

**The Dean Academy 5 year Implementation overview:**

Through the curriculum in Maths we aim to develop independent and resilient pupils who will have the skills required to become successful members of the community and gain qualifications that enable them to progress along their chosen path. Our aim is that pupils become fluent in the fundamentals of mathematics, develop strong problem-solving skills and can apply their skills and knowledge to a range of context including in other subject areas such as science and geography.

We follow the 5-year White Rose Maths scheme of work. The SOW is well designed to fit with both the department and whole school goals of developing a research-informed mastery curriculum. The SOW is designed to be delivered in small steps thus allowing for clear detailed instructions and explanations.

The SOW is designed to build on from KS2 and prepare pupils for KS5 and above. The emphasis is on the fluency of the basics and depth of learning rather than breadth. Pupils are challenged through problem solving, interleaving and application of skills. Pupils who are not fluent consolidate their learning through extra practice in the form of bridging tasks, reteaching where necessary and out of class Sparx Maths activities.

		TERM 1	TERM 2	TERM 3	TERM 4	TERM 5	TERM 6
Year 7	Knowledge	<b>Algebraic Thinking</b> <ul style="list-style-type: none"> <li>- Sequences</li> <li>- Understand and use algebraic notation</li> <li>- Equality and Equivalence</li> </ul>	<b>Place value &amp; Proportion</b> <ul style="list-style-type: none"> <li>- Place value and ordering integers and decimals</li> <li>- Fractions, decimals and % equivalence</li> </ul>	<b>Applications of Number</b> <ul style="list-style-type: none"> <li>- Solving problems with addition and subtraction</li> <li>- Solving problems with multiplication and division</li> <li>- Fractions and % of amounts</li> </ul>	<b>Directed Number</b> <ul style="list-style-type: none"> <li>- Operations with directed number</li> <li>- Fractional thinking</li> <li>- Addition and subtraction of fractions</li> </ul>	<b>Lines and Angles</b> <ul style="list-style-type: none"> <li>- Constructing, measuring and using geometric notation</li> <li>- Geometric reasoning</li> </ul>	<b>Reasoning with number</b> <ul style="list-style-type: none"> <li>- Number sense</li> <li>- Sets &amp; probability</li> <li>- Prime numbers and proof</li> </ul>
	Skills & Concepts	<ul style="list-style-type: none"> <li>- Describing and continuing linear and non linear sequences in number and diagrammatic form</li> <li>- Compare numerical and graphical forms</li> <li>- Using single and multi function machines</li> <li>- Using and interpreting algebraic notation</li> <li>- Understand and use inverse operations</li> <li>- Use form &amp; substitute into sequences</li> <li>- Represent functions graphically</li> <li>- Understand equality and use fact families</li> <li>- Form and solve one step equations</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise and use place integers up to 1 billion</li> <li>- Recognise and use place decimals to at least 1/100</li> <li>- Work our intervals and use number lines</li> <li>- Compare and order numbers</li> <li>- Use ordered number lists to find range and median</li> <li>- Round to powers of 10</li> <li>- Round to 1 significant figure</li> <li>- Represent 1/10 and 1/100 on a number line</li> <li>- Interchange between fractions, decimals and percentages for multiples of 1/10 and ¼ &amp; convert between other</li> </ul>	<ul style="list-style-type: none"> <li>- Use mental and formal written methods of addition with integers &amp; decimals</li> <li>- Solve perimeter and money problems</li> <li>- Solve problems in bar charts and line charts</li> <li>- multiply by 10, 100, 1000, 0.1, 0.01</li> <li>- Convert metric units</li> <li>- Use mental and formal written methods of multiplication and division</li> <li>- Find HCF and LCM</li> <li>- Find the mean of a set of numbers</li> <li>- Evaluate areas of triangles, parallelograms and rectangles</li> </ul>	<ul style="list-style-type: none"> <li>- Order directed numbers</li> <li>- Use a calculator with directed number</li> <li>- Solve 2 step calculations with and without a calculator</li> <li>- Use order of operations</li> <li>- Represent 1/10 and 1/100 on diagrams &amp; number lines</li> <li>- Convert mixed number and improper fractions</li> <li>- Add and subtract fractions with – same denominator, 1 denominator multiple of another, different denominators</li> <li>- Add and subtract fractions &amp; decimals</li> </ul>	<ul style="list-style-type: none"> <li>- Understand and use letting and labelling notation for angles</li> <li>- Draw &amp; measure lines and angles accurately</li> <li>- Classify angles</li> <li>- Identify and draw parallel and perpendicular lines</li> <li>- Recognise types of triangles, quadrilateral and other polygons</li> <li>- Construct triangles given SSA, SAS, ASA</li> <li>- Draw and interpret pie charts</li> <li>- Calculate and use angles at a point, on straight lines and opposite angles</li> <li>- Calculate missing angles in triangles and quadrilaterals</li> </ul>	<ul style="list-style-type: none"> <li>- Develop mental arithmetic strategies</li> <li>- Use known facts in derivation</li> <li>- Evaluate algebraic expressions</li> <li>- Use estimation</li> <li>- Understand and use set notation</li> <li>- Draw and interpret venn diagrams</li> <li>- Understand and use language of probability</li> <li>- Calculate the probability of a single event</li> <li>- Know and use the sum of probabilities of an event = 1</li> <li>- Recognise prime, square and triangle numbers</li> <li>- Express a number as a product of prime factors</li> </ul>

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		<ul style="list-style-type: none"> <li>- Understand equivalence</li> </ul>	<ul style="list-style-type: none"> <li>fractions, decimals and percentages</li> <li>- Interpret pie charts and equivalent fractions</li> </ul>	<ul style="list-style-type: none"> <li>- Calculate simple fractions and percentages with and without a calculator</li> <li>- Find simple fractions and percentages of amounts</li> <li>- use order of operation</li> </ul>			<ul style="list-style-type: none"> <li>- Powers and roots</li> <li>- Make and test conjectures</li> <li>- Understand and use counterexamples</li> </ul>
Common Misconceptions	<ul style="list-style-type: none"> <li>- There is a common difference between the terms of a sequence.</li> <li>- <math>2a</math> where <math>a = 3</math> equals 23</li> <li>- Not using standard notation when working with algebra e.g. <math>a^2</math> instead of <math>2a</math>, <math>2xa</math> instead of <math>2a..</math></li> <li>- Adding or subtracting non-like terms e.g. <math>x^2</math> and <math>x</math></li> </ul>	<ul style="list-style-type: none"> <li>- When using number lines counting the number of lines instead of the number of intervals.</li> <li>- Not using place holders (zeros) when writing numbers.</li> <li>- Not understanding that 0.5 is bigger than 0.355</li> <li>- When converting percentages to decimals not dividing by 100 so thinking <math>8\% = 0.8</math></li> </ul>	<ul style="list-style-type: none"> <li>- When using column methods not lining the sum up using place value columns</li> <li>- When multiplying by 10 (100,1000) just adding a zero e.g. <math>2.3 \times 10 = 2.30</math></li> <li>- When dividing by 10 (100,1000) just taking away the end digit e.g. <math>45 \div 10 = 4</math></li> <li>- Thinking that the formula for area is the same for all shapes.</li> </ul>	<ul style="list-style-type: none"> <li>- Using 'rules of negatives' incorrectly with adding and subtracting e.g. <math>-5-4=9</math></li> <li>- Adding or subtracting fractions without finding a common denominator</li> <li>- When adding/subtracting fractions adding/subtracting the denominators together</li> <li>- When getting a common denominator only multiplying the denominator and not the numerator</li> </ul>	<ul style="list-style-type: none"> <li>- Using the wrong scale on the protractor</li> <li>- Trying to use a protractor on diagrams that are not drawn to scale</li> <li>- Mis-remembering angle facts</li> </ul>	<ul style="list-style-type: none"> <li>- Not rounding to 1 sig fig when estimating</li> <li>- Thinking that 1 is a prime number</li> <li>- Writing a probability as a ratio</li> </ul>	
Links to prior learning	<ul style="list-style-type: none"> <li>- Developing and spotting patterns</li> <li>- 4 operations</li> <li>- Inverse operations</li> </ul>	<ul style="list-style-type: none"> <li>- Place value</li> <li>- Ordering numbers</li> <li>- Reading and writing numbers</li> </ul>	<ul style="list-style-type: none"> <li>- 4 operations</li> <li>- Place value</li> </ul>	<ul style="list-style-type: none"> <li>- Negative numbers</li> <li>- Equivalent fractions</li> <li>- Simplifying fractions</li> <li>- Algebraic notation</li> <li>- Converting mixed numbers and improper fractions</li> </ul>	<ul style="list-style-type: none"> <li>- Using a ruler, protractor and compass</li> <li>- Properties of shapes including the different types of triangles</li> <li>- Classification of angles</li> </ul>	<ul style="list-style-type: none"> <li>- Prime numbers</li> <li>- Factors and multiples</li> <li>- Rounding</li> <li>- Place value</li> </ul>	
Links to future learning	<ul style="list-style-type: none"> <li>- All future algebra topics</li> <li>- Nth term</li> <li>- Quadratic sequences</li> </ul>	<ul style="list-style-type: none"> <li>- Percentages</li> <li>- Fractions</li> <li>- Decimals</li> <li>- Most future topics</li> </ul>	<ul style="list-style-type: none"> <li>- Product of prime factors</li> <li>- More complex geometry</li> <li>- Most future topics</li> </ul>	<ul style="list-style-type: none"> <li>- Most future topics</li> <li>- Solving more complex equations</li> <li>- Solving problems with fractions</li> </ul>	<ul style="list-style-type: none"> <li>- Angles and parallel lines</li> <li>- Complex angle problems</li> </ul>	<ul style="list-style-type: none"> <li>- Probability with more than 1 event</li> <li>- Probability trees</li> <li>- HCF/LCM using prime factors</li> </ul>	

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						- Interior/exterior angles	- Applications of Venn diagrams and set notation	
	Assessment	At the end of each unit students will sit a short, closed book assessment during a lesson.						
		Students will sit mid- year and end of year exams, these exams will cover any content taught up to that point including topics from previous years.						

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		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 8	Knowledge	<b>Proportional Reasoning</b> <ul style="list-style-type: none"> <li>- Ratio and scale</li> <li>- Multiplicative change</li> <li>- Multiplying and dividing fractions</li> </ul>	<b>Representations</b> <ul style="list-style-type: none"> <li>- Working in the cartesian plane</li> <li>- Representing data</li> <li>- Tables and probability</li> </ul>	<b>Algebraic Techniques</b> <ul style="list-style-type: none"> <li>- Brackets, equations and inequalities</li> <li>- Sequences</li> <li>- Indices</li> </ul>	<b>Developing Number</b> <ul style="list-style-type: none"> <li>- Fractions and percentages</li> <li>- Standard index form</li> <li>- Number sense</li> </ul>	<b>Developing Geometry</b> <ul style="list-style-type: none"> <li>- Angles in parallel lines and polygons</li> <li>- Area of trapezia and circles</li> <li>- Line symmetry and reflection.</li> </ul>	<b>Reasoning with Data</b> <ul style="list-style-type: none"> <li>- The data handling cycle</li> <li>- Measures of location</li> </ul>
	Skills and Concepts	<ul style="list-style-type: none"> <li>- Understand ratio and its link to multiplication</li> <li>- Use ratio notation</li> <li>- Reduce ratios to simplest form</li> <li>- Solve ratio problems</li> <li>- Calculate the circumference of a circle</li> <li>- Use scale factors, linking to ratio, to solve simple direct proportion problems</li> <li>- Convert between currencies, including using graphs</li> <li>- Draw and interpret scale diagrams and maps</li> <li>- Multiply and divide a fraction by an integer</li> <li>- Multiply and divide a fraction by a fraction</li> <li>- Understand and use the reciprocal</li> </ul>	<ul style="list-style-type: none"> <li>- Plot and interpret straight line graphs</li> <li>- Understand and use the equation of a straight line, including lines parallel to the axis</li> <li>- Make links between direct proportion and straight lines of the form <math>y=kx</math></li> <li>- Model situations by translating them into expressions, formula and graphs</li> <li>- Draw and interpret scatter graphs</li> <li>- Understand correlation</li> <li>- Draw and use lines of best fit</li> <li>- Understand grouped and ungrouped, discrete and continuous data</li> <li>- Design and use one and two-way tables</li> <li>- List outcomes using sample space diagrams for one and two events</li> <li>- Find probabilities using tables and venn diagrams</li> </ul>	<ul style="list-style-type: none"> <li>- Expand and factorise into single brackets</li> <li>- Form and use expressions, formula and identities</li> <li>- Form and solve equations and inequalities with and without brackets</li> <li>- Distinguish between equations, expressions, formula and identities</li> <li>- Generate sequences using more complex rules e.g. with brackets and squared terms, both in words and algebraically</li> <li>- Form expressions using indices</li> <li>- Understand and use the addition and subtraction rules</li> </ul>	<ul style="list-style-type: none"> <li>- Develop understanding of fractions, decimals and percentages</li> <li>- Evaluate percentage increase/decrease</li> <li>- Use multipliers to solve percentage problems</li> <li>- Express one number as a percentage of another</li> <li>- Convert between numbers on ordinary and standard form</li> <li>- Compare numbers given in standard form</li> <li>- Calculate with numbers given in standard form, with and without a calculator</li> <li>- Develop mental strategies</li> <li>- Convert between metric measures and units</li> <li>- Estimation, including rounding to a given number of decimal places</li> <li>- Use the order of operations.</li> </ul>	<ul style="list-style-type: none"> <li>- Review yr7 angle rules</li> <li>- Understand and use parallel lines and angles</li> <li>- Revisit geometric notation</li> <li>- Work out angles in special quadrilaterals</li> <li>- Find and use the sum of interior and exterior angles of a polygon</li> <li>- Prove simple geometric facts</li> <li>- Review area of shapes covered in year 7</li> <li>- Calculate the area of a trapezium</li> <li>- Calculate the area of a circle, and the area of parts of a circle</li> <li>- Use significant figures</li> <li>- Calculate the area of compound shapes</li> <li>- Recognise line symmetry in polygons and other shapes</li> <li>- Reflect shapes in horizontal, vertical and diagonal lines</li> </ul>	<ul style="list-style-type: none"> <li>- Understand and use primary and secondary sources of data</li> <li>- Collect data, including using questionnaires</li> <li>- Interpret and construct statistical diagrams, including multiple bar charts</li> <li>- Construct and interpret pie charts</li> <li>- Compare distributions using charts</li> <li>- Identify misleading graphs</li> <li>- Revisit median and mean including finding the total given the mean</li> <li>- Find the mean of grouped data</li> <li>- Work out the mode and modal class</li> <li>- Choose the appropriate average</li> <li>- Comparing distributions using measures</li> </ul>
	Common Misconceptions	<ul style="list-style-type: none"> <li>- Choosing the correct calculation to calculate a scale factor</li> </ul>	<ul style="list-style-type: none"> <li>- Incorrectly calculating with negative numbers</li> </ul>	<ul style="list-style-type: none"> <li>- Not find the HCF when factorising</li> </ul>	<ul style="list-style-type: none"> <li>- Not dividing by 100 when converting percentages to decimals e.g.</li> </ul>	<ul style="list-style-type: none"> <li>- Mis-identifying parallel line facts</li> <li>- Mis-remembering angle facts</li> </ul>	<ul style="list-style-type: none"> <li>- Incorrectly using a protractor</li> <li>- On Pie charts always measuring</li> </ul>

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		<ul style="list-style-type: none"> <li>- Writing a ratio in the wrong order</li> <li>- Not using the correct notation</li> <li>- Finding a common denominator when multiplying or dividing fractions.</li> </ul>	<ul style="list-style-type: none"> <li>- Mislabelling x and y axis or confusing x and y co-ordinates</li> <li>- Connecting points of a scatter graph</li> <li>- Always drawing the line of best fit from the origin</li> </ul>	<ul style="list-style-type: none"> <li>- When expanding not multiplying all the terms</li> <li>- Not using the correct notation</li> <li>- Mis-identifying like terms e.g. <math>x</math> and <math>x^2</math></li> </ul>	<ul style="list-style-type: none"> <li>- <math>5\%=0.5</math> or <math>120\%=0.120</math></li> <li>- When multiplying by 10 (100,1000) just adding a zero e.g. <math>2.3 \times 10 = 2.30</math></li> <li>- When dividing by 10 (100,1000) just taking away the end digit e.g. <math>45 \div 10 = 4</math></li> <li>- Thinking addition must come before subtraction and division must come before multiplication.</li> </ul>	<ul style="list-style-type: none"> <li>- Confusing diameter and radius</li> <li>- Mis-identifying shapes</li> <li>- Not using the correct area formula for the shape</li> </ul>	<ul style="list-style-type: none"> <li>- the angle from the same line.</li> <li>- Not calculating angles when drawing a pie chart</li> <li>- Not using an appropriate scale on a bar chart</li> <li>- Mis-interpretation of averages from frequency tables and grouped frequency tables</li> </ul>
Links to prior learning	<ul style="list-style-type: none"> <li>- Direct proportion problems</li> <li>- Money calculations</li> <li>- Fractions</li> </ul>	<ul style="list-style-type: none"> <li>- Co-ordinates</li> <li>- Single event probability</li> <li>- Venn diagrams</li> <li>- Substitution</li> </ul>	<ul style="list-style-type: none"> <li>- Simplifying expressions</li> <li>- Algebraic notation</li> <li>- Like terms</li> <li>- Linear and geometric sequences</li> <li>- HCF</li> </ul>	<ul style="list-style-type: none"> <li>- Rounding</li> <li>- Multiplying and dividing by 10, 100,1000</li> <li>- Converting F/D/P</li> </ul>	<ul style="list-style-type: none"> <li>- Names and properties of shapes</li> <li>- Basic angle facts</li> <li>- Parallel and perpendicular lines</li> <li>- Formulas for area</li> </ul>	<ul style="list-style-type: none"> <li>- Averages</li> <li>- Bar charts</li> <li>- Pictograms</li> </ul>	
Links to future learning	<ul style="list-style-type: none"> <li>- Calculating and solving problems with fractions</li> <li>- Applications of ratio</li> <li>- n:1</li> <li>- Combining ratios</li> <li>- Ratios and algebra</li> </ul>	<ul style="list-style-type: none"> <li>- <math>Y=mx+c</math></li> <li>- Co-ordinate geometry</li> <li>- Gradients and intercepts</li> <li>- Non-linear graphs</li> <li>- Probability trees</li> </ul>	<ul style="list-style-type: none"> <li>- Expanding a factorising quadratics</li> <li>- Algebraic manipulation</li> <li>- Solving equations</li> <li>- Quadratic sequences</li> </ul>	<ul style="list-style-type: none"> <li>- Reverse percentages</li> <li>- Compound interest and depreciation</li> <li>- Growth and decay</li> <li>- Calculating with numbers in standard form</li> </ul>	<ul style="list-style-type: none"> <li>- Arcs and sectors</li> <li>- Circle theorems</li> <li>- Surface area</li> <li>- Volume</li> <li>- Bearings</li> </ul>	<ul style="list-style-type: none"> <li>- Estimated mean</li> <li>- Cumulative frequency and box plots</li> <li>- Interpreting data</li> </ul>	
Assessment	<p>At the end of each unit students will sit a short, closed book assessment during a lesson. Students will sit mid- year and end of year exams, these exams will cover any content taught up to that point including topics from previous years.</p>						

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		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 9	Knowledge	Reasoning with Algebra <ul style="list-style-type: none"> <li>- Straight line graphs</li> <li>- Forming and solving equations</li> <li>- Testing conjectures</li> </ul>	Constructing in 2 and 3 Dimensions <ul style="list-style-type: none"> <li>- Three dimensional shapes</li> <li>- Constructions and congruency</li> </ul>	Reasoning with number <ul style="list-style-type: none"> <li>- Numbers</li> <li>- Using percentages</li> <li>- Maths and money</li> </ul>	Reasoning with Geometry <ul style="list-style-type: none"> <li>- Deduction</li> <li>- Rotation and translation</li> <li>- Pythagoras theorem</li> </ul>	Reasoning and Proportion <ul style="list-style-type: none"> <li>- Enlargement and similarity</li> <li>- Solving ratio and proportion problems</li> <li>- Rates</li> <li>-</li> </ul>	Representations and Revision <ul style="list-style-type: none"> <li>- Probability</li> <li>- Algebraic Representation</li> <li>- Revision</li> </ul>
	Skills and concepts	<ul style="list-style-type: none"> <li>- Interpret straight line graphs</li> <li>- Find and use the equation of a straight line</li> <li>- Reduce equations to the form <math>y=mx+c</math></li> <li>- Compare to linear sequences and finding the rule for the nth term</li> <li>- Revisit and extend to equations and inequalities with unknown on both side using all previous context: angles, probability, area etc</li> <li>- Change the subject of a formula</li> <li>- Test conjectures in a wide range of context e.g. sums and products of even numbers, is a given number in a sequence? is this shape...? Are these lines parallel? What would happen if...?</li> </ul>	<ul style="list-style-type: none"> <li>- Understand the language of faces, edges and vertices</li> <li>- Know the names of common prisms and non-prisms</li> <li>- Identify 2D shapes within 3D shapes</li> <li>- Work out the volume and surface area of cuboids and cylinders</li> <li>- Work out the volume of any prism</li> <li>- Work out missing lengths given area and/or volume</li> <li>- Construct 3D shapes from nets and construct the net of a given 3D shape</li> <li>- Construct and use scale drawings</li> <li>- Construct perpendiculars and bisectors</li> <li>- Understand congruency</li> <li>- Exploring congruency via construction</li> </ul>	<ul style="list-style-type: none"> <li>- Revisit types of number – extend to include rational and real numbers</li> <li>- Revisit fraction arithmetic</li> <li>- Extend knowledge of HCF and LCM</li> <li>- Revisit standard form</li> <li>- Revisit percentage increase and decrease</li> <li>- Use percentages over 100%</li> <li>- Find percentage changes</li> <li>- Use multipliers in a variety of contexts</li> <li>- Solve reverse percentage problems</li> <li>- Explore financial mathematics including: bills and bank statements, interest and unit pricing</li> </ul>	<ul style="list-style-type: none"> <li>- Revisit angle rules, including within special quadrilaterals</li> <li>- Find angles using algebraic methods</li> <li>- Use chains of reasoning to evaluate angles</li> <li>- Identify the order rotational symmetry of a shape</li> <li>- Find the result of rotating shapes</li> <li>- Translate points and shapes by a given vector</li> <li>- Understand variance and invariance in the context of transformations</li> <li>- Identify the hypotenuse of a right-angled triangle</li> <li>- Determine whether a triangle is right angled</li> <li>- Calculate missing sides in right-angled triangles</li> </ul>	<ul style="list-style-type: none"> <li>- Enlarge shapes by a positive scale factor, including from a given point</li> <li>- Calculate the lengths of missing sides in similar shapes</li> <li>- Direct proportion problems and graphs</li> <li>- Conversion graphs</li> <li>- Solve ratio problems given the whole or a part</li> <li>- Simple inverse proportion</li> <li>- Unit pricing problems</li> <li>- Work with speed, distance, time</li> <li>- Solve problems involving density</li> <li>- Work with compound units</li> </ul>	<ul style="list-style-type: none"> <li>- Relative frequency</li> <li>- Expected number of outcomes</li> <li>- Independent events</li> <li>- Drawing and reading from quadratics</li> <li>- Interpreting other graphs e.g. reciprocal</li> <li>- Representing inequalities</li> <li>- Revision of algebra skills</li> </ul>
	Common Misconceptions	<ul style="list-style-type: none"> <li>- Confusing x and y co-ordinate</li> <li>- Incorrect substitution particularly when involving negatives.</li> <li>- Not using the correct order of operations</li> </ul>	<ul style="list-style-type: none"> <li>- Using the wrong formula for area of a shape</li> <li>- Mis-identifying shapes</li> <li>- Confusing 2d and 3d shapes</li> <li>- Not using consistent units</li> </ul>	<ul style="list-style-type: none"> <li>- Confusing factors and multiples</li> <li>- Thinking 1 is a prime number</li> <li>- Not getting a common denominator when adding or</li> </ul>	<ul style="list-style-type: none"> <li>- Misidentifying angles facts and shapes</li> <li>- Misidentifying like terms</li> <li>- Mis-reading vector notation, confusing vertical and</li> </ul>	<ul style="list-style-type: none"> <li>- Scale factor not used consistently</li> <li>- Scale factor calculated incorrectly</li> <li>- Direct proportion graph not going through the origin</li> </ul>	<ul style="list-style-type: none"> <li>- Misinterpretation of inequality symbols</li> <li>- Writing probabilities as a ratio</li> <li>- Miscalculation with negatives</li> </ul>

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		<ul style="list-style-type: none"> <li>- Incorrect use of inequality symbols</li> </ul>	<ul style="list-style-type: none"> <li>- Not using the correct scale factor</li> </ul>	<ul style="list-style-type: none"> <li>subtracting fractions</li> <li>- Not having the same power of ten when adding or subtracting numbers in standard form</li> <li>- Not dividing by 100 when converting percentages to decimals e.g. <math>125\%=0.125</math></li> <li>- Using incorrect multipliers when increasing or decreasing by a percentage.</li> </ul>	<ul style="list-style-type: none"> <li>horizontal movement</li> <li>- Mis-reading co-ordinates. Confusing x and y.</li> <li>- Incorrect operation used when using Pythagoras Theorem</li> <li>- Mis-identifying the hypotenuse</li> </ul>	<ul style="list-style-type: none"> <li>- Mis-interpreting ratio questions</li> <li>- Converting time particularly when converting between hours and minutes and a decimal.</li> <li>- Converting compound measures</li> <li>- Incorrect formula used</li> </ul>	<ul style="list-style-type: none"> <li>- Joining points on quadratic graphs with a ruler instead of a smooth curve.</li> </ul>
Links to prior learning	<ul style="list-style-type: none"> <li>- Algebraic notation</li> <li>- Expanding, factorising</li> <li>- Solving 1 and 2 step equations</li> <li>- Angle facts</li> <li>- Straight line graphs</li> </ul>	<ul style="list-style-type: none"> <li>- Area</li> <li>- Properties of shapes</li> <li>- Converting metric measures</li> <li>- Use of ruler, compass, protractor</li> <li>- Ratio</li> <li>- Rearranging formula</li> </ul>	<ul style="list-style-type: none"> <li>- Fractions, decimals and percentages</li> <li>- Standard form</li> <li>- Number properties</li> <li>- Indices</li> </ul>	<ul style="list-style-type: none"> <li>- Co-ordinates</li> <li>- Rearranging formula</li> <li>- Angle facts</li> <li>- Algebra skills</li> </ul>	<ul style="list-style-type: none"> <li>- Rearranging formula</li> <li>- Ratio</li> <li>- Proportion</li> <li>- Co-ordinates</li> <li>- Scale factor</li> <li>- Substitution</li> </ul>	<ul style="list-style-type: none"> <li>- Inequalities</li> <li>- Solving equations</li> <li>- Substitution</li> <li>- Directed number</li> <li>- Probability</li> <li>- Straight line graphs</li> </ul>	
Links to future learning	<ul style="list-style-type: none"> <li>- Equations of parallel and perpendicular lines</li> <li>- Co-ordinate geometry</li> <li>- Simultaneous equations</li> <li>- Quadratic equations</li> <li>- Non-linear graphs</li> <li>- Solving inequalities</li> </ul>	<ul style="list-style-type: none"> <li>- Volume and surface area of sphere, cones and pyramids</li> <li>- Similarity and congruency</li> <li>- Construction and loci</li> <li>- Forming and solving equations</li> </ul>	<ul style="list-style-type: none"> <li>- Growth and decay</li> <li>- Solving complex problems with percentages</li> <li>- Applications of standard form</li> <li>- Surds</li> </ul>	<ul style="list-style-type: none"> <li>- Solving complex geometric problems</li> <li>- Trigonometry</li> <li>- 3D Pythagoras</li> <li>- Transformations</li> <li>- Bearings</li> <li>- Equation of a circle</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed transformations</li> <li>- Similarity and congruency</li> <li>- Direct and inverse proportion equations</li> <li>- Complex calculations with compound measures</li> </ul>	<ul style="list-style-type: none"> <li>- Quadratic equations</li> <li>- Non-linear graphs</li> <li>- Solving inequalities</li> <li>- Higher probability</li> </ul>	
Assessment	<p>At the end of each unit students will sit a short, closed book assessment during a lesson. Students will sit mid- year and end of year exams, these exams will cover any content taught up to that point including topics from previous years.</p>						

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		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Knowledge	Similarity <ul style="list-style-type: none"> <li>- Congruence, similarity and enlargement</li> <li>- Trigonometry</li> </ul>	Developing Algebra <ul style="list-style-type: none"> <li>- Representing solutions of equations and inequalities</li> <li>- Simultaneous equations</li> </ul>	Geometry <ul style="list-style-type: none"> <li>- Angles and Bearings</li> <li>- Working with circles</li> <li>- Vectors</li> </ul>	Proportions and proportional change <ul style="list-style-type: none"> <li>- Ratios and fractions</li> <li>- Percentages and interest</li> <li>- Probability</li> </ul>	Delving into Data <ul style="list-style-type: none"> <li>- Collecting, representing and interpreting data</li> </ul>	Using number <ul style="list-style-type: none"> <li>- Non-calculator methods</li> <li>- Types of number and sequences</li> <li>- Indices and Roots</li> </ul>
	Skills and concepts	<ul style="list-style-type: none"> <li>- Understand the difference between congruence and similarity</li> <li>- Enlarge a shape about a given point; understand and use similarity</li> <li>- Find missing sides in similar shapes including pairs of similar triangles</li> <li>- Understand and use the conditions for a pair of congruent triangles</li> <li>- Understand trigonometric ratios</li> <li>- Work out missing lengths and angles in right angled triangles</li> <li>- Know and use the exact values of key angles</li> </ul> Higher only: <ul style="list-style-type: none"> <li>- Area and volume of similar shapes</li> <li>- Formal proof of congruency of triangles</li> <li>- Enlarge a shape by a negative scale factor</li> <li>- Use trigonometry in 3D shapes</li> <li>- Derive and use the Sine and Cosine rules.</li> <li>- Use the formula <math>\frac{1}{2}ab\sin C</math> to find the area of non-right angled triangles.</li> </ul>	<ul style="list-style-type: none"> <li>- Form and solve equations and inequalities in a variety of context, including with unknowns on both sides</li> <li>- Represent solutions to inequalities on a number line</li> <li>- Represent solutions to equations graphically</li> <li>- Understand the meaning of a solution, appreciating the some equations have multiple solutions</li> <li>- Form and solve a pair of simultaneous equations graphically</li> <li>- Form and solve a pair of simultaneous equations algebraically</li> </ul> Higher only: <ul style="list-style-type: none"> <li>- Use set notation for solutions</li> <li>- Solve inequalities in tow variable, identifying regions</li> <li>- Solve quadratic equations and inequalities by factorisation</li> </ul>	<ul style="list-style-type: none"> <li>- Review KS3 angle rules</li> <li>- Understand and use bearings</li> <li>- Review area and circumference</li> <li>- Name parts of a circle and perform related calculations</li> <li>- Find areas and volumes related to circles – cylinder, cone, sphere etc</li> <li>- Understand vector notation</li> <li>- Vector arithmetic – addition, subtraction and multiplication by a scalar</li> <li>- Vectors and translations</li> </ul> Higher Only: <ul style="list-style-type: none"> <li>- Derive, use and prove the first 4 circle theorems</li> <li>- Understand and use the equation of a circle</li> <li>- Construct geometric proofs with vectors</li> </ul>	<ul style="list-style-type: none"> <li>- Use ratios, including with mixed units</li> <li>- Fractions in ratios</li> <li>- Fractions from ratios</li> <li>- Combining ratios</li> <li>- Unit pricing</li> <li>- Currency conversion</li> <li>- Convert fractions, decimals and percentages</li> <li>- Find percentages and percentage changes</li> <li>- Find one number as a percentage of another</li> <li>- Calculate simple and compound interest</li> <li>- Evaluate exponential change</li> <li>- Find original values</li> <li>- Review single event probability - comparing theoretical and experimental</li> <li>- Understand and work with mutually exclusive and independent events</li> <li>- Construct and interpret tree diagrams</li> <li>- Find probabilities from frequency trees, tables and venn diagrams</li> </ul> Higher only:	<ul style="list-style-type: none"> <li>- Construct and interpret tables and line graphs for time series data</li> <li>- Understand and represent with grouped data</li> <li>- Understand and identify correlation</li> <li>- Use lines of best fit and understand the dangers of extrapolation</li> <li>- Construct and interpret frequency polygons</li> <li>- Evaluate and measures of location and dispersion</li> <li>- Use statistical diagrams and measures to compare distributions</li> </ul> Higher only: <ul style="list-style-type: none"> <li>- Construct and interpret cumulative frequency diagrams, box plots and histograms</li> <li>- Understand quartiles; use and interpret the inter-quartile range</li> </ul>	<ul style="list-style-type: none"> <li>- Use four operations with integers, decimals, fractions with and without context</li> <li>- Work with exact answers e.g. area and volume</li> <li>- Evaluate calculations involving percentages</li> <li>- Use factors, multiples, primes and prime factorisation</li> <li>- Recognise arithmetic and geometric sequences</li> <li>- Recognise and use other sequences</li> <li>- Work out powers and roots</li> <li>- Use the rules of indices</li> <li>- Calculate with numbers in standard index form</li> </ul> Higher only: <ul style="list-style-type: none"> <li>- Calculate with surds</li> <li>- Find the rule for the nth term with quadratics</li> <li>- Understand and use fractional indices</li> <li>- Work with rational and irrational</li> </ul>

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			<ul style="list-style-type: none"> <li>- Solve simultaneous equations with one linear and one quadratic</li> </ul>		<ul style="list-style-type: none"> <li>- Revise area and volume ratios</li> <li>- Use iterative methods</li> <li>- Calculate and interpret conditional probabilities</li> </ul>		<ul style="list-style-type: none"> <li>numbers, including recurring decimals</li> <li>- Work with limits of accuracy, including upper and lower bounds</li> </ul>
Common Misconceptions	<ul style="list-style-type: none"> <li>- Mis-identify similar shapes</li> <li>- Inconsistent use of scale factor</li> <li>- Mis-identify which trig ratio to use</li> <li>- Incorrect substitution/rearranging formula</li> <li>- Miscalculation with negative numbers</li> <li>- Incorrectly label triangle</li> <li>- Converting from an area scale factor directly to a volume scale factor</li> </ul>	<ul style="list-style-type: none"> <li>- Incorrect algebraic notation</li> <li>- Errors in algebra manipulation</li> <li>- Not balancing the equation</li> <li>- Mis-identifying inequality symbols</li> <li>- Choosing the wrong operation when solving simultaneous equations by elimination</li> <li>- When representing inequalities having multiples of the variable</li> </ul>	<ul style="list-style-type: none"> <li>- Not measuring a bearing from the north line</li> <li>- Not measuring a bearing in a clockwise direction</li> <li>- Not using the correct notation when writing a bearing</li> <li>- Mis-identifying angle facts</li> <li>- Mis-labelling circles</li> <li>- Mis-identifying shapes and formulas for area and volume</li> <li>- Confusing the vector notation</li> </ul>	<ul style="list-style-type: none"> <li>- Probabilities not adding to 1</li> <li>- Not choosing the correct operation when working with probabilities</li> <li>- Writing a probability as a ratio</li> <li>- Using incorrect multipliers when calculating percentages</li> <li>- Mis-remembering formulas especially with compound interest and depreciation</li> <li>- Confusing methods between the different types of percentages questions.</li> </ul>	<ul style="list-style-type: none"> <li>- Using inappropriate graph or chart</li> <li>- Using inappropriate average</li> <li>- Inappropriate scales or keys</li> <li>- Confusing the different graphs and charts</li> <li>- Misinterpretation of scales or results</li> </ul>	<ul style="list-style-type: none"> <li>- Confusing factors and multiples</li> <li>- Thinking 1 is prime</li> <li>- Assuming a sequence is linear</li> <li>- Miscalculating powers e.g. <math>2^3 = 6</math></li> <li>- Incorrect use of rules of indices e.g. when bases are not the same</li> <li>- Having a number below 1 or 10 and above when writing in standard form</li> </ul>	
Links to prior learning	<ul style="list-style-type: none"> <li>- Ratio</li> <li>- Pythagoras</li> <li>- Scale factor</li> <li>- Enlargement</li> <li>- Congruency</li> <li>- Rearranging formula</li> <li>- Substitution</li> </ul>	<ul style="list-style-type: none"> <li>- Algebra notation and skills</li> <li>- Inequalities</li> <li>- Solving equations</li> <li>- Straight line graphs</li> <li>- Quadratic graphs</li> </ul>	<ul style="list-style-type: none"> <li>- Area</li> <li>- Area and circumference of a circle</li> <li>- Volume and surface area</li> <li>- Angle facts</li> <li>- 2D and 3D shapes</li> <li>- Use of a protractor</li> <li>- Algebraic notation and manipulation</li> </ul>	<ul style="list-style-type: none"> <li>- Ratio</li> <li>- Fractions</li> <li>- Decimals</li> <li>- Percentages</li> <li>- Probability</li> </ul>	<ul style="list-style-type: none"> <li>- Averages</li> <li>- Frequency and grouped frequency tables</li> <li>- Bar charts</li> <li>- Scatter Graphs</li> <li>- Pictograms</li> </ul>	<ul style="list-style-type: none"> <li>- Number properties</li> <li>- Rounding</li> <li>- Sequences</li> <li>- Powers and roots</li> <li>- Standard form</li> <li>- Indices</li> </ul>	
Links to future learning	<ul style="list-style-type: none"> <li>- Bearings</li> <li>- Transformations</li> <li>- Ratio</li> <li>- Trigonometric graphs</li> <li>- Application to GCSE style questions</li> </ul>	<ul style="list-style-type: none"> <li>- Quadratic formula</li> <li>- Completing the square</li> <li>- Application to GCSE style questions</li> </ul>	<ul style="list-style-type: none"> <li>- Application to GCSE style questions</li> <li>- Complex geometric problems</li> <li>- Circle Theorems</li> </ul>	<ul style="list-style-type: none"> <li>- Application to GCSE style questions</li> <li>- Solving complex number problems</li> <li>- Solving complex geometry problems</li> </ul>	<ul style="list-style-type: none"> <li>- Applications to GCSE style questions</li> <li>- Statistical enquiry cycle</li> </ul>	<ul style="list-style-type: none"> <li>- Application to GCSE style questions</li> <li>- Higher level study in a range of topics</li> </ul>	

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		- Higher level study in a range of subjects	- Higher level study in maths and other subjects.	- Links to higher level study in a range of subjects including maths and physics.	- Higher level study in a large range of subjects	- Higher level statistics e.g. A Level	
	Assessment	At the end of each unit students will sit a short, closed book assessment during a lesson. Students will sit mid- year and end of year exams, these exams will cover any content taught up to that point including topics from previous years.					

## MATHS SUBJECT CURRICULUM PLAN 2025 - 2026

		Term 1	Term 2	Term 3	Term 4	Term 5
Year 11	Knowledge	Graphs <ul style="list-style-type: none"> <li>- Gradients and lines</li> <li>- Non-linear graphs</li> <li>- Using Graphs</li> <li>-</li> </ul>	Algebra <ul style="list-style-type: none"> <li>- Expanding and factorising</li> <li>- Change the subject</li> <li>- Functions</li> </ul>	Reasoning <ul style="list-style-type: none"> <li>- Multiplicative reasoning</li> <li>- Geometric reasoning</li> <li>- Algebraic reasoning</li> </ul>	Revision and Communication <ul style="list-style-type: none"> <li>- Transforming and constructing</li> <li>- Listing and describing</li> <li>- Show that....</li> </ul>	<ul style="list-style-type: none"> <li>- Revision and exam preparation</li> </ul>
	Skills and Concepts	<ul style="list-style-type: none"> <li>- Find and use the equations of straight lines</li> <li>- Plot and read from quadratic curves</li> <li>- Understand and find roots</li> <li>- Plot cubic and reciprocal graphs</li> <li>- Reflect shapes in a given line</li> <li>- Construct and interpret speed, distance and time graphs</li> <li>- Construct and interpret real-life graphs</li> </ul> Higher only: <ul style="list-style-type: none"> <li>- Understand and use exponential graphs</li> <li>- Understand and use equations of perpendicular lines</li> <li>- Find the equation of tangent to a curve</li> <li>- Estimate the area under a curve</li> </ul>	<ul style="list-style-type: none"> <li>- Expand a single bracket and binomials</li> <li>- Factorise into a single bracket</li> <li>- Factorise quadratics of the form <math>x^2 + bx + c</math></li> <li>- Solve quadratic equations</li> <li>- Simplify complex algebraic expressions including algebraic fractions</li> <li>- Review solving linear equations</li> <li>- Change the subject of a formula, including perimeter, area and volume formulae</li> <li>- Volume of a pyramid</li> <li>- Find inputs and outputs</li> <li>- Show algebraic expressions are equivalent</li> <li>- Solve problems using the kinematics formulae</li> </ul> Higher only: <ul style="list-style-type: none"> <li>- Solve quadratic equations by completing the square and using the quadratic formula</li> <li>- Changing the subject of a formula where the subject appears more than once</li> <li>- Solving equations by iteration</li> <li>- Work with composite and inverse functions</li> </ul>	<ul style="list-style-type: none"> <li>- Review scale and enlargement</li> <li>- Work with direct and inverse proportion</li> <li>- Calculate with pressure and density</li> <li>- Determine whether a problem requires additive or multiplicative reasoning</li> <li>- Review angle facts, focusing on the language of reasons and chains of reasoning</li> <li>- Review Pythagoras theorem and using trigonometric ratios</li> <li>- Work with complex indices</li> <li>- Review simplification of a complex expressions and finding the nth term rule</li> <li>- Justify e.g. why a number is/isn't in a given sequence</li> </ul> Higher only: <ul style="list-style-type: none"> <li>- Solve problems involving variation with powers</li> <li>- Construct formal geometric proofs, including the remaining circle theorems</li> <li>- Construct formal algebraic proofs</li> </ul>	<ul style="list-style-type: none"> <li>- Revisit transformations of shapes, linking to types of symmetry</li> <li>- Perform standard constructions using ruler and protractor or ruler and compasses</li> <li>- Solve loci problems</li> <li>- Work with organised lists</li> <li>- Sample spaces and probability</li> <li>- Complete and use Venn diagrams</li> <li>- Work with plans and elevations</li> <li>- Use data to compare distributions</li> <li>- Illustrate equivalence, numerically and algebraically</li> <li>- Justify answers</li> <li>- Use the language of angles rules</li> <li>- Use the condition for congruent triangles</li> </ul> Higher: <ul style="list-style-type: none"> <li>- Product rule for counting</li> <li>- Understand and use trigonometric graphs</li> <li>- Sketch translations and reflections of the graph of a given function</li> <li>- Formal proof with congruent triangles</li> </ul>	During this last half term in the run up to the final exams, teachers will work with students on past papers and topics that have been identified that need further attention.
	Links to prior learning	<ul style="list-style-type: none"> <li>- Straight line graphs</li> <li>- Quadratic graphs</li> <li>- Algebraic notation and skills</li> </ul>	<ul style="list-style-type: none"> <li>- Algebraic notation and skills</li> <li>- Solving equations</li> <li>- Inequalities</li> </ul>	<ul style="list-style-type: none"> <li>- Ratio</li> <li>- Proportion</li> <li>- Angle facts</li> <li>- Similarity</li> </ul>	<ul style="list-style-type: none"> <li>- Transformations</li> <li>- Constructions</li> <li>- Probability</li> <li>- Venn diagrams</li> </ul>	<ul style="list-style-type: none"> <li>- All prior study</li> </ul>

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		<ul style="list-style-type: none"> <li>- Parallel and perpendicular lines</li> <li>- Area</li> <li>- Compound measures</li> <li>- Gradients and intercepts</li> </ul>	<ul style="list-style-type: none"> <li>- Algebra manipulation</li> <li>- Fractions</li> <li>- Area, perimeter and volume</li> <li>- Quadratic and linear graphs</li> </ul>	<ul style="list-style-type: none"> <li>- Pythagoras</li> <li>- Trigonometry</li> <li>- Indices</li> <li>- Compound measure</li> <li>- Circle theorems</li> <li>- Algebra skills</li> <li>- Sequences</li> </ul>	<ul style="list-style-type: none"> <li>- Averages</li> <li>- Congruency</li> <li>- Non-linear graphs</li> <li>- Trigonometry</li> <li>- Angle facts</li> </ul>	
	Links to future learning	<ul style="list-style-type: none"> <li>- GCSE style questions</li> <li>- Higher level study</li> </ul>	<ul style="list-style-type: none"> <li>- GCSE style questions</li> <li>- Higher level study</li> </ul>	<ul style="list-style-type: none"> <li>- GCSE style questions</li> <li>- Higher level study</li> </ul>	<ul style="list-style-type: none"> <li>- GCSE style questions</li> <li>- Higher level study</li> </ul>	<ul style="list-style-type: none"> <li>- GCSE style questions</li> <li>- Higher level study</li> </ul>
	Assessment	In class assessment	Mock Exams	In class assessment	Mock Exams	GCSE Exams