Our Lady Queen of Peace
Catholic Engineering College

Curriculum Overview

Year 10 Foundation Mathematics

	Knowledge & Understanding			Subject Specific Literacy Development		Cultural Capital / Enrichment Opportunities
	Composites (Bigger Picture)	**Components (Key Concepts)**	**Recall & Retrieval Focus**	**Read Like A... Focus**	**Key Vocabulary**	
Half Term 1	**Properties of Shape and Angle Facts**	Recall the properties and definitions of special types of quadrilaterals, including symmetry properties Recall and use properties of angles at a point, angles at a point on a straight line, right angles, and vertically opposite angles Derive and use the sum of angles in a triangle Use the side/angle properties of isosceles and equilateral triangles Show step-by-step deduction when solving problems Find missing angles using properties of corresponding and alternate angles Understand and use the angle properties of parallel lines.	Key skills from Y9 HT6 Class specific based on Y9 EOY QLA	Multi-step reasoning problems. Draw and interpret mathematical diagrams.	Isosceles – Intersecting – Corresponding – Alternate –	**Road Design and Signage**: Examine how road signs use standard 2D shapes (octagons, triangles) for universal understanding **Sports Pitches**: Investigate the dimensions and area of football pitches, basketball courts, or athletics tracks — including differences across sports and levels (e.g., Olympic vs local).
	Interior and Exterior Angles	Understand 'regular' and 'irregular' as applied to polygons Use the sum of angles of irregular polygons Calculate and use the sums of the interior angles of polygons Calculate and use the angles of regular polygons Use the sum of the interior angles of an n-sided polygon Use the sum of the exterior angles of any polygon is 360° Use the sum of the interior angle and the exterior angle is 180°			Regular – Polygon – Interior – Exterior –	
	Perimeter and Area	Convert metric units to metric units Find the perimeter of basic 2D shapes Find the perimeter of compound shapes Find the area of 2D shapes; rectangle, triangle, a trapezium, parallelogram Calculate areas and perimeters of compound shapes made from triangles and rectangles Find the surface area of a prism Convert between metric area measures.			Metric Unit – Compound –	

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Half Term 2	**3D and Volume**	Identify and name common 3D shapes Sketch nets of cuboids and prisms Find the volume of a prism, including a triangular prism, cube and cuboid Calculate volumes of right prisms and shapes made from cubes and cuboids Convert between metric volume measures. Convert between metric measures of volume and capacity	Properties of Shape Angle Facts Interior and Exterior Angles Perimeter and Area	Multi-step reasoning problems. Draw and interpret mathematical diagrams.	Prism Net	**Housing around the world** Compare the size (volume) of living spaces globally. Raises awareness of wealth, overcrowding, and environmental factors. **Health and Nutrition Graphs** Compare average calorie intake or physical activity levels across countries or demographics using bar and line graphs. Reflects cultural and economic factors.
	Real Life Graphs	Find the coordinates of points identified by geometrical information in 2D Find the coordinates of the midpoint of a line segment. Draw and interpret straight-line graphs for real-life situations Draw and Interpret distance–time graphs Draw velocity–time graphs and interpret gradient as the rate of change in distance			Axes Co-ordinates Midpoint	
	Straight Line Graphs	Plot and draw graphs of y = a, x = a, y = x and y = –x Recognise that equations of the form y = mx + c correspond to straight-line graphs Plot and draw graphs of straight lines of the form y = mx + c using a table of values Sketch a graph of a linear function, using the gradient and y-intercept Identify and interpret gradient from an equation y = mx + c Find the equation of a straight line from a graph Find the equation of the line through one point with a given gradient			Parallel – Gradient – y-intercept –	

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Half Term 3	**Transformations**	Describe a rotation fully using the angle, direction of turn, and centre Rotate a shape about the origin or any other point on a coordinate grid Describe and transform 2D shapes using single translations on a coordinate grid Use column vectors to describe translations	Key skills from HT1 & 2 Class specific based on QLA	Multi-step reasoning problems. Draw and interpret mathematical diagrams.	Rotation – Translations – Vector –	
		Identify the equation of a line of symmetry Transform 2D shapes using single reflections with vertical, horizontal and diagonal mirror lines Describe reflections on a coordinate grid Scale a shape on a grid Enlarge a given shape using (0, 0) as the centre of enlargement, and enlarge shapes with a centre other than (0, 0) Describe and transform 2D shapes using enlargements by: a positive integer scale factor. a fractional scale factor.			Reflection – Enlargement – Scale Factor –	
	Ratio	Use a ratio to compare a scale model to a real-life object Calculate missing parts of a ratio when the difference is given Combining 2 ratios into one Problems involving mixing, e.g. paint colours, cement and drawn conclusions. Write a ratio as a linear function Write lengths, areas and volumes of two shapes as ratios in simplest form Express a multiplicative relationship between two quantities as a ratio or a fraction.			Ratio – Simplest form – Equivalence -	**Fuel or Budget Calculations** Discuss fuel efficiency (miles per gallon), or ratio of spend to savings — especially relevant in cost-of-living discussions.

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Half Term 4	**Proportion**	Solve word problems involving direct and inverse proportion Work out which product is the better buy Scale up recipes Convert between currencies Solve proportion problems using the unitary method Recognise when values are in direct proportion by reference to the graph form Understand direct proportion ---> relationship y = kx.	Key skills from HT2 & 3 Class specific based on QLA	Multi-step reasoning problems. Draw and interpret mathematical diagrams.	Proportion – Unitary – Best buy –	**Wealth & Inequality** Investigate income proportions between the richest and poorest in the world — sparking discussion on fairness and sustainability. **Navigation & GPS** GPS systems and air traffic control use right-angled triangles and Pythagoras' Theorem to calculate shortest paths (distance between two points). **Speed of Transport Around the World** Compare average speeds in rural vs urban areas across countries — e.g. tuk-tuks in Thailand vs subways in New York or Tokyo.
	Pythagoras' Theorem	Understand, recall and use Pythagoras' Theorem in 2D to calculate the length of the hypotenuse or a shorter side Given 3 sides of a triangle, justify if it is right-angled or not Apply Pythagoras' Theorem with a triangle drawn on a coordinate grid Calculate the length of a line segment AB given pairs of points			Hypotenuse – Line Segment –	
	Trigonometry	Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures Use the trigonometric ratios to solve 2D problems Know the exact values of sin θ, cos θ and tan θ for θ = 0°, 30°, 45°, 60° and 90°			Elevation – Depression –	
	Compound Measures	Understand and use compound measures: density; pressure; speed Convert between metric speed measures Calculate average speed, distance, time – in miles per hour as well as metric measures			Density – Pressure –	

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Half Term 5	**Multiplicative Reasoning**	Express a given number as a percentage of another number in more complex situations Calculate percentage profit or loss Find the original amount given the final amount after a percentage increase or decrease Use compound interest	Key skills from HT3 & 4 Class specific based on QLA	Multi-step reasoning problems. Draw and interpret mathematical diagrams.	Profit – Loss – Compound Interest –	**Credit Cards and Debt** Explore the **dangers of borrowing** — how **compound interest** on loans or credit cards can **spiral into debt**. **Probability in Sport** Use data from real events (e.g. World Cup, Wimbledon, Olympics) to explore outcomes, odds, and performance statistics. Example: What are the chances of scoring a penalty kick? Winning a tennis match? **Lottery and Gambling Simulation** Run a class simulation of lottery draws. Discuss **how unlikely big wins are** and why people still play. Encourage **financial literacy and critical thinking**.
	Probability 1	Mark events and/or probabilities on a probability scale of 0 to 1 Write probabilities in words or fractions, decimals and percentages Find the probability of an event happening using theoretical probability List all outcomes for single events systematically Work out probabilities from frequency tables and two-way tables Add simple probabilities Identify different mutually exclusive outcomes and know that the sum of the probabilities of all outcomes is 1 Find a missing probability from a list or table including algebraic terms			Outcome – Impossible – Certain – Event –	
	Probability 2	Estimate the number of times an event will occur, given the probability and the number of trials Work out probabilities from Venn diagrams Use union and intersection notation Compare relative frequencies from samples of different sizes Find the probability of successive events, such as several throws of a single dice Use tree diagrams to calculate the probability of two independent events Use tree diagrams to calculate the probability of two dependent events			Relative Frequency Sample Space Theoretical	
	Fractions and Reciprocals	Add, subtract, multiply and divide mixed number fractions Understand and find the reciprocal of an integer, decimal or fraction			Mixed Number –	

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Half Term 6	**Indices and Standard Form**	Use index laws involving fractions Use numbers raised to the power zero Convert large and small numbers into standard form and vice versa Add, subtract, multiply and divide numbers in standard form Interpret a calculator display using standard form and know how to enter numbers in standard form	Key skills from HT4 & 5 Class specific based on QLA	Multi-step reasoning problems. Draw and interpret mathematical diagrams.	Standard Form – Index –	**Activity:** Research a planet and write a fact sheet using standard form (e.g., mass, diameter, distance from the sun)

Key Assessments			
When	**What will be assessed?**	**Why is this being assessed?**	**How will results be stored & students receive feedback?**
HT1	Basic Angle Facts - Angles on a straight Line, Angles around a point, vertically opposite angles, angles in a triangle including isosceles Missing angles using multi-step reasoning Angles in parallel lines giving reasons Exterior angle of regular polygon Sum of the interior angles of a regular polygon Calculating the number of sides, given the interior angle Interior and Exterior angle multi-step problem	To assess the students understanding of and their retention of the topics taught. This information will be used to inform the topics that make up the recall and retention starter activities .	Scores will be stored on SIMS and student feedback will be through individualised Fix IT Questions.
HT2	Perimeter and Area 3D and Volume Real Life Graphs		
HT3	Transformations		
HT4	Ratio Proportion Pythagoras' Theorem		
HT5	Trigonometry Compound Measures Multiplicative Reasoning Probability		
HT6	End of Year Assessment – will assess content from across the Scheme of Work delivered this academic year.		