

Our Lady Queen of Peace

Catholic High School

Curriculum Overview

YEAR 11 Maths (Higher)

Careers

Local Market Information	Skills	Jobs
Engineering, advanced manufacturing, construction, digital technology, finance, healthcare, logistics and distribution, business and administration, scientific research, public services.	Analytical thinking, problem solving, mathematical reasoning, critical thinking, resilience, logical reasoning, communication, independent learning, precision, data interpretation, decision making, financial literacy, organisation, modelling, perseverance.	Civil Engineer, Mechanical Engineer, Architect, Quantity Surveyor, Data Scientist, Software Developer, Actuary, Accountant, Financial Analyst, Research Scientist, Structural Engineer, Aerospace Engineer, Surveyor, Teacher, Project Manager

	Knowledge & Understanding			Subject Specific Literacy Development Key Vocabulary	Cultural Capital / Enrichment Opportunities
	Topics (Bigger Picture)	Knowledge (Key Concepts)	Recall & Retrieval Practice Focus		
Half Term 1	Circle Theorems	<p>Prove and use the facts that:</p> <ul style="list-style-type: none">- the angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the circumference- the angle in a semicircle is a right angle- the perpendicular from the centre of a circle to a chord bisects the chord- angles in the same segment are equal- alternate segment theorem- opposite angles of a cyclic quadrilateral sum to 180°;- Tangent of any point is perpendicular to the radius at that point <p>Find and give reasons for missing angles on diagrams using circle theorems, isosceles triangles (radius properties) in circles, the fact that the angle between a tangent and radius is 90°, the fact that tangents from an external point are equal in length.</p>	Content class specific identified as areas of weakness in the Yr 10 Summer assessments	Subtended Bisects Cyclic Segment	Formula One Engineering Challenge:

	Knowledge & Understanding			Subject Specific Literacy Development	Cultural Capital / Enrichment Opportunities
	Topics (Bigger Picture)	Knowledge (Key Concepts)	Recall & Retrieval Practice Focus	Key Vocabulary	
	Circle Geometry	Find the equation of a tangent to a circle at a given point, by: <ul style="list-style-type: none"> - finding the gradient of the radius that meets the circle at that point (circles all centre the origin) - finding the gradient of the tangent perpendicular to it - using the given point Recognise and construct the graph of a circle using $x^2 + y^2 = r^2$ for radius r centred at the origin of coordinates.		Perpendicular Tangent	
	Vectors and Geometric Proof	Understand and use vector notation, including column notation Understand that $2a$ is parallel to a and twice its length, and that a is parallel to $-a$ in the opposite direction. Represent vectors, combinations of vectors and scalar multiples in the plane pictorially. Calculate the sum of two vectors, the difference of two vectors and a scalar multiple of a vector using column vectors (including algebraic terms). Find the length of a vector using Pythagoras' Theorem. Calculate the resultant of two vectors. Solve geometric problems in 2D where vectors are divided in a given ratio. $\vec{f} = \frac{u}{u+v} + \frac{v}{u+v}$ Produce geometrical proofs to prove points are collinear and vectors/lines are parallel.		Vector Scalar Resultant	
	Complex Change of Subject	Change the subject of a formula, including cases where the subject occurs on both sides of the formula, or where a power of the subject appears Change the subject of a formula such as where all variables are in the denominators		Subject Formula Factorise Denominator Square Root	
Half Term 2	Algebraic Fractions, Proof, Rationalising	Rationalise the denominator involving surds Simplify algebraic fractions Multiply and divide algebraic fractions Solve quadratic equations arising from algebraic fractions Solve 'Show that' and proof questions using consecutive integers, squares, even numbers, odd numbers Use function notation	Content class specific identified as areas of weakness in the Yr 10 Summer	Rationalise Variables Function	Disease Outbreak Modelling

	Knowledge & Understanding			Subject Specific Literacy Development	Cultural Capital / Enrichment Opportunities
	Topics (Bigger Picture)	Knowledge (Key Concepts)	Recall & Retrieval Practice Focus	Key Vocabulary	
		Find the inverse of a linear function Find the composite function of two or more functions	assessments		
	Graphs	Recognise, sketch & interpret graphs of the reciprocal function State the value of x for which the equation is not defined Recognise, sketch and interpret graphs of exponential functions for positive values of k and integer values of x Use calculators to explore exponential growth and decay Set up, solve and interpret solutions in growth and decay problems Interpret & analyse transformations of graphs of functions and write the functions algebraically Trapezium rule for Quadratic & other graphs Interpret the gradient of linear or non-linear graphs, and estimate the gradient of a quadratic or non-linear graph at a given point by sketching the tangent and finding its gradient Interpret the gradient of a non-linear distance–time graph, estimate the speed at one point in time, from the tangent, and the average speed over several seconds by finding the gradient of the chord Interpret the gradient of a non-linear velocity–time graph, estimate the acceleration at one point in time, from the tangent, and the average acceleration over several seconds by finding the gradient of the chord Interpret the gradient of a linear or non-linear graph in financial contexts and real-life contexts		Reciprocal Exponential Non-Linear	
Half Term 3	Direct and Inverse Proportion	Recognise and interpret graphs showing direct and inverse proportion Identify direct proportion from a table of values, by comparing ratios of values, for x squared and x cubed relationships Set up and use equations to solve word and other problems involving direct and inverse proportion Use $y = kx$ to solve direct proportion problems, including questions where students find k, and then use k to find another value Solve problems involving inverse proportion using graphs by	Mark Maximisers	Direct Proportion Inverse Proportion Constant of Proportionality Scale Factor	Medicine and Drug Dosage Investigation

	Knowledge & Understanding			Subject Specific Literacy Development	Cultural Capital / Enrichment Opportunities
	Topics (Bigger Picture)	Knowledge (Key Concepts)	Recall & Retrieval Practice Focus	Key Vocabulary	
		plotting and reading values from graphs Solve problems involving inverse proportionality			
	Bespoke Scheme of Work	Content based on Question Level Analysis from Rehearsal Exam 1			
Half Term 4	Bespoke Scheme of Work	Content based on Question Level Analysis from Rehearsal Exam 2	Mark Maximisers		
Half Term 5	Bespoke Scheme of Work	Content based on Question Level Analysis from Rehearsal Exam 2	Mark Maximisers		

Key Assessments			
When	What will be assessed?	Why is this being assessed?	How will results be stored & students receive feedback?
Every 2 weeks throughout yr 11 – 11x Week 1 p	Each exam is approximately 60 marks of a previous GCSE paper sat in order (Paper 1, 2 then 3) focusing on content that has been delivered up to that point in the Foundation GCSE SoW	To allow pupils the most opportunities to see GCSE exam questions as they appear in the actual exams. Areas of strength and development can then be determined	Feedback given Friday Week 1 for both x and y groups. QLA to be generated from Pupil Progress to highlight areas of strength and concern to link in starter activities.

HT2 Week 5 & 6	Year 11 Mock 1 exams – All 3 papers sat in full by pupils	To allow pupils the most opportunities to see GCSE exam questions as they appear in the actual exams. Areas of strength and development can then be determined. To assess the students understanding of the topics taught which will inform the content that makes up the bespoke scheme of work for each class.	Feedback given by staff using their visualiser to demonstrate methods and areas of improvement to pupils. QLA to be generated from Pupil Progress to highlight areas of strength and concern to link in starter activities and help staff identify topics needed to be retaught in the Bespoke content
HT4 Week 3	Year 11 Mock 2 exams – papers to be decided by need, probably a non-calculator and calculator paper.	To allow pupils the most opportunities to see GCSE exam questions as they appear in the actual exams. Areas of strength and development can then be determined. To assess the students understanding of the topics taught which will inform the content that makes up the bespoke scheme of work for each class.	Feedback given by staff using their visualiser to demonstrate methods and areas of improvement to pupils. QLA to be generated from Pupil Progress to highlight areas of strength and concern to link in starter activities and help staff identify topics needed to be retaught in the Bespoke content