

BLESSED TRINITY LEARNING PROGRAMME

SUBJECT: Maths - Stage 5

YEAR: 9

Half Term: 1

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Geometrical reasoning: Pythagoras	To understand and apply Pythagoras' Theorem	Explore how to use Pythag when solving problems in 2D and begin to use it for simple problems in 3D	L7SSM1	Peer, self and teacher assessment Weekly homework
Geometrical reasoning: lines, angles and shapes	To calculate missing angles in diagrams which include: parallel lines; triangles and other polygons	Making use of diagrams and text, explain reasoning in working out missing angles Refine arguments and produce simple proofs Distinguish between demonstration and proof		Peer, self and teacher assessment Weekly homework
Construction and Loci	To construct triangles To find the locus of a point	Construct triangles in order to derive conditions which make them unique or similar Eg: SSS SAS ASA etc Using ICT and reasoning, find the locus of a point that moves according to a more complex rule	L6SSM4 L7SSM4	Peer, self and teacher assessment Weekly homework

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Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Integers. Powers and roots	To extend use of index notation to include negative and fractional powers	Recognise that index laws can be extended to negative/fractional powers		Peer, self and teacher assessment Weekly homework
Equations, formulae, identities and expressions	To expand/simplify expressions	Square linear expressions Expand/simplify $(x \pm n)(x \pm n)$ Establish basic identities $a^2 - b^2 \equiv (a+b)(a-b)$	L7ALG1	Peer, self and teacher assessment Weekly homework
Ratio and proportion	To understand and use proportionality	Calculate proportional changes using effective multiplicative methods	L7NNS1	Peer, self and teacher assessment Class test

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Half Term: 2

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Fraction, Decimals and Percentages.	<p>To convert between decimals and fractions</p> <p>To understand terminating and recurring decimals</p>	<p>Explore how to convert fractions to decimals and vice versa.</p> <p>Write a reoccurring decimal as a fraction.</p>	The four operations with fractions	Peer, self and teacher assessment
Fraction, Decimals and Percentages.	To be able to add, subtract, multiply or divide a full range of fractions efficiently	<p>Practise skills in addition and subtraction of fractions on a range of numerical and simple algebraic fractions</p> <p>Understand efficient methods for multiplying and dividing numerical fractions</p>	L7CALC3	Peer, self and teacher assessment
<p>Processing and representing data; Interpreting and discussing results</p> <p>Statistical enquiry</p>	<p>To Understand the Data Handling Cycle.</p> <p>To understand best practice in survey design and data</p> <p>To use cumulative frequency graphs efficiently to interpret data</p> <p>To understand how to use scatter graphs</p>	<p>Be able to use the Data Handling Cycle to plan a pathway through a statistical problem.</p> <p>Carry out a survey to collect and compare two different sets of data</p> <p>Be able to construct a cumulative frequency graph and use it to produce a boxplot</p> <p>Draw a scatter graph and a line of best fit</p> <p>Intepret all of the above and comment of trends, including Mean, median, range (IQ)</p>	<p>Working with grouped data</p> <p>Comparing distributions</p> <p>L7CALC3</p>	Peer, self and teacher assessment

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Half Term: 3

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Significant figures	To round and calculate with significant figures	To round to a given number of sig. fig's and use them to approximate in large calculations	L7CALC4	Peer, self and teacher assessment Weekly homework
Standard form	To express numbers in Standard Form	Be able to convert between ordinary numbers and standard form in both written form and with calculator		Peer, self and teacher assessment Weekly homework
Reciprocals	To understand and use Reciprocals	Understand 'reciprocal' as a multiplicative inverse; Use an extended range of function keys (reciprocal and trig functions)	Mymaths - RECIPROCALS	Peer, self and teacher assessment Weekly homework
Sequences, functions and graphs and Probability	To explore the properties of quadratic sequences To understand and use relative frequency To produce and use tree diagrams	Be able to identify quadratic sequences Produce the next term and the nth term rules. Deduce the properties of special number patterns such as triangular and square numbers from spatial patterns Be able to work out relative frequencies and use to compare outcomes Use tree diagrams to display the outcomes of two or more events and calculate probabilities from them	L7ALG5 L7HD5	Peer, self and teacher assessment Weekly homework



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Half Term: 4

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
<p>Transformation and coordinates</p>	<p>To explore and combine reflections, translations and rotations in 2D, and reflection in 3D shapes</p> <p>To Enlarge 2-D shapes using positive, fractional and negative scale factors.</p> <p>To understand Similarity in 2d shapes</p>	<p>On paper or using ICT, draw combinations of reflections, translations and rotations</p> <p>Describe reflections, rotations and translations fully</p> <p>Design own transformation puzzle using squared paper.</p> <p>Investigate negative and fractional scale factors.</p> <p>Extension – Explore the effects that enlargement has on area/volume</p> <p>Investigate the properties of similar 2d shapes.</p> <p>Express corresponding side lengths as ratios and use this to determine if shapes are similar</p>	<p>L6SSM7</p>	<p>Peer, self and teacher assessment</p>

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Half Term: 4

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
<p>Equations, formula, identities and expressions.</p>	<p>To solve simple linear inequalities</p> <p>To solve simultaneous linear equations using the elimination method</p>	<p>Be able to solve simple inequalities and represent solutions on a number line.</p> <p>List all integer solutions to an inequality</p> <p>Use the Elimination method to solve simultaneous equations (linear)</p> <p>Recognise key features of important graphs and match with correct equations.</p>	<p>L7ALG2</p> <p>L7ALG3</p>	<p>Peer, self and teacher assessment</p>
<p>Sequence, functions and graphs</p>	<p>To find n^{th} term of quadratic sequences.</p>	<p>Be able to find n^{th} term of a quadratic sequence looking at 2^{nd} difference</p> <p>Be able to write a sequence from a given n^{th} term</p> <p>Recognising the similarities between different quadratic sequences.</p>	<p>L7ALG5</p>	<p>Peer, self and teacher assessment</p>

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Half Term: 5

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Sequences, functions and graphs	<p>To use ICT to investigate properties of graphs</p> <p>To plot simple quadratic and cubic functions</p>	<p>Using ICT, explore the key features of</p> <p>$y = mx + c$ (gradient and intercept)</p> <p>and parallel and perpendicular lines</p> <p>Explore simple properties of quadratic and cubic functions</p> <p>Be able to plot the graph of the inverse of a linear function</p>	L7ALG6	<p>Peer, self and teacher assessment</p> <p>Weekly homework</p>
Equations, formulae, identities and expressions	<p>To derive and use more complex formulae</p>	<p>Be able to change the subject of a formula, including cases where a power of the subject appears in the question or solution</p> <p>eg. Find r given that $A = \pi r^2$</p>		<p>Peer, self and teacher assessment</p> <p>Weekly homework</p>
Measures and mensuration	<p>To solve problems involving cylinders</p>	<p>Solve more complex problems by finding surface area and/or volume of a cylinder and other prisms</p>	<p>L7SSM2</p> <p>Revision</p>	Formal Assessment

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Half Term: 6

Title	Learning Objectives	Classroom Activity	Recommended Homework	Marking & Assessment
Geometrical reasoning: lines, angles and shapes	<p>To understand and apply Pythagoras' theorem.</p> <p>To use angles on parallel lines</p> <p>To find missing angles in polygons</p> <p>To understand simple Circle theorems</p>	<p>Solve problems involving 2D shapes, finding hypotenuse and other missing sides.</p> <p>Solve simple 3D Pythagoras' problems.</p> <p>Be able to find missing angles on parallel lines and provide reasons with answers.</p> <p>Know that exterior angles of a polygon add to 360 and use this fact to find missing information.</p> <p>Investigate circles to discover geometrical properties such as angle between radii and tangent is 90.</p>	<p>L6SSM3</p> <p>L7SSM1</p>	<p>Peer, self and teacher assessment</p>
Geometrical reasoning: Trigonometry	<p>To extend Pythagoras to find length of a line segment</p> <p>To understand and use trigonometric relationships</p>	<p>Using coordinates, find lengths of lines using Pythagoras' theorem.</p> <p>Understand SOHCAHTOA and be able to find missing angles and sides.</p> <p>Be able to solve trig problems which involve bearings.</p>		<p>Peer, self and teacher assessment</p>
Measures and mensuration	<p>To find rates of change (e.g. Kmph, feet per second etc)</p> <p>To interpret real life graphs</p>	<p>Finding rates of change given appropriate values.</p> <p>Interpret distance time graphs, create distance time graphs.</p> <p>Mobile phone value graphs task.</p>	L7SSM6	<p>Peer, self and teacher assessment</p>