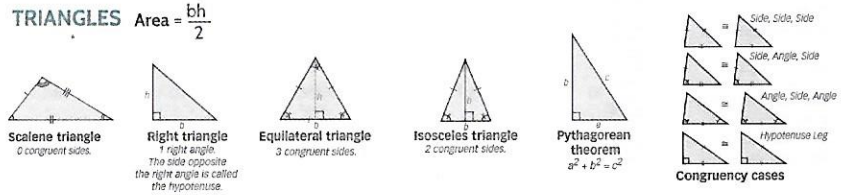
LINES



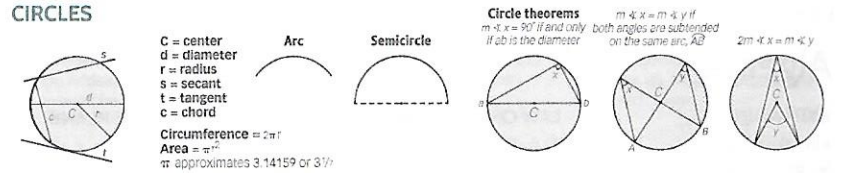
ANGLES



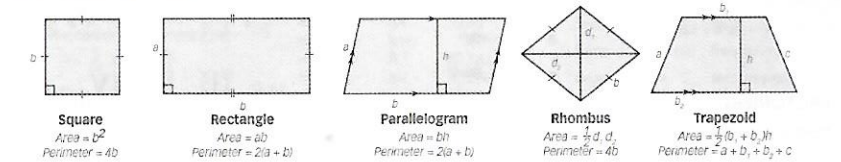
TRIANGLES Area = $\frac{bh}{2}$



CIRCLES

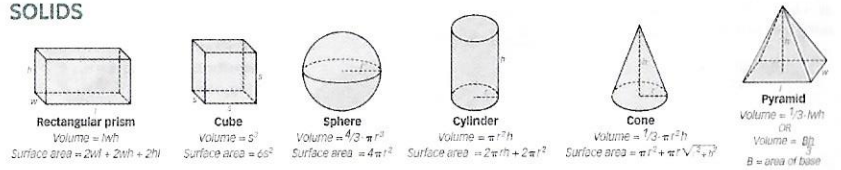


QUADRILATERALS

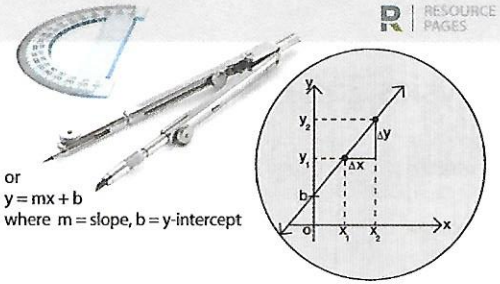


REGULAR POLYGONS Sum of interior angles for any polygon = 180 (n-2). (n = number of angles)

SOLIDS



Linear



Equation of a straight line

$y - y_1 = m(x - x_1)$

where m = slope = $\frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$

or

$y = mx + b$

where m = slope, b = y-intercept

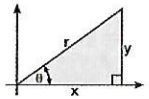
Trigonometry

TRIGONOMETRIC RATIOS

$\sin\theta = \frac{y}{r}$ (opposite/hypotenuse) $= 1/\csc\theta$

$\cos\theta = \frac{x}{r}$ (adjacent/hypotenuse) $= 1/\sec\theta$

$\tan\theta = \frac{y}{x}$ (opposite/adjacent) $= 1/\cot\theta$



$\cot\theta = \frac{\cos\theta}{\sin\theta}$

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

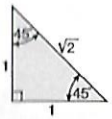
$\sin^2\theta + \cos^2\theta = 1$

$1 + \tan^2\theta = \sec^2\theta$

$1 + \cot^2\theta = \csc^2\theta$

$\cos^2\theta - \sin^2\theta = \cos 2\theta$

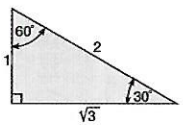
$\sec\theta = \frac{1}{\cos\theta}$



$\sin 45° = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$\cos 45° = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$\tan 45° = 1$



$\sin 30° = \frac{1}{2}$ $\quad \sin 60° = \frac{\sqrt{3}}{2}$

$\cos 30° = \frac{\sqrt{3}}{2}$ $\quad \cos 60° = \frac{1}{2}$

$\tan 30° = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$ $\quad \tan 60° = \sqrt{3}$

$\sin(A+B) = \sin A \cos B + \cos A \sin B$

$\sin(A-B) = \sin A \cos B - \cos A \sin B$

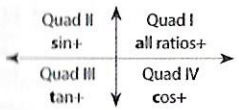
$\cos(A+B) = \cos A \cos B - \sin A \sin B$

$\cos(A-B) = \cos A \cos B + \sin A \sin B$

$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$

$\tan(A-B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$

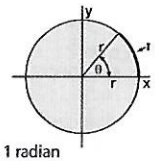
CAST



Value of trig ratio

θ	0	π/2	π	3π/2	2π
sin θ	0	1	0	−1	0
cos θ	1	0	−1	0	1
tan θ	0	*	0	*	0

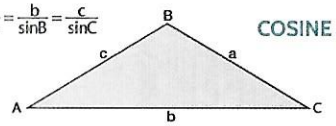
*undefined for π/2 and 3π/2



θ = 1 radian

2π radians = 360°

SINE LAW $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$



COSINE LAW

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

$b^2 = a^2 + c^2 - 2ac \cos B$

$c^2 = a^2 + b^2 - 2ab \cos C$

y = sin(x) y = cos(x) y = tan(x)