

### Year 7 MATHS Curriculum Map

Term	Topic/Unit title	Essential knowledge & skills <i>(what students should know, understand and be able to do by the end of the unit/topic)</i>
<b>Autumn 1</b>	1) Essential Number	<ul style="list-style-type: none"> <li>● Complete the four operations with integer and decimal values.               <ul style="list-style-type: none"> <li>○ Use mental and written methods to do this.</li> </ul> </li> <li>● Understand the importance of place value when calculating with decimals.               <ul style="list-style-type: none"> <li>○ Understand the effects of multiplying and dividing by powers of ten.</li> </ul> </li> <li>● Understand how to apply BIDMAS to calculate the solution to a question.</li> </ul>
	2) Factors, Multiples, Primes & Indices	<ul style="list-style-type: none"> <li>● Understand the meaning of factor, multiple               <ul style="list-style-type: none"> <li>○ Be able to identify Highest Common Factors and Lowest Common Multiples of pairs of numbers</li> </ul> </li> <li>● Understand the definition of a prime number               <ul style="list-style-type: none"> <li>○ Be able to express a number as a product of primes</li> </ul> </li> <li>● Understand the idea of indices, be able to identify square and cube numbers</li> </ul>
	3) Negative Numbers	<ul style="list-style-type: none"> <li>● Calculate all four operations using negative numbers</li> <li>● Answer BIDMAS questions when negative numbers are involved</li> </ul>
<b>Autumn 2</b>	4) Experimental Probability	<ul style="list-style-type: none"> <li>● Understand the language of probability to include:               <ul style="list-style-type: none"> <li>○ Experiment</li> <li>○ Outcome</li> <li>○ Event</li> <li>○ Likely</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ Unlikely</li> <li>○ Impossible</li> <li>○ Certain</li> <li>● Experimental probability <ul style="list-style-type: none"> <li>○ Carrying out a simple experiment</li> <li>○ Understanding relative frequency</li> <li>○ Having an appreciation that the greater the number of trials the better estimate of the probability</li> </ul> </li> <li>● Theoretical probability <ul style="list-style-type: none"> <li>○ Calculate the probability of events using “desired outcomes”/”total outcomes”</li> <li>○ Predicting how many of a given outcome we should get from a given number of experiments, eg how many Tails from flipping a coin 50 times.</li> </ul> </li> </ul>
	<p>5) Properties of Shapes</p>	<ul style="list-style-type: none"> <li>● Understand the meanings of “parallel” and “perpendicular”</li> <li>● Understand the properties of 2D shapes including: <ul style="list-style-type: none"> <li>○ Different types of triangles</li> <li>○ Quadrilaterals</li> <li>○ Regular polygons</li> <li>○ Circles</li> </ul> </li> <li>● Understand how to refer to specific lengths and angles of shapes using standard notation, eg side AB, angle ABC</li> <li>● Construct accurate diagrams of shapes from written descriptions</li> <li>● Understand the properties of 3D shapes including: <ul style="list-style-type: none"> <li>○ Being able to recognise and name shapes</li> <li>○ Understand the terms vertices, edges and faces in relation to 3D shapes</li> <li>○ Recognise, sketch and accurately draw nets of 3D shapes including cuboids, pyramids and prisms</li> </ul> </li> </ul>

	6) Co-ordinates & Geometry	<ul style="list-style-type: none"> <li>● Plotting coordinates in all four quadrants</li> <li>● Apply knowledge of properties of shapes to plot missing coord</li> </ul>
<b>Spring 1</b>	7) Introduction to algebra	<ul style="list-style-type: none"> <li>● Use the language of algebra to form expressions to describe mathematical systems</li> <li>● Understand basic algebraic notation, eg <math>2y</math>, <math>2+y</math>, <math>y-2</math></li> <li>● Simplify expressions by collecting like terms</li> <li>● Be able to simplify expressions by applying the laws of indices</li> <li>● Understand the definitions of “expression”, “identity”, “formula” and “equation” and be able to correctly identify them.</li> </ul>
	8) Substitution	<ul style="list-style-type: none"> <li>● Input values into a function machine and evaluate the output (and back again)</li> <li>● Substitute values into formulae and evaluate the result</li> <li>● Substitute values into formulae for shape, including expanding brackets for regular polygons.</li> </ul>
	9) Rounding & Estimating	<ul style="list-style-type: none"> <li>● To be able to round values to a given degree of accuracy</li> <li>● To be able to use rounded values to estimate an answer to a calculation</li> </ul>
	10) Perimeter & Basic Area	<ul style="list-style-type: none"> <li>● Calculate the perimeter of 2D shapes.</li> <li>● Know and use formulae for areas of: <ul style="list-style-type: none"> <li>○ Rectangles</li> <li>○ Triangles</li> <li>○ Parallelograms</li> <li>○ Trapezia</li> </ul> </li> <li>● Find the area and perimeter of compound shapes</li> </ul>
<b>Spring 2</b>	11) Accurate Drawings	<ul style="list-style-type: none"> <li>● Measure line segments and angles accurately</li> <li>● Be able to recognise types of angle</li> <li>● Use scale factors, scale diagrams and maps</li> </ul>

		<ul style="list-style-type: none"> <li>● Draw and interpret scale drawings</li> <li>● Use simple bearings: North, South, East, West</li> </ul>
	12) Nets & Isometric Drawings	<ul style="list-style-type: none"> <li>● Recognise, sketch and draw accurately the net of 3D shapes: <ul style="list-style-type: none"> <li>○ Cuboids</li> <li>○ Pyramids</li> <li>○ Prisms</li> </ul> </li> <li>● Be able to sketch a shape on isometric paper</li> </ul>
	13) Measures	<ul style="list-style-type: none"> <li>● Be able to read scales and use measuring equipment</li> <li>● Understand the metric system and be able to make conversions between relevant units.</li> <li>● Convert between metric units of area and volume</li> </ul>
<b>Summer 1</b>	14) Fractions Skills	<ul style="list-style-type: none"> <li>● Compare fractions and reinforce the idea of equivalence, recognising it numerically.</li> <li>● Be able to simplify increasingly difficult fractions, which requires strong times table knowledge, and an understanding of divisibility.</li> <li>● Extend to finding fractions of amounts in increasingly difficult contexts.</li> <li>● Convert between improper fractions and mixed numbers.</li> </ul>
	15) Sorting/ Classifying	<ul style="list-style-type: none"> <li>● Introduce Venn Diagrams <ul style="list-style-type: none"> <li>○ Two Way Venn Diagrams - what they look like and how to populate them</li> <li>○ Populate Venn Diagrams with shapes and numbers.</li> </ul> </li> </ul>

<b>Summer 2</b>	16) Real life graphs	<ul style="list-style-type: none"> <li>● Draw and use conversion graphs, starting with kilometres and miles.</li> <li>● Use graphs to carry out currency conversions.</li> </ul>
	17) Percentages	<ul style="list-style-type: none"> <li>● Find percentages of amounts</li> <li>● Express one quantity as a percentage of another</li> <li>● Perform percentage increases and decreases</li> <li>● Apply percentages in real life contexts</li> <li>● Find the original amount after an increase/decrease has taken place (reverse percentages)</li> </ul>
	18) Averages	<ul style="list-style-type: none"> <li>● Identify the mean, median, mode and range from: <ul style="list-style-type: none"> <li>○ A small list of data</li> <li>○ A frequency table</li> </ul> </li> <li>● Use mean, median, mode and range to compare two sets of data</li> <li>● Understand the relative merits of each average</li> </ul>

### Year 8 MATHS Curriculum Map

Term	Topic/Unit title	Essential knowledge & skills <i>(what students should know, understand and be able to do by the end of the unit/topic)</i>
Autumn 1	1) Basic number work	<ul style="list-style-type: none"> <li>● Recap of four operations using mental and written methods with both integer and decimal values.</li> </ul>
	2) Sequences	<ul style="list-style-type: none"> <li>● Notice patterns in shapes and numbers.</li> <li>● Understand the difference between “term to term” and “position to term”.</li> <li>● Be able to recognise term to term rules in arithmetic and simple geometric sequences.</li> <li>● Find the position to term rule of an arithmetic sequence.</li> <li>● Be able to use a position to term rule to generate a linear sequence or a specific term in that sequence</li> </ul>
	3) Straight line graphs	<ul style="list-style-type: none"> <li>● Recap basic coordinate axes skills               <ul style="list-style-type: none"> <li>○ Accurately plot coordinates in all four quadrants.</li> <li>○ Draw and label scales</li> <li>○ Find the coordinates of the midpoint of a line segment both by observation and through calculation.</li> </ul> </li> <li>● Use function machines and substitution to generate coordinate pairs and plot these to form graphs</li> <li>● Identify the equations of horizontal and vertical lines</li> <li>● Draw and use simple real life graphs, eg currency conversion,</li> </ul>

		<p>distance/time.</p> <ul style="list-style-type: none"> <li>● Understand the concept of <math>y=mx+c</math> <ul style="list-style-type: none"> <li>○ Identify gradients</li> <li>○ Identify y-intercepts</li> <li>○ Identify equations of lines by finding m and c</li> <li>○ Construct lines using <math>y=mx+c</math></li> </ul> </li> <li>● Understand the relationship between gradients and parallel (and perpendicular) lines</li> </ul>
<b>Autumn 2</b>	4) Transformations	<ul style="list-style-type: none"> <li>● Recognise, describe fully and carry out: <ul style="list-style-type: none"> <li>○ Reflections</li> <li>○ Rotations</li> <li>○ Translations</li> </ul> </li> </ul>
	5) Enlargements	<ul style="list-style-type: none"> <li>● Perform enlargements: <ul style="list-style-type: none"> <li>○ Positive scale factors</li> <li>○ Centres of enlargement</li> <li>○ Fractional scale factors</li> <li>○ Negative scale factors</li> </ul> </li> <li>● Recognise enlargements and be able to describe them</li> <li>● Understand the effect an enlargement has on the length, area and volume of a shape.</li> </ul>
	6) Four operations with fractions	<ul style="list-style-type: none"> <li>● Simplify fractions and work with equivalent fractions</li> <li>● Convert between mixed numbers and improper fractions</li> <li>● Add, subtract, multiply and divide with fractions</li> </ul>
<b>Spring 1</b>	7) Probability	<ul style="list-style-type: none"> <li>● Apply the property that probabilities of an exhaustive event must sum to 1.</li> <li>● Construct theoretical probability spaces for combined experiments with equally likely outcomes and use these to calculate theoretical probabilities.</li> </ul>

		<ul style="list-style-type: none"> <li>● Understand the term “mutually exclusive” and be able to identify mutually exclusive events.</li> <li>● Start exploring the idea of sets: <ul style="list-style-type: none"> <li>○ Identify which values would belong in a given set and sort in a simple Venn diagram</li> <li>○ Use a Venn diagram to calculate probabilities</li> </ul> </li> </ul>
	8) Solving Equations	<ul style="list-style-type: none"> <li>● Solve linear equations including: <ul style="list-style-type: none"> <li>○ Equations with brackets</li> <li>○ Equations with unknowns on both sides</li> <li>○ Simple algebraic fractions</li> </ul> </li> <li>● Start to look at rearranging formulae and changing the subject.</li> </ul>
<b>Spring 2</b>	9) Ratio & Proportion	<ul style="list-style-type: none"> <li>● Express quantities in a ratio</li> <li>● Simplify ratios</li> <li>● Divide using a ratio</li> <li>● Use a ratio to find one quantity when the other is known</li> <li>● Write a ratio as a fraction</li> <li>● Use the unitary method to solve problems involving direct proportion</li> <li>● Express a multiplicative relationship between two quantities as a ratio or fraction</li> </ul>
	10) Angle Facts	<ul style="list-style-type: none"> <li>● Know and use basic angle rules to solve problems <ul style="list-style-type: none"> <li>○ Angles on a straight line</li> <li>○ Angles around a point</li> <li>○ Vertically opposite</li> </ul> </li> <li>● Find the size of missing angles within different shapes including <ul style="list-style-type: none"> <li>○ Triangles</li> <li>○ Quadrilaterals</li> </ul> </li> </ul>



		<ul style="list-style-type: none"> <li>○ Polygons (pentagon upwards!)</li> <li>● Introduce the idea of the relationships between angles in parallel lines and be able to use the following rules: <ul style="list-style-type: none"> <li>○ Corresponding angles are equal</li> <li>○ Alternate angles are equal</li> <li>○ Co-interior angles sum to 180</li> </ul> </li> <li>● Understand the concept of shapes being mathematically similar to each other</li> <li>● Understand the word “congruent” and be able to identify pairs of triangles that are congruent.</li> </ul>
<b>Summer 1</b>	11) Area	<ul style="list-style-type: none"> <li>● Know and use formulae for areas of: <ul style="list-style-type: none"> <li>○ Rectangles</li> <li>○ Triangles</li> <li>○ Parallelograms</li> <li>○ Trapezia</li> </ul> </li> <li>● Find the area and perimeter of compound shapes</li> </ul>
	12) Surface area & volume	<ul style="list-style-type: none"> <li>● Calculate the surface area of a cube or cuboid from either a net or a sketch.</li> <li>● Know the formula for the volume of cubes, cuboids and prisms</li> </ul>
	13) Circles	<ul style="list-style-type: none"> <li>● Know and use the formulae for area and circumference of a circle.</li> <li>● Find the area and perimeter of sectors</li> </ul>
<b>Summer 2</b>	14) Using formulae	<ul style="list-style-type: none"> <li>● Substitute values into formulae and evaluate the result</li> <li>● Revisit formulae we have seen throughout the year, including but not limited to: <ul style="list-style-type: none"> <li>○ Sequences</li> <li>○ Straight line graphs</li> <li>○ Solving equations (to check if solutions are correct)</li> <li>○ Area and perimeter</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ Volume and surface area</li> <li>○ Circles</li> <li>● Use formulae given in questions in a written context, eg working out a taxi driver's fare</li> </ul>
	15) Effective use of a calculator	<ul style="list-style-type: none"> <li>● Understand how to make the best possible use of a scientific calculator.</li> <li>● Use specific buttons such as: <ul style="list-style-type: none"> <li>○ Powers and roots</li> <li>○ Fractions (and mixed numbers)</li> <li>○ Pi</li> <li>○ S to D button</li> </ul> </li> </ul>
	16) Averages	<ul style="list-style-type: none"> <li>● Identify the mean, median, mode and range from: <ul style="list-style-type: none"> <li>○ A small list of data</li> <li>○ A frequency table</li> </ul> </li> <li>● Use mean, median, mode and range to compare two sets of data</li> <li>● Understand the relative merits of each</li> </ul>
	17) Averages from Charts	<ul style="list-style-type: none"> <li>● Identify the mean, median, mode and range from: <ul style="list-style-type: none"> <li>○ A bar chart</li> <li>○ A frequency table</li> <li>○ A grouped frequency table</li> </ul> </li> </ul>

### Year 9 MATHS Curriculum Map

Term	Topic/Unit title	Essential knowledge & skills  (what students should <i>know, understand and be able to do</i> by the end of the unit/topic)
<b>Autumn 1</b>	1) Pythagoras & Trigonometry	<ul style="list-style-type: none"> <li>● Use Pythagoras' Theorem to calculate missing side lengths of right angled triangles</li> <li>● Use SohCahToa to calculate missing angles and side lengths in right angled triangles</li> <li>● Decide whether to use Pythagoras or Trigonometry to solve a problem within a given context.</li> <li>● Apply SohCahToa and Pythagoras to 3D problems as well as 2D, eg longest diagonal in a cuboid.</li> </ul>
	2) Inequalities	<ul style="list-style-type: none"> <li>● Students should know the difference between <math>&lt;</math>, <math>&gt;</math>, <math>\leq</math> and <math>\geq</math> and be able to interpret them</li> <li>● Solve simple linear inequalities</li> <li>● Be able to represent inequalities on number lines</li> </ul>
	3) Scatter Graphs	<ul style="list-style-type: none"> <li>● Draw scatter graphs</li> <li>● Recognise types of linear correlation</li> <li>● Be able to interpret correlations within the context of the graph</li> <li>● Use a line of best fit to make suitable estimations (recognise why extrapolating is not a good plan)</li> </ul>
	4) Cumulative Frequency & Box plots (Higher attainers only)	<ul style="list-style-type: none"> <li>● Draw and use cumulative frequency graphs to estimate the median, quartiles, IQR</li> <li>● Draw and interpret box and whisker plots</li> <li>● Compare two distributions with reference to median and</li> </ul>
<b>Autumn 2</b>	5) Solve linear equations	<ul style="list-style-type: none"> <li>● Solve linear equations including:               <ul style="list-style-type: none"> <li>○ Equations with brackets</li> <li>○ Equations with unknowns on both sides</li> <li>○ Simple algebraic fractions</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>● High attaining sets could also start to look at rearranging formulae and changing the subject</li> </ul>
	6) Solving simultaneous equations	<ul style="list-style-type: none"> <li>● Solve simultaneous equations by: <ul style="list-style-type: none"> <li>○ Elimination</li> <li>○ Substitution</li> <li>○ Drawing graphs</li> </ul> </li> </ul>
	7) Equivalence between fractions, decimals and percentages	<ul style="list-style-type: none"> <li>● Convert between fractions, decimals and percentages, recognise equivalences</li> <li>● Be able to use recurring notation and convert between recurring decimals and fractions</li> <li>● Use equivalence to compare and order fractions, decimals and percentages</li> </ul>
	8) Probability of combined events	<ul style="list-style-type: none"> <li>● Use probability diagrams to calculate the probability of two events occurring: <ul style="list-style-type: none"> <li>○ Sample spaces</li> <li>○ Tree diagrams</li> <li>○ Venn diagrams</li> </ul> </li> </ul>
<b>Spring 1</b>	9) Factors, multiples and primes	<ul style="list-style-type: none"> <li>● Understand the meaning of factor, multiple <ul style="list-style-type: none"> <li>○ Be able to identify Highest Common Factor and Lowest Common Multiple of pairs of numbers</li> </ul> </li> <li>● Understand the definition of a prime number <ul style="list-style-type: none"> <li>○ Be able to express a number as a product of primes</li> </ul> </li> <li>● Understand the idea of indices, be able to identify square and cube numbers</li> <li>● Use the Venn diagram method to find Highest Common Factor and Lowest Common Multiple of pairs of numbers</li> <li>● Use the prime factor decomposition to identify properties of the number</li> </ul>

	10) Loci and constructions	<ul style="list-style-type: none"> <li>● Use straight edge and compasses to construct:               <ul style="list-style-type: none"> <li>○ Perpendicular bisector</li> <li>○ Angle bisector</li> <li>○ Equilateral triangle</li> <li>○ Regular hexagon</li> <li>○ Perpendicular to and from a point</li> <li>○ Angles of 30, 45, 60 and 90 degrees</li> </ul> </li> <li>● Understand the term “loci” and draw loci given a written rule or in the context of solving a 2D problem</li> </ul>
<b>Spring 2</b>	11) Isometric drawing, plans and elevations	<ul style="list-style-type: none"> <li>● Be able to sketch a shape on isometric paper</li> <li>● Sketch the plans and elevations for a variety of 3D shapes, both “standard” and compound</li> </ul>
	12) Surface area and volume	<ul style="list-style-type: none"> <li>● Calculate the surface area of a cube or cuboid from either a net or a sketch.</li> <li>● Know the formula for the volume of cubes, cuboids and prisms</li> <li>● Calculate the volume and surface area of cylinders, pyramids and cones</li> </ul>
	13) Standard form	<ul style="list-style-type: none"> <li>● Understand that standard form is a convention for expressing very large and very small numbers</li> <li>● Convert between ordinary numbers and numbers in standard form</li> <li>● Carry out calculations involving numbers in standard form</li> </ul>
<b>Summer 1&amp;2</b>	Begin GCSE course	

