



### KS3 – Year 9 Long Term Mapping

#### Subject Intent/ Aims: Subject Intent/ Aims

The mathematics curriculum aims to ignite curiosity and prepare students well for everyday life and future employment. Our mathematics curriculum gives students the opportunity to:

become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including break down problems into a series of simpler steps and persevering in seeking solutions.

can communicate, justify, argue and prove using mathematical vocabulary.

develop their character, including resilience, confidence and independence, so that they contribute positively to the life of the school, their local community and the wider environment.

The Year 9 curriculum prepares students with the skills and knowledge necessary to provide a solid foundation ahead of the GCSE programme of study.

Term:	Component:	Composite Skills:	Composite Knowledge:	Higher Order Knowledge:	Literacy / Numeracy / Cross Curricular links
<u>Unit 1</u> (Aut 1)	Number <ul style="list-style-type: none"> <li>Negative number</li> </ul> Algebra <ul style="list-style-type: none"> <li>Solving equations</li> </ul>	<ul style="list-style-type: none"> <li>Use a calculator and ICT</li> <li>Apply maths in real life context and solve problems</li> <li>Understand Mathematical language</li> <li>Identify misconceptions</li> <li>Display fluency</li> </ul>	<ul style="list-style-type: none"> <li>Directed number</li> <li>Form/solve expressions and equations</li> <li>Change the subject of the formulae</li> </ul>	Interpreting fractional and negative solutions	Substitution of scientific formulas.



	<ul style="list-style-type: none"> <li>• Coordinates and Graphs</li> <li>• Inequalities</li> </ul>	<ul style="list-style-type: none"> <li>• Reason mathematically including written communication skills</li> </ul>	<ul style="list-style-type: none"> <li>• Substitution into formulae and expressions, including scientific formulae</li> <li>• Plot coordinates in all four quadrants</li> <li>• Draw and interpret a linear graph</li> <li>• Real life graphs</li> <li>• Quadratic, cubic and reciprocal graphs</li> <li>• Gradients, y intercept and the equation of a line (<math>y=mx + c</math>)</li> <li>• Inequalities and number lines</li> <li>• Interpret inequalities (values represented by an inequality)</li> <li>• Solving Inequalities (linear)</li> <li>• Simultaneous Equations (linear)</li> </ul>		
<u>Unit 2</u> <u>(Aut 2)</u>	Number <ul style="list-style-type: none"> <li>• Special Number</li> <li>• Index Laws</li> </ul>	<ul style="list-style-type: none"> <li>• Use a calculator and ICT</li> <li>• Apply maths in real life context and solve problems</li> <li>• Understand Mathematical language</li> </ul>	<ul style="list-style-type: none"> <li>• Powers, Factors, Multiples, Primes and Roots</li> <li>• Indices (index rules)</li> <li>• Standard Form</li> </ul>	Fractional and negative indices	Orienteering (PE)



	<p>Geometry and Measure</p> <ul style="list-style-type: none"> <li>• Angles</li> <li>• Bearings</li> </ul> <p>Algebra</p> <ul style="list-style-type: none"> <li>• Sequences</li> </ul> <p>Data</p> <ul style="list-style-type: none"> <li>• Collecting data</li> <li>• Displaying data</li> </ul>	<ul style="list-style-type: none"> <li>• Identify misconceptions</li> <li>• Display fluency</li> <li>• Reason mathematically including written communication skills</li> </ul>	<ul style="list-style-type: none"> <li>• Angle facts (including angles in parallel lines)</li> <li>• Interior and Exterior angles of polygons (including regular polygons)</li> <li>• Bearings</li> <li>• Generate terms of a sequence and understand when a term is, or is not, part of a sequence</li> <li>• nth term of a linear sequence</li> <li>• Charts, tables and diagrams</li> </ul>		
<p><u>Unit 3</u> <u>(Spr 1)</u></p>	<p>Number</p> <ul style="list-style-type: none"> <li>• Fractions, decimals and percentages</li> </ul> <p>Ratio and Proportion</p> <ul style="list-style-type: none"> <li>• Ratio and Proportion</li> </ul>	<ul style="list-style-type: none"> <li>• Use a calculator and ICT</li> <li>• Apply maths in real life context and solve problems</li> <li>• Understand Mathematical language</li> <li>• Identify misconceptions</li> <li>• Display fluency</li> <li>• Reason mathematically including written communication skills</li> </ul>	<ul style="list-style-type: none"> <li>• Percentages</li> <li>• Percentage problems</li> <li>• Compound Interest and Depreciation</li> <li>• Scale drawings</li> <li>• Ratio notation</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>



			<ul style="list-style-type: none"> <li>• Equivalent ratios and fractions</li> <li>• Direct and inverse proportion</li> <li>• Real life graphs</li> </ul>		
<u>Unit 4</u> <u>(Spr 2)</u>	<p>Geometry and Measure</p> <ul style="list-style-type: none"> <li>• 2D and 3D Shape</li> <li>• Area, perimeter and volume</li> </ul> <p>Algebra</p> <ul style="list-style-type: none"> <li>• Simplifying</li> </ul>	<ul style="list-style-type: none"> <li>• Use a calculator and ICT</li> <li>• Apply maths in real life context and solve problems</li> <li>• Understand Mathematical language</li> <li>• Identify misconceptions</li> <li>• Display fluency</li> <li>• Reason mathematically including written communication skills</li> </ul>	<ul style="list-style-type: none"> <li>• Pythagoras' theorem</li> <li>• Trigonometry in right angled triangles (SOHCAHTOA)</li> <li>• Units of measure</li> <li>• Area, perimeter and volume, including compound shapes (including complex e.g. L shapes)</li> <li>• Problems involving area, perimeter and volume (including money problems)</li> </ul> <ul style="list-style-type: none"> <li>• Understand equivalence</li> <li>• Order of operations</li> <li>• Simplify and manipulate algebraic expressions</li> </ul>	Pythagoras in 3D	Architectural drawings (Engineering)



<p><u>Unit 5</u> <u>(Sum 1)</u></p>	<p>Number</p> <ul style="list-style-type: none"> <li>Integers</li> <li>Negative Numbers</li> <li>Fractions, decimals and percentages</li> </ul> <p>Probability</p> <ul style="list-style-type: none"> <li>Calculating probabilities</li> <li>Interpreting probabilities</li> </ul>	<ul style="list-style-type: none"> <li>Use a calculator and ICT</li> <li>Apply maths in real life context and solve problems</li> <li>Understand Mathematical language</li> <li>Identify misconceptions</li> <li>Display fluency</li> <li>Reason mathematically including written communication skills</li> </ul>	<ul style="list-style-type: none"> <li>Place value</li> <li>Rounding and estimation</li> <li>Equivalence and ordering of fractions, decimals and percentages</li> <li>Four operations (FDP)</li> <li>Four operations(BIDMAS)</li> </ul> <ul style="list-style-type: none"> <li>Exhaustive probabilities</li> <li>Single event probability</li> <li>Diagrams to calculate probabilities</li> <li>And/Or Rule</li> </ul>	<p>Tree diagrams (three stages)</p>	<p>Solving contextual problems (Science)</p>
<p><u>Unit 6</u> <u>(Sum 2)</u></p>	<p>Data</p> <ul style="list-style-type: none"> <li>Interpreting data</li> </ul> <p>Geometry and Measure</p> <ul style="list-style-type: none"> <li>Transformations</li> <li>Similarity</li> </ul>	<ul style="list-style-type: none"> <li>Use a calculator and ICT</li> <li>Apply maths in real life context and solve problems</li> <li>Understand Mathematical language</li> <li>Identify misconceptions</li> <li>Display fluency</li> <li>Reason mathematically including written communication skills</li> </ul>	<ul style="list-style-type: none"> <li>Compare data sets</li> <li>Averages</li> </ul> <ul style="list-style-type: none"> <li>Single and combined transformations</li> <li>Translation using 2D vectors</li> </ul>	<p>Negative scale factor enlargement</p>	<p>Interpreting data sources (Geography)</p>



	<ul style="list-style-type: none"> <li>• Construction</li> </ul>		<ul style="list-style-type: none"> <li>• Use column representation of vectors</li> <li>• Similar Shapes (lengths, area and volume))</li> <li>• Ruler and Compass constructions</li> </ul>		
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SMSC	British Values	RSHE	Assessment
<p><b>Cultural:</b> As part of enrichment activities, students will investigate the uses of symmetry and Art in Rangoli and Islamic art. Statistical analysis of data that will enable students to understand results and representations of data in the news.</p> <p><b>Spiritual:</b> Investigating the Fibonacci sequence. Using the findings to link to other curriculum areas e.g. the natural world.</p>	<p><b>Democracy.</b> Use of proportion, ratio, fractions decimals and percentages to describe ‘fairness’. Outside speaker delivering a two interactive sessions to key year groups on financial education. One session to ensure students understand the concept of credit and savings, the second to practice how to budget in later life as an adult.</p> <p><b>The rule of law.</b> Interpreting and analysing the accuracy of statistics. Does proportional representation in the</p>	<p><b>Moral.</b> Examples of the moral development in mathematics include: • The trip to Bletchley Park shows the work that mathematicians contributed in WWII to help stop the spread of the Nazi ideals, and help the allies win the war. Discussions to take place about Turin, his ideas and how and why he was persecuted due to his sexuality? • History of Maths day for year 7 to show the role of males and females in the development of mathematics through the ages.</p> <p><b>Social:</b> Participation in the UKMT Team Maths challenges across the year group. Participation in regional competitions pending performance. The art of origami and it’s links with mathematics.</p>	<p><b>Summative</b> Homework tasks to assess understanding in each area of the curriculum. Half termly assessments to measure progress and areas for improvement in topics covered so far. End of year examination covering all content.</p> <p><b>Formative</b></p>



	UK electoral system ensure a 'fair' result?		Frequent WWW/EBI feedback from the class teacher. Self/peer/teacher 'live' marking during lessons to adapt content during a lesson to keep the level of challenge high.
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<p><b><u>Adapted Curriculum Content:</u></b>  Lower ability:  <ul style="list-style-type: none"> <li>Order positive and negative integers</li> </ul> Use the four operations on positive and negative integers  Higher ability:  <ul style="list-style-type: none"> <li>Use the four operations on positive and negative numbers (including decimals and fractions)</li> <li>Solve problems involving negative numbers</li> </ul> </p>	<p><b><u>Adapted Curriculum Content:</u></b>  Lower ability:  <ul style="list-style-type: none"> <li>Understand the word percentages.</li> <li>Find simple percentages of amounts (50%, 25%, 10%, 1%) without a calculator</li> </ul> Use the “build up” method to find an percentage of an amount.  Higher ability:  <ul style="list-style-type: none"> <li>Increase and decrease amounts by percentages.</li> <li>Problem solving: e.g. If 10% is £40, what is 100%</li> <li>Calculate simple interest and begin to understand compound interest as repeated percentage change</li> </ul> </p>	<p><b><u>Adapted Curriculum Content:</u></b>  Lower ability:  <ul style="list-style-type: none"> <li>round numbers and measures to an appropriate degree of accuracy (10s, 100s, decimal places)</li> <li>use approximation through rounding to estimate answers</li> </ul> Higher ability:  <ul style="list-style-type: none"> <li>Order a mixture of fractions, decimals and percentages.</li> <li>Solve problems involving a range of fractions, decimals and percentages.</li> </ul> </p>
<p><b><u>Adaptive Implementation Practices:</u></b>  White Rose units – Year 6 content/website  SATS content (Year 6 standard, Year 6 Advanced)  Taskmaster dominoes</p>	<p><b><u>Adaptive Implementation Practices:</u></b>  White Rose units – Year 6 content/website  Taskmaster dominoes content (Year 6 standard, Year 6 Advanced)</p>	<p><b><u>Adaptive Implementation Practices:</u></b>  White Rose units – Year 6 content/website  SATS content (Year 6 standard, Year 6 Advanced)</p>