Year 10 Unit 6: 2D Geometry

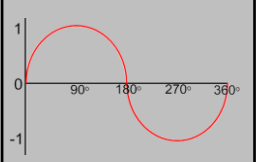
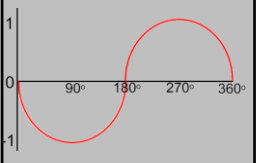
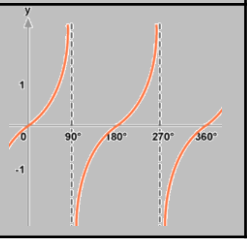
TRIGONOMETRIC RULES

sine rule	**use with non right angled triangles** use when the question involves **2 sides and 2 angles**
sine Rule (for an angle)	$\frac{SinA}{a} = \frac{SinB}{b} = \frac{SinC}{c}$
sine Rule (for a side)	$\frac{a}{SinA} = \frac{b}{SinB} = \frac{c}{SinC}$
cosine rule	**use with non right angled triangles** **use when the question involves 3 sides and 1 angle**
cosine Rule (for a side)	$a^2 = b^2 + c^2 - 2bcCosA$
cosine Rule (for an angle)	$CosA = \frac{b^2 + c^2 - a^2}{2bc}$
area of a triangle (trig)	$Area = \frac{1}{2}abSinC$

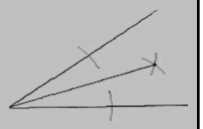
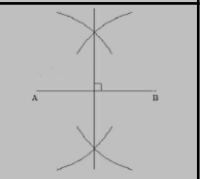
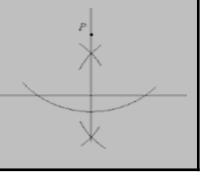
EXACT TRIG VALUES

	0°	30°	45°	60°	90°
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	----

OTHER NON-LINEAR GRAPHS

sine graph	$y = sin(x)$ important points: (0,0), (90,1), (180,0), (270,-1), (360,0)	
cosine graph	$y = cos(x)$ important points: (0,0), (90,-1), (180,0), (270,1), (360,0)	
tangent graph	$y = tan(x)$ the graph has **asymptotes** at **x=90° and x=270°** important points: (0,0), (180,0), (360,0)	

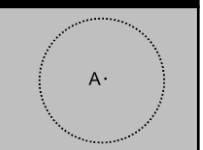
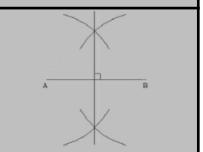
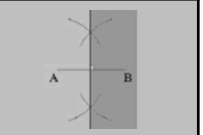
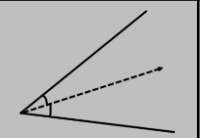
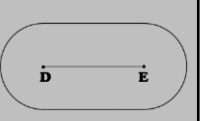
CONSTRUCTIONS

construct	to **build** or make an **accurate drawing** using a **ruler** and **protractor** or **compass**	
angle bisector	cut an **angle exactly** in **half**	
perpendicular bisector of a line segment	cut a **line exactly** in **half**, making a **right angle**	
the perpendicular distance from a point to a line	the **shortest distance** from a point to that line N.B. doesn't always bisect the line	

LOCI VOCABULARY

loci	a locus is a **path of points** that **follow a rule**
equidistant	**equal** distance
regions	'**more/further than**' indicates **shading outside the loci** '**within/less than**' indicates **shading inside the loci**

LOCI

locus of points equidistant from A	a **circle** with **A at the centre** **radius** is the **distance given**	
locus of points equidistant from two points	**perpendicular bisector**	
locus of points closer to B than A	**perpendicular bisector** of AB, shade the side closest to **B**	
locus of points equidistant from two lines	an **angle bisector**	
locus of points a set distance from a line	create **two semi-circles** at **either end joined** by two **parallel lines**	

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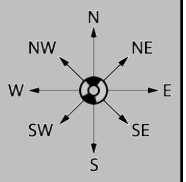
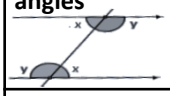
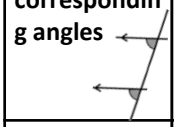
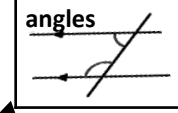
BEARINGS	
bearing	a **measure of turn** relating to the compass - always measured from **North** - always measured **clockwise** - always has **3 digits**
compass	used to measure direction **N**ever **N**orth **E**at **E**ast **S**hredded **S**outh **W**heat **W**est 

VECTORS		
scalar	a **quantity defined only** by **size**	
vector	a **quantity** which has **magnitude** and **direction** it **defines** a **movement from one point** to **another**	
vector notation	a vector can be **written in 3 ways**: **a or** $\overrightarrow{AB}$ ***or*** $\begin{pmatrix} x \\ y \end{pmatrix}$	
magnitude	the **size** of something (the **length of a vector**)	
column vector (in 2D)	the **top number** (**x**) moves **left** (-) or **right** (+) the **bottom number** (**y**) moves **up** (+) or **down** (-)	
	e.g. $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$ *means a* ***movement*** *of 3 right and 2 up*	
parallel vectors	**parallel vectors** have the **same direction** **parallel vectors** are **scalar multiples** of each other	
collinear vectors	vectors on the **same line** to prove: **show** they **are parallel** and **show** they **share** a **common point**	
resultant vector	the **vector** that **results** from **adding** two or more vectors together	
prove	to **show** something is **always true,** in maths, you must use **algebra** to prove	

Links to: ANGLE RULES	
angles around a point	**add to 360°** (as they make a full turn)
angles on a straight line	**add to 180°**
vertically opposite angles	**are equal**
angles in a triangle	**add to 180°**
angles in a quadrilateral	**add to 360°**

Links to: ANGLES IN PARALLEL LINES	
alternate angles 	are **equal** a pair of angles on **opposite sides** of the **transversal, inside** the **parallel lines**
corresponding angles 	are **equal** a pair of angles on the **same side** of the **transversal** in the **same position of the intersection**
co-interior angles 	add to **180°** a pair of angles on the **same side** of the **transversal**, **inside** the **parallel lines**

Links to: TRANSFOMATIONS	
translation	to **move a shape** the shape **does not change size** or **orientation** (**congruent**) to translate a shape you **need** a **vector** in the form $\begin{pmatrix} x \\ y \end{pmatrix}$