Year 11 Higher Unit 16 – Circle geometry		
Learning Outcome	*Students will know and remember …*	*So that they can….*
Understand circle theorems.	That the angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the circumference. That the angle in a semicircle is a right angle. That the perpendicular from the centre of a circle to a chord bisects the chord. That angles in the same segment are equal. That angles are equal in the alternate segment theorem. That opposite angles of a cyclic quadrilateral sum to 180°. That the tangent at any point on a circle is perpendicular to the radius at that point That 2 radii create an isosceles triangle. That the fact that the angle between a tangent and radius is 90°. That the fact that tangents from an external point are equal in length.	Calculate missing angles in circles.
Use coordinate geometry with circles.	That the equation of a circle in=s in the form $x^2 + y^2 = r^2$ That the equation of a straight line is in the form $y = mx + c$. That perpendicular gradients have a product of -1. That a tangent is perpendicular to the radius.	Find the equation of a tangent to a circle at a given point. Recognise and draw the graph of a circle using $x^2 + y^2 = r^2$ for radius r centred at the origin of coordinates.
Year 11 Higher Unit 17 – Formulae and surds		
Learning Outcome	*Students will know and remember …*	*So that they can….*
Understand algebraic fractions.	That algebraic fractions can be simplified by factorising. That to multiply fractions you multiply the numerators and denominators. That to divide fractions you multiply by the reciprocal.	Simplify algebraic fractions. Multiply and divide algebraic fractions. Solve quadratic equations arising from algebraic fraction equations. Change the subject of a formula arising from algebraic fraction equations.
Understand proof.	That consecutive integers can be represented by $(n, n + 1)$. That even numbers are represented by $2n$. That odd numbers are represented by $2n+1$. That square numbers are represented by n^2.	Solve 'Show that' and proof questions
Understand functions.	That function notation is $f(x)$ or $g(x)$ That $f^{-1}(x)$ refers to the inverse function.	Use function notation and perform function arithmetic. Find the inverse of a linear function. Find composite functions.

	That fg(x) means that g(x) is applied first.	
Year 11 Higher Unit 18 – Vectors and proof		
Learning Outcome	*Students will know and remember …*	*So that they can….*
Understand vectors.	That a column vector represents horizontal and vertical movement. That a vector has direction and magnitude. Vectors which are multiples of each other represent parallel vectors.	Be able to draw and interpret column vector. Perform vector arithmetic.
Understand the pictorial representation of vectors.	That Pythagoras is used to find the magnitude of a vector. That is points are collinear they will share a point and have parallel vectors.	Find the magnitude of a vector. Solve geometric problems in 2D where vectors are divided in a given ratio. Produce geometrical proofs to prove points are collinear and vectors are parallel.
Year 11 Higher Unit 19 – Proportion and graphs		
Learning Outcome	*Students will know and remember …*	*So that they can….*
Recognise graphs.	That a linear graph is in the form $y=mx + c$. That a quadratic graph is in form $y = x^2$. That a cubic graph is in form $y = x^3$. That the graph of a circle is in form $x^2 + y^2 = r^2$. That a reciprocal graph is in form $y = 1/x$. That an exponential graph is in form $y = k^x$. That a direct proportion graph is in form $y = kx$. That an inverse proportion graph is in form $y = k/x$.	Identify and plot graphs in any form. Find solutions to graphs.
Understand the transformations of graphs.	That reflections are algebraically represented by $y = -f(x)$, $y = f(-x)$. That translations are algebraically represented by $y = f(x) + a$, $y = f(x +a)$.	Translate and reflect graphs.
Interpret rates of change.	That gradient = change in y/ change in x. That the area of a trapezium is ½ (a+b)h. That the are under a speed-time graph finds the distance travelled. That the gradient of a distance–time and velocity–time graphs find speed and acceleration respectively.	Estimate the area under a quadratic graph by dividing it into trapezia. Interpret and estimate the gradient of graphs.