

Year Group	Term One	Term Two	Term Three	Term Four	Term Five	Term Six
Intent of Study	<p>Year 7 Mathematics at Salisbury Academy for Inspirational Learning (SAIL)                      The Year 7 Mathematics curriculum prepares all students for secondary mathematics with a heavy numeracy focus, together with a tentative introduction to algebra. Our students are studying this because a fluency with numbers is necessary to fully access the rest of the curriculum as well as to succeed in life. All students complete a baseline assessment and will follow a curriculum appropriate to their current ability level, but with no ceiling on their attainment. The curriculum has been sequenced in this way because good number skills underpin everything else within secondary mathematics and provides an opportunity to identify and close gaps from KS2. Much of the knowledge and skills from the year 7 curriculum are prerequisite for year 8 and beyond. Every lesson starts with an activity based around retrieval to reinforce previous learning.</p>					
Year 7	<p>Year 7 Themes of Study:                      Place value: This is required in most areas of mathematics. Place value also helps understand the meaning of number and order of numbers. Decimals are used commonly in everyday life, for example money and measurement. Rounding: Students will be asked to round their answers to a given number of decimal places or significant figures across a range of topics in their 5-year journey. An understanding of this is also important for bounds at GCSE. Negative numbers: Students should be equally competent and fluent in dealing with both positive and negative numbers. This is vital so as not to create barriers to other topics higher up the school. Conversions: Students must be able to convert between different units in order to solve problems in a range of contexts including area, volume, capacity time and currency. BIDMAS: Without an understanding of BIDMAS, students would conduct calculations in the wrong order. It is also an opportunity to explore use of a calculator. Multiples and factors: Factors and multiples are especially important in working with expanding, factorising and working with fractions as well as finding numbers in patterns. Index laws: Index notation is a short way of writing a number that is multiplied by itself several times, e.g. the number of stars in the Milky Way is around 10<sup>11</sup>. Knowledge of index laws is required for standard form. Sequences: Learning about sequences helps students in spotting patterns and interleaves algebra through finding the position-to-term rule for sequences and generating sequences by substitution. You can use sequences to perform a piece of music or do a kata in martial arts. Knowing how a pattern continues can help us to know what to expect, for example when planets are going to appear in the night sky. Coordinates: Can help with map reading, cross curricular with Geography and PE. This will have been covered in KS2 but allows for extension to, for example, midpoints. Linear graphs: Closely related to both coordinates and sequences this will also help to develop graph plotting skills for use in science, for example. This also provides an opportunity to interleave with conversion, studied earlier in the year, through the use of conversion graphs. Fractions, and decimals: Fractions are seen in everyday life, for example, recipes may contain fractional amounts, like 1/2 teaspoon. When scaling a recipe up you need to multiply fractions. Dividing by fractions helps you work out how many 1/3 litre glasses you can fill from a 2-litre bottle. Decimals are used commonly in everyday life, for example money and measurement</p>					
	<ul style="list-style-type: none"> <li>Place Value</li> <li>Addition/Subtraction</li> <li>Multiplication</li> <li>Division</li> <li>Rounding and estimating</li> <li>Order of operations</li> <li>Metric Units</li> </ul>	<ul style="list-style-type: none"> <li>Types of number</li> <li>Factors and multiples</li> <li>Introduction to algebra</li> <li>Expanding single brackets</li> <li>Functions</li> </ul>	<ul style="list-style-type: none"> <li>Properties of shape</li> <li>Angles - drawing/measuring/point/line/opposite</li> <li>Angles – shapes</li> <li>Simplify/Equivalent/Order Fractions</li> <li>Calculate with fractions</li> </ul>	<ul style="list-style-type: none"> <li>Calculate with fractions</li> <li>Area and perimeter of quadrilaterals</li> <li>Area of triangles and trapezia</li> <li>Types of sequence</li> </ul>	<ul style="list-style-type: none"> <li>Types of sequence</li> <li>Linear sequences</li> <li>Mathematical movement - Graphs</li> <li>Straight line graphs</li> <li>Measuring data</li> </ul>	<ul style="list-style-type: none"> <li>Presentation of data (1)</li> <li>Presentation of data (2)</li> <li>Construction</li> <li>Review Point</li> </ul>
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Intent of Study	<p>Year 8 Themes of Study:                      Fractions: Fractions are seen in everyday life, for example, recipes may contain fractional amounts, like 1/2 teaspoon. When scaling a recipe up you need to multiply fractions. Dividing by fractions helps you work out how many 1/3 litre glasses you can fill from a 2-litre bottle. Percentages: Percentages are used all over the real world. Pupils need to understand what a percentage is, how to work with them and the common misconceptions associated with them. E.g. Why will a 40% decrease not undo a 40% increase? This also links in with proposed enrichment day activities on finances and taxes. Ratio and proportion: Ratio and proportion are all around us. A glass of squash needs the right ratio of squash to water, but what is the difference between a ratio and a fraction? How to you convert between the two? This topic will also lay the foundation for inverse proportion at GCSE. Collecting like terms: Simplifying makes algebra less complicated and easier to use. This will often be interleaved into another question, e.g. 'Give your answer in its simplest form.' Substitution: Tentatively introduced in year 7 through sequences and linear graphs, we formally teach substitution in year 8. This also has real-life applications such as substituting into scientific formulae. At the most basic level this is following a 'rule' such as 'I start with 3, I multiply it by 2 and I add 5'. Expressions: An expression is a 'statement' in algebra. E.g. If I square has sides of length x then an expression for the perimeter of the rectangle would be 4x. This prepares students for forming and solving equations at GCSE. Expanding and factorising: As an extension to expanding single brackets in year 7 double brackets will be introduced in year 8. Expanding brackets is multiplying two algebraic expressions together, factorising is the opposite of expanding. Changing the subject of a formula: Cross curricular with science. In a formula e.g. speed = distance/ time, you may be given the distance and speed and have to rearrange the formula in order to calculate the time taken. Required at GCSE also to find the inverse of a function, solve simultaneous equations and derive iterative formulae. Solving equations: Knowing how to solve equations helps you solve other problems such as finding one mass when given another. Engineers building large structures solve many equations to make sure that the structure is strong enough and will not fall. Required at GCSE to solve simultaneous equations. Probability: Calculating probabilities can help you work out is games are fair. Modelling probabilities by experimenting can help scientists predict the outcomes of random events. Car insurers use probability to assess how likely a driver is to have an accident. Properties of shapes: This helps students identify and organise visual information. Learning about shapes also helps students understand other signs and symbols. Angles: Engineers need to know about angle properties between parallel lines when designing buildings like the Shard in London. Knowing the angles in a triangle helps pinpoint the exact location of an aircraft. Interleaving with displaying data in pie charts is important here. Nets: Supports students in being able to visualise shapes, work out the number of faces, vertices and edges. Supports students in being able to calculate surface area. Nets are required for packaging. Food manufacturers look at the nets for food cartons very carefully in order to work out the most efficient way to cut the cardboard. Plans and elevations: Used in jobs such as engineering, design and architecture. If you apply for planning permission to build a new house or an extension, you need to send plan and elevation drawings of the new building to the council for approval. Construction and loci: Pupils often struggle with the dexterity needed to use compasses and early experience of this is valuable. Students need to be able to construct circles, angle bisectors, perpendicular bisectors, accurate drawings of triangles and angles. Scale drawing: Scale diagrams have a range of applications including maps, building plans and scale models. An understanding of scale drawings is important at GCSE and can also be interleaved with conversions studied in year 7.</p>					
Year 8	<ul style="list-style-type: none"> <li>Multiplication/Division of Decimals</li> <li>FDP (1)</li> <li>FDP (2)</li> <li>Percentages</li> <li>Simplifying ratios inc. conversion to fractions</li> <li>Sharing into a ratio</li> <li>Ratio problems including FDP</li> </ul>	<ul style="list-style-type: none"> <li>Expressions and equivalence</li> <li>Substitution into formulae</li> <li>Expanding pairs of brackets</li> <li>Factorisation - common factors</li> <li>One step/Two step equations</li> </ul>	<ul style="list-style-type: none"> <li>Rearranging formulae</li> <li>Linear equation with unknowns on both</li> <li>Construct and solve linear equations</li> <li>Construct and solve linear equations - properties of shapes</li> <li>Angles in parallel lines</li> </ul>	<ul style="list-style-type: none"> <li>Bearings</li> <li>Scale conversions</li> <li>Percentage change</li> <li>Simple interest</li> </ul>	<ul style="list-style-type: none"> <li>Probability</li> <li>Probability</li> <li>Circumference of circles</li> <li>Area of circles</li> <li>Properties of 3D shapes</li> </ul>	<ul style="list-style-type: none"> <li>Volume of shapes</li> <li>Plans and elevations</li> <li>Constructions</li> </ul>
Year Group	Term One	Term Two	Term Three	Term Four	Term Five	Term Six
Intent of Study	<p>Year 9 Themes of Study                      Probability: Calculating probabilities can help you work out is games are fair. Modelling probabilities by experimenting can help scientists predict the outcomes of random events. Car insurers use probability to assess how likely a driver is to have an accident. Averages: Averages are useful as they summarise a large amount of data into a single value making it easier to compare data. For example, to see which mobile phone we want we may want to take into consideration the mean battery life of each phone. Collecting data: Calculations involving frequency tables and grouped data are introduced here. This is good preparation for GCSE as there are frequent misconceptions with regards averages from frequency tables. Presenting data: Displaying data in a graph makes it easier to interpret. For example, if a bar chart is used to display the hours of sunshine per day in a number of holiday destinations, you can see at a glance which</p>					

	destination is the sunniest. Students will need an understanding of graphs as they are used everywhere in life for example to show house price change as you move further away from the city. Inequalities: Inequalities are used to compare quantities. This topic is closely interleaved with solving equations and can also be used to express upper and lower bounds for an amount. Pythagoras and trigonometry: Lots of jobs require the use of Pythagoras and trigonometry (engineers, builders, architects, landscapers etc.) It is something that will reoccur multiple times through GCSE and A-level study.					
Year 9	<ul style="list-style-type: none"> <li>Conversions</li> <li>Index Laws</li> <li>Standard Form</li> <li>Standard Form (2)</li> <li>Rounding and Bounds</li> <li>Inequalities</li> <li>Direct Proportion</li> </ul>	<ul style="list-style-type: none"> <li>Inverse Proportion</li> <li>Compound Units</li> <li>Drawing Graphs (1) and (2)</li> <li>Equation of a line</li> </ul>	<ul style="list-style-type: none"> <li>Length of unit</li> <li>Real Life Graphs</li> <li>Angles in polygons (1) and (2) 8</li> <li>Similarity and congruence 4 Unit</li> <li>Pythagoras'</li> </ul>	<ul style="list-style-type: none"> <li>Trigonometry</li> <li>Venn Diagrams (including set notation)</li> <li>Two-way tables</li> <li>Tree Diagrams</li> </ul>	<ul style="list-style-type: none"> <li>Factorising quadratics</li> <li>Quadratic Sequences</li> <li>Frequency tables</li> <li>Stem and Leaf</li> <li>Scatter graphs</li> </ul>	<ul style="list-style-type: none"> <li>Inequalities</li> <li>Use correct notation to show inclusive and exclusive inequalities</li> <li>Solve simple linear inequalities</li> <li>Write down whole numbers which satisfy and inequality</li> <li>Represent inequalities on a number line</li> <li>Solve two sided inequalities</li> </ul>
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Intent of Study	<p>Year 10 Themes of study</p> <p>Presenting data: Displaying data in a graph makes it easier to interpret. For example, if a bar chart is used to display the hours of sunshine per day in a number of holiday destinations, you can see at a glance which destination is the sunniest. Students will need an understanding of graphs as they are used everywhere in life for example to show house price change as you move further away from the city. Inequalities: Inequalities are used to compare quantities. This topic is closely interleaved with solving equations and can also be used to express upper and lower bounds for an amount. Pythagoras and trigonometry: Lots of jobs require the use of Pythagoras and trigonometry (engineers, builders, architects, landscapers etc.) It is something that will reoccur multiple times through GCSE and A-level study. Probability: Calculating probabilities can help you work out is games are fair. Modelling probabilities by experimenting can help scientists predict the outcomes of random events. Car insurers use probability to assess how likely a driver is to have an accident. Averages: Averages are useful as they summarise a large amount of data into a single value making it easier to compare data. For example, to see which mobile phone we want we may want to take into consideration the mean battery life of each phone. Nets: Supports students in being able to visualise shapes, work out the number of faces, vertices and edges. Supports students in being able to calculate surface area. Nets are required for packaging. Food manufacturers look at the nets for food cartons very carefully in order to work out the most efficient way to cut the cardboard. Plans and elevations: Used in jobs such as engineering, design and architecture. If you apply for planning permission to build a new house or an extension, you need to send plan and elevation drawings of the new building to the council for approval. Construction and loci: Pupils often struggle with the dexterity needed to use compasses and early experience of this is valuable. Students need to be able to construct circles, angle bisectors, perpendicular bisectors, accurate drawings of triangles and angles.</p>					
Year 10	<b>Fractions, ratio and Percentages</b> <ul style="list-style-type: none"> <li>Percentage Changes</li> <li>Direct and inverse proportion</li> <li>Recurring decimals</li> </ul>	<b>Algebra</b> <ul style="list-style-type: none"> <li>Solving Linear Equations</li> <li>Expanding and factorising</li> <li>CTS (higher only)</li> <li>Solving linear simultaneous equations</li> <li>Solving quadratic simultaneous equations (higher only)</li> </ul>	<b>Pythagoras and Trigonometry</b> <ul style="list-style-type: none"> <li>SOHCAHTOA</li> <li>Sine and Cosine rule (higher only)</li> </ul>	<b>Displaying Data</b> <ul style="list-style-type: none"> <li>Averages</li> <li>Averages from grouped data</li> <li>Stem and Leaf Diagrams</li> <li>Scatter Graphs</li> <li>Frequency Polygons</li> <li>Cumulative Frequency (higher only)</li> <li>Pie charts</li> <li>Pictograms</li> <li>Histograms (higher only)</li> </ul>	<b>Shape and Space</b> <ul style="list-style-type: none"> <li>Area and Volume</li> <li>Compound shapes</li> <li>Surface area</li> <li>Nets 10</li> <li>Transformations and Constructions</li> </ul>	<b>Inequalities</b> <ul style="list-style-type: none"> <li>On a number line</li> <li>Solving</li> <li>Regions on a graph</li> </ul>
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Intent of Study	<p>The SAIL Year 11 Mathematics curriculum aims to prepare pupils for their final examinations, further study or the world of work. The curriculum varies according to the needs of individual students, but most students will follow the plan below. Classroom starter activities focus on recall of previous learning which is then built upon in the main section of the lesson. Students complete regular practice papers both online and paper based. Enrichment opportunities available for students include regular maths challenge problems, World Pi Day and access to online platforms such as NCFE for all. It is the aim that new content can be finished by January to allow for a bespoke curriculum for groups based on areas of weakness identified on the mock in November. Revision of all topics from the year 7-11 curriculum as appropriate.</p>					
Year 11	<b>Similarity and Congruency</b> <ul style="list-style-type: none"> <li>SAS, ASA, SSS, RHS</li> <li>Transformations</li> </ul>	<b>Circles</b> <ul style="list-style-type: none"> <li>Circle theorems (higher only)</li> <li>Area and circumference</li> <li>Arcs and Sectors</li> </ul>	<b>Vectors</b> <ul style="list-style-type: none"> <li>Vectors as a concept</li> <li>Column vectors</li> </ul>	<b>Algebraic proof</b> <ul style="list-style-type: none"> <li>Recap of algebra</li> <li>Proof</li> </ul>	Revision and preparation.	