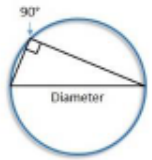
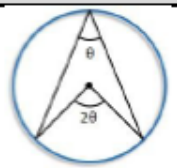
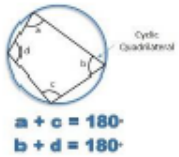
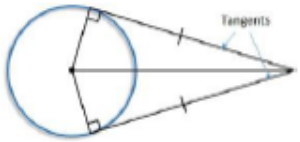
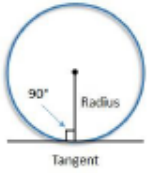
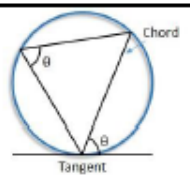
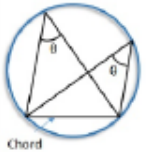
Year 11 HIGHER Term 1 Knowledge Organiser

Unit 1: Circle Calculations

1.01	Circumference	The outer edge of a circle.
1.02	Chord	A line segment with its start and end points on the circumference.
1.03	Diameter	A chord that passes through the centre of the circle.
1.04	Radius	A line segment from the centre to the circumference. Its length is always half the diameter.
1.05	Length of the circumference of a circle	$\pi d \quad or \quad 2\pi r$
1.06	Arc length of a sector [where θ is the angle of the sector]	$\frac{\theta}{360} \times \pi d$
1.07	Area of a circle	πr^2
1.08	Area of a sector [where θ is the angle of the sector]	$\frac{\theta}{360} \times \pi r^2$

Unit 2: Circle Theorems

2.01	The angle in a semi-circle is 90		**2.05**	The angle at the centre is twice the angle at the circumference	
2.02	Opposite angles in a cyclical quadrilateral add up to 180		**2.06**	Two tangents from the same point are equal in length	
2.03	The angle between a tangent and a radius is 90		**2.07**	Alternate Segment Theorem	
2.04	Angles at the circumference in the same segment are equal				

Unit 3: Proportion

3.01	Direct Proportion	As one increase, the other increases at the same rate
3.02	If a is directly proportional to b…	a = kb
3.03	Inverse Proportion	As one increases, the other decreases at the same rate
3.04	If a is inversely proportional to b	$a = \frac{k}{b}$

Unit 4: Equation of a Circle

4.01	The equation of a circle, with radius "r" at its centre at (0,0)	$x^2 + y^2 = r^2$
4.02	Due to 2.03, if the gradient of the radius to a point is m…	… the gradient of the tangent $= \frac{-1}{m}$

Unit 5: Grouped Data

5.01	Modal class	The group with the highest frequency
5.02	Mean	$\frac{sum\ of\ (midpoint \times frequency)\ column}{total\ frequency}$
5.03	Cumulative Frequency	The total frequency of all the groups so far
5.04	Median (cumulative frequency diagram)	Read from half the maximum cumulative frequency across to the curve, then down to the x-axis
5.05	Lower quartile (CFD)	As median, but from ¼ of the maximum cumulative frequency
5.06	Upper quartile (CFD)	As median, but from ¾ of the maximum cumulative frequency
5.07	Interquartile Range	$IQR = Upper\ Quartile - Lower\ Quartile$
5.08	Box plot	A 1D graph showing the lowest value, lower quartile, median, upper quartile an highest value of a set of data.
5.09	Histogram	"bar-style" chart where frequency is the area of the bar and frequency density is the y-axis
5.10	Frequency Density	$\frac{Frequency}{Class - width}$