

Year 10 Curriculum Map : Mathematics

	Autumn	Spring	Summer
Assessment Objectives	<p>AO1 Use and apply standard techniques (Foundation 50%, Higher 40%)</p> <p>AO2 Reason, interpret and communicate mathematically (Foundation 25%, Higher 30%)</p> <p>AO3 Solve problems within mathematics and in other contexts (Foundation 25%, Higher 30%)</p>		
Unit Length	<p>Foundation</p> <p>Unit 9 - Graphs: 3 weeks</p> <p>Unit 10 – Transformations: 3 weeks</p> <p>Unit 11 – Ratio and proportion: 3 weeks</p> <p>Higher</p> <p>Unit 9 – Equations and inequalities –2 weeks</p> <p>Unit 10 – Probability: – 2weeks</p> <p>Unit 11 – Multiplicative reasoning – 2 weeks</p>	<p>Foundation</p> <p>Unit 12 – right-angled triangles –4 weeks</p> <p>Unit 13 – probability – 2 weeks</p> <p>Unit 14 – Multiplicative reasoning – 2 weeks</p> <p>Higher</p> <p>Unit 12 – Similarly and congruence:–2 weeks</p> <p>Unit 13 – More trigonometry – 3-4 weeks</p> <p>Unit 14 – Further statistics – 2 weeks</p>	<p>Foundation</p> <p>Unit 15 – constructions, Loci and Bearings –3 weeks</p> <p>Unit 16 – Quadratic Equations and Graphs – 2 weeks</p> <p>Unit 17 – Perimeter, area and volume 3– 4 weeks</p> <p>Higher</p> <p>Unit 15 – Equations and graphs –4 weeks</p> <p>Unit 16 – Circle theorems – 4 weeks</p> <p>Unit 17 – More algebra – 2 weeks</p>
Key Learning Outcomes	<p>Foundation</p> <p>Unit 9 - Graphs: students will study finding the midpoint of a line segment, ● Recognise, name and plot the graphs of $y = x$ and $y = -x$, ●Plot straight-line graphs from tables of values, ●Draw graphs to represent relationships, ●Find the gradient of a line. ●Understand that parallel lines have the same gradient. ● Understand what m and c represent in $y = mx + c$, ● Find the equations of straight-line graphs.</p> <p style="text-align: center; color: red;">Intentional monitoring</p> <p>Unit 10 – Transformations: students will study to translate a shape on a coordinate grid, ● Use a column vector to describe a translation, ●Draw reflections on a coordinate grid, ● Describe reflections on a coordinate grid, ● Rotate a shape on a coordinate grid, ●Describe a rotation, ●Enlarge a shape by a scale factor, ● Enlarge a shape using a centre of enlargement, ● ●Identify the scale factor of an enlargement,</p>	<p>Foundation</p> <p>Unit 12 – Right-angled triangles: students will study calculating the length in a right-angled triangle, ●solve problems using Pythagoras’ theorem. ● use the sine, cosine and tangent ratios to calculate the length of a side in a right-angled triangle ● use the sine, cosine and tangent ratios to calculate an angle in a right-angled triangle, ● use the trigonometry ratio to solve problems.</p> <p style="text-align: center; color: red;">Intentional monitoring</p> <p>Unit 13 – Probability: students will study calculating simple probabilities from equally likely events. ●Understand mutually exclusive and exhaustive outcomes. ●Use two-way tables to record the outcomes from two events. ●Work out probabilities from sample space diagrams. ●Use Venn diagrams to work out probabilities. ●Understand the language of sets and Venn diagrams. Use frequency trees and tree diagrams. ●Work out probabilities using tree diagrams. ●Understand independent events. ●Solve</p>	<p>Foundation</p> <p>Unit 15 - Constructions, loci and bearings: students will study recognising 3D shapes and their properties. ●Describe 3D shapes using the correct mathematical words. ● Understand and draw plans and elevations of 3D shapes. ● Make accurate drawings of triangles using a ruler, protractor and compasses.● Identify SSS, ASA, SAS and RHS triangles as unique from a given description.● Identify congruent triangles. ●Accurately draw angles and 2D shapes using a ruler, protractor and compasses.● Construct a polygon inside a circle.● Recognise nets and make accurate drawings of nets of common 3D objects.● Bisect angles and lines using rulers and compasses. ● Draw loci for the path of points that follow a given rule.● Identify regions bounded by loci to solve practical problems. ●Find and use three-figure bearings. ● Solve problems involving bearings and scale diagrams.</p> <p style="text-align: center; color: red;">Intentional monitoring</p> <p>Unit 16 – Quadratic equations and graphs: students will study to multiply double brackets.● Recognise</p>

	<p>●Find the centre of enlargement, ● Describe an enlargement.</p> <p style="text-align: center;">Intentional monitoring</p> <p>Unit 11 – Ratio and proportion: students will study to use ratio notation, ● solve problems using ratios, ●Use ratios to convert between units, write and use ratios for shapes and their enlargements, ● Divide a quantity into a given ratio, ● Use ratios involving decimals, ●Compare ratios, ●Solve ratio and proportion problems, ●Use the unitary method to solve proportion problems, ●solve proportion problems in words, ● work out which product is better value for money. ●Recognise and use direct proportion on a graph, ● understand the link between the unit ratio and the gradient, ● solve word problems involving direct and inverse proportion.</p> <p style="text-align: center;">Progress assessment, feedback, reteach and DIRT.</p>	<p>probability problems involving events that are not independent.</p> <p>Unit 14 – Multiplicative reasoning: students will study calculating a percentage profit or loss. ●Express a given number as a percentage of another in more complex situations. ●Find the original amount given the final amount after a percentage increase or decrease. ●Find an amount after repeated percentage change, ● solve growth and decay problems. ●Solve problems involving compound measures. ●Convert between metric speed measures. ●Calculate average speed, distance and time. ●Use formulae to calculate speed and acceleration.</p> <p style="text-align: center;">Progress assessment, feedback, reteach and DIRT.</p>	<p>quadratic expressions.● Square single brackets. ● Plot graphs of quadratic functions.● Recognise a quadratic function. ● Use quadratic graphs to solve problems. ● Solve quadratic equations $ax^2 + bx + c = 0$ using a graph.● Solve quadratic equations $ax^2 + bx + c = k$ ● Using a graph. ● Factorise quadratic expressions. ● Solve quadratic functions algebraically.</p> <p style="text-align: center;">Intentional monitoring</p> <p>Unit 17 – Perimeter, area and volume 2: students will study calculating the circumference of a circle. ● Solve problems involving the circumference of a circle. ● Work out the area of a circle.● Work out the radius or diameter of circle.● Solve problems involving the area of a circle.● Give answers in terms of π. ● Work out areas of semicircles and quarter circle and perimeters. ● Work out the volume and surface area of cylinders. ● Work out the volume and surface area of a pyramid, cone and sphere.</p> <p style="text-align: center;">Progress assessment, feedback, reteach and DIRT.</p>
<p>Prior knowledge</p>	<p>"AO3: demonstrate knowledge, understanding and skills in handling data:</p> <ul style="list-style-type: none"> • statistics • probability." <p>"AO3: demonstrate knowledge, understanding and skills in handling data:</p> <ul style="list-style-type: none"> • statistics • probability." <p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p> <ul style="list-style-type: none"> • numbers and the numbering system • calculations • solving numerical problems • equations, formulae and identities • sequences, functions and graphs." <p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p> <ul style="list-style-type: none"> • numbers and the numbering system • calculations • solving numerical problems • equations, formulae and identities • sequences, functions and graphs." <p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p> <ul style="list-style-type: none"> • numbers and the numbering system • calculations 	<p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p> <ul style="list-style-type: none"> • numbers and the numbering system • calculations • solving numerical problems • equations, formulae and identities • sequences, functions and graphs." <p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p> <ul style="list-style-type: none"> • numbers and the numbering system • calculations • solving numerical problems • equations, formulae and identities • sequences, functions and graphs." <p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p> <ul style="list-style-type: none"> • numbers and the numbering system • calculations 	<p>"AO3: demonstrate knowledge, understanding and skills in handling data:</p> <ul style="list-style-type: none"> • statistics • probability." <p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p> <ul style="list-style-type: none"> • numbers and the numbering system • calculations • solving numerical problems • equations, formulae and identities • sequences, functions and graphs." <p>"AO2: demonstrate knowledge, understanding and skills in shape, space and measures:</p> <ul style="list-style-type: none"> • geometry • vectors and transformation geometry. " <p>"AO1: demonstrate knowledge, understanding and skills in number and algebra:</p>

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CEIAG Specific careers links	<p>The specific value of maths as a required or preferred subject for particular careers, e.g.:</p> <ul style="list-style-type: none"> • Engineers and engineering technicians • Surveyors and surveying technicians • Systems analysts • Actuaries • Accountants • Operational researchers • Chemists • Software engineers • Statisticians 	<p>The specific value of maths as a required or preferred subject for particular careers, e.g.:</p> <ul style="list-style-type: none"> • Engineers and engineering technicians • Surveyors and surveying technicians • Systems analysts • Actuaries • Accountants • Operational researchers • Chemists • Software engineers • Statisticians 	<p>The specific value of maths as a required or preferred subject for particular careers, e.g.:</p> <ul style="list-style-type: none"> • Engineers and engineering technicians • Surveyors and surveying technicians • Systems analysts • Actuaries • Accountants • Operational researchers • Chemists • Software engineers • Statisticians
RRSA	<p>Article 2 – Non discrimination Article 12 – Respect for the views of the child Article 13 – Freedom of expression Article 14 – Freedom of thought, belief and religion Article 15 – Freedom of association Article 16 – Right to privacy Article 23 – Right to a full life if child with disability Article 28 – Right to education Article 29 – Goals of education Article 42 – Knowledge of rights</p>	<p>Article 2 – Non discrimination Article 12 – Respect for the views of the child Article 13 – Freedom of expression Article 14 – Freedom of thought, belief and religion Article 15 – Freedom of association Article 16 – Right to privacy Article 23 – Right to a full life if child with disability Article 28 – Right to education Article 29 – Goals of education Article 42 – Knowledge of rights</p>	<p>Article 2 – Non discrimination Article 12 – Respect for the views of the child Article 13 – Freedom of expression Article 14 – Freedom of thought, belief and religion Article 15 – Freedom of association Article 16 – Right to privacy Article 23 – Right to a full life if child with disability Article 28 – Right to education Article 29 – Goals of education Article 42 – Knowledge of rights</p>
Cross curricular links	<p>Art & Design and Maths</p> <ul style="list-style-type: none"> • Symmetrical art can be analysed and the number of lines of symmetry can be found. Also, the order of rotational symmetry can be studied. • Ratio is used to mix paints. For example, to make purple, you mix 3 parts red to 7 parts blue. • You could also explore the Art through mathematics section on the NCETM website. <p>English and Maths</p> <ul style="list-style-type: none"> • Spelling mathematical vocabulary correctly and using it in the correct context. • Mastery of maths is advanced by children being able to explain their mathematical thinking to others and to justify methods and conclusions. • English skills can be used to clearly interpret and discuss results you get from collecting data in maths lessons. • Solving comprehension questions from maths comprehension cards. <p>Design & Technology and Maths</p> <ul style="list-style-type: none"> • Reading Scales. • Measuring ingredients and working out proportions. • Using ratios in recipes. <p>Geography and Maths</p> <ul style="list-style-type: none"> • Collecting and representing data from field trips or for weather investigations. • Grid references and coordinates. • Using scales on Ordnance Survey maps to establish the correct distance between two points. 		

	<p>Computing and Maths</p> <ul style="list-style-type: none"> • Angles and direction which can be drawn and measured using floor robots and apps too. • Information can be represented in Excel and calculations using formula can be done on the data here too. • Logic is used in programming as is problem solving. <p>Foreign Languages and Maths</p> <ul style="list-style-type: none"> • Numbers can be used to do sums or times tables in French. • Asking what time it is in another language. <p>Music and Maths</p> <ul style="list-style-type: none"> • Time and speed can be represented by tempo which is the number of beats per minute (BPM). • Equivalent fractions can be shown using musical notation where a different type of note is worth a different fraction of a whole beat. <p>History and Maths</p> <ul style="list-style-type: none"> • Historical timelines can be used as a basis for finding the difference in dates. • Historical dates can also be utilised for sequencing events. <p>Physical Education and Maths</p> <ul style="list-style-type: none"> • Time, distance and speed of races can be incorporated into Maths sessions to enable children • Averages (Mean, Mode and Median) can be used to assess and athlete's performance. 		
<p>Useful websites/videos</p>	<p>https://www.bbc.co.uk/bitesize/subjects/zqhs34</p> <p>https://hegartymaths.com/</p> <p>https://corbettmaths.com/</p>		
<p>Wider Reading</p>	<ul style="list-style-type: none"> • Research the history of algebra. Where did the word algebra derive from? Which civilizations introduced algebra? Who were the early pioneers? • Investigate Egyptian fractions. What are they? How did they work? Are they still used anywhere today? What are the benefits and drawbacks of Egyptian fractions? • Investigate misleading graphs. Where can they be seen? Why would the media use misleading charts or graphs? • Research Greek Mathematician Pythagoras of Samos. Investigate some careers where Pythagoras and trigonometry skills could be required. • Investigate where averages are used in everyday life. What jobs might require you to work with averages. • Investigate quadratic graphs. What do they look like? Where might quadratic graphs be used in real life? 		
<p>Literacy Programme</p>	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies 	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies 	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies
<p>Independent Learning Tasks</p>	<p>Hegarty maths tasks Knowledge organisers</p>	<p>Hegarty maths tasks Knowledge organisers</p>	<p>Hegarty maths tasks Knowledge organisers</p>