

Year 8 Curriculum Map : Mathematics

	Autumn	Spring	Summer
Assessment Objectives	AO1 Use and apply standard techniques (Support/Core 50%, Core/Depth 40%) AO2 Reason, interpret and communicate mathematically (Support/Core 25%, Core/Depth 30%) AO3 Solve problems within mathematics and in other contexts (Support/Core 25%, Core/Depth 30%)		
Unit Length	Topic: <ol style="list-style-type: none"> 1. Number Skills 2. Expressions and equations 3. Statistics, graphs and charts 4. Area and volume 	Topic: <ol style="list-style-type: none"> 1. Real life graphs 2. Decimals and ratios 3. Lines and angles 4. Calculating with fractions 	Topic: <ol style="list-style-type: none"> 1. Straight line graphs 2. Percentages, decimals and fractions 3. Data project 4. Reasoning lesson sequence
Key Learning Outcomes	<p><u>Unit One – Number skills</u></p> <ol style="list-style-type: none"> 1. students will be studying calculations with the four operations, including negative numbers. Students will then investigate powers, roots and brackets before working on multiples and factors. (S/C) 2. students will be studying prime factor decomposition, laws of indices, powers of 10 and estimation. (C/D) <p style="text-align: center; color: red;">Intentional monitoring</p> <p><u>Unit two – Expressions and equations</u></p> <ol style="list-style-type: none"> 3. students will be introduced algebraic notation, expressions and function machines. Students will then apply this to expand brackets and solve equations. (S/C) 4. students will be introduced to algebraic notation. Students will learn how to expand brackets and factorise expressions as well as solve equations. (C/D) <p style="text-align: center; color: red;">Progress assessment, feedback, reteach and DIRT.</p> <p><u>Unit three – Statistics, graphs and charts</u></p>	<p><u>Unit five – Real life graphs</u></p> <ol style="list-style-type: none"> 9. students will be studying line graphs and conversion graphs linking them to real life. Students will then move onto studying distance-time graphs and rates of change. (S/C) 10. students will be studying direct proportion and how this links with graphs. Students will move onto study distance-time graphs and rates of change. (C/D) <p style="text-align: center; color: red;">Intentional monitoring</p> <p><u>Unit six – Decimals and ratio</u></p> <ol style="list-style-type: none"> 11. Students will be studying how to add, subtract and multiply decimals. Also they will learn how to estimate and order decimals. (S/C) 12. students will be studying how to calculate decimals using all four operations. Students will then link decimals to sharing ratios into a given amount. (C/D) <p style="text-align: center; color: red;">Progress assessment, feedback, reteach and DIRT.</p> <p><u>Unit seven – Lines and angles</u></p>	<p><u>Unit nine – Straight line graphs</u></p> <ol style="list-style-type: none"> 17. students will be studying direct proportion and how this links with graphs. Also students will be using the knowledge of graphs to find the equation of a straight line. (S/C) 18. students will be studying how to find the equation of a line and how to identify perpendicular and parallel lines. (C/D) <p style="text-align: center; color: red;">Intentional monitoring</p> <p><u>Unit ten – Percentages, decimals and fractions</u></p> <ol style="list-style-type: none"> 19. students will be studying how to convert between decimals, fractions and percentages and compare. (S/C) 20. students will be studying how to convert recurring decimals to fractions. Students will then move onto calculating percentage change and reverse percentages. (C/D) <p style="text-align: center; color: red;">Progress assessment, feedback, reteach and DIRT.</p> <p><u>Data project</u></p>

	<p>5. students will be introduced to data collection sheets and interpreting bar charts and pie charts. (S/C)</p> <p>6. students will be studying pie charts, tables, stem and leaf diagrams and scatter graphs. Students will then apply their skills to compare data.. (C/D)</p> <p style="text-align: center;">Intentional monitoring</p> <p><u>Unit four – Area and volume</u></p> <p>7. students will calculate the areas of shapes such as triangles, parallelograms and trapezium. Students will then develop this to calculate the volume and surface area of 3D shapes. (S/C)</p> <p>8. students will be focusing on how to draw plans and elevations of 3D shapes initially. They will then learn how to calculate surface area and volumes of various prisms. This will be extended to working with circles and cylinders. (C/D)</p> <p style="text-align: center;">Progress assessment, feedback, reteach and DIRT.</p>	<p>13. Students will be taught angle facts and how to measure and draw angles. Also students will be focussing on constructing triangles and finding angles in triangles and sketching nets (S/C)</p> <p>14. Students will be studying how to calculate angles using angle facts and parallel lines. Also students will then move onto finding interior and exterior angles of regular polygons (C/D)</p> <p style="text-align: center;">Intentional monitoring</p> <p><u>Unit eight – Calculating with fractions</u></p> <p>15. students will be studying how to calculate with fractions and mixed numbers using all four operations. (S/C)</p> <p>16. students will be studying how to simplify and find equivalent fractions in order to compare them. Also they will be studying how to find fractions of an amount. (C/D)</p> <p style="text-align: center;">Progress assessment, feedback, reteach and DIRT.</p>	<p>21. students will be studying how to calculate positive and negative numbers using addition, subtraction, multiplying and dividing. (S/C)</p> <p>22. students will be studying the properties of numbers and how to calculate directed numbers using all four operations. (C/D)</p> <p style="text-align: center;">Intentional monitoring</p> <p><u>Reasoning lesson sequence</u></p> <p>23. students will be studying how to calculate positive and negative numbers using addition, subtraction, multiplying and dividing. (S/C)</p> <p>24. students will be studying the properties of numbers and how to calculate directed numbers using all four operations. (C/D)</p> <p style="text-align: center;">Progress assessment, feedback, reteach and DIRT.</p>
Prior knowledge	<p>KS2: Pupils connect their work on angles, fractions and percentages to the interpretation of pie charts.</p> <p>Pupils both encounter and draw graphs relating 2 variables, arising from their own enquiry and in other subjects.</p> <p>They should connect conversion from kilometres to miles in measurement to its graphical representation.</p> <p>Pupils know when it is appropriate to find the mean of a data set</p>	<p>KS2: Pupils continue to practise adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole. Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions.</p> <p>Pupils’ understanding of the number system and decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimal notation to division of whole number by 10 and later 100.</p> <p>They practise counting using simple fractions and decimals, both forwards and backwards</p>	<p>KS2: define percentage as ‘number of parts per hundred’, interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express 1 quantity as a percentage of another, compare 2 quantities using percentages, and work with percentages greater than 100% interpret fractions and percentages as operators</p>
CEIAG	<p><i>The general value of maths in careers and everyday life, e.g.: Numeracy skills are needed in most jobs such as being able to do basic calculations, to make sense of data in graphs and charts, to have a basic understanding of probability.</i></p>		

<p>Specific careers links</p>	<p><i>A qualification at level 2 such as GCSE maths A*-C is a general entry requirement for many courses and jobs</i></p> <p>The specific value of maths as a required or preferred subject for particular careers, e.g.:</p> <ul style="list-style-type: none"> o Engineers and engineering technicians o Surveyors and surveying technicians o Systems analysts o Actuaries o Accountants o Operational researchers o Chemists o Software engineers o Statisticians o Mathematicians <p>Useful subject combinations, e.g.:</p> <ul style="list-style-type: none"> o Maths and physics for meteorology o Maths and chemistry for chemical engineering o Maths, statistics and a social science subject for social scientist/researcher o Maths and art and design for architecture <p>Useful skill combinations, e.g.:</p> <ul style="list-style-type: none"> o doing calculations, using ICT and relating well to people, e.g. for accountancy, banking, insurance, investment advice, clerical work o teaching maths and relating well to children and young people, e.g. maths teaching o handling quantitative data and physical skills, e.g. for construction, farming o doing calculations, using ICT, planning and attending to detail, e.g. for transport and logistics o doing mental arithmetic and treating customers well, e.g. for jobs in retail, hotel and catering, o doing geometry and having creative flair, e.g. packaging and product design o using logical reasoning and problem-solving and leading and organising people, e.g. for managerial jobs 		
<p>RRSA</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>	<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>Cross curricular links</p>	<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. 		

	<ul style="list-style-type: none"> 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. 		
Useful websites/videos	https://www.bbc.co.uk/bitesize/subjects/zqhs34j https://hegartymaths.com/ https://corbettmaths.com/		
Wider Reading	<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? 		
Literacy Programme	<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
Independent Learning Tasks	Hegarty maths tasks Knowledge organiser	Hegarty maths tasks Knowledge organiser	Hegarty maths tasks Knowledge organiser