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| **Year 11 Foundation Curriculum Overview [2023-2024]**  **Mathematics** | | | | | | |
| **Autumn Term** | **Knowledge & Understanding** | | | **Literacy Skills**  **Opportunities for**  **developing**  **literacy skills** | **Employability Skills**  **[if any]** | **Assessment Opportunities** |
| **Composites** | **Components**  **[KEY concepts & subject specific vocab]** | **Formal Retrieval**  **[if any]** |
| **HT1**  **HT2** | **Unit 9 - Graphs** | * Find the midpoint of a line segment. * Recognise, name and plot straight-line graphs parallel to the axes. * Generate and plot coordinates from a rule. * Plot straight-line graphs from tables of values. * Draw graphs to represent relationships. * Find the gradient of a line. * Identify and interpret the gradient from an equation. * 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. * Sketch graphs given the values of m and c. * Draw and interpret graphs from real data. * Use distance–time graphs to solve problems. * Draw distance–time graphs. * Interpret rate of change graphs. * Draw and interpret a range of graphs. * Understand when predictions are reliable. | * Retrieval in class starter * Prior knowledge whiteboard questions * End of Topic Unit Test Intervention lessons using knowledge organiser material | * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Problem Solving Tasks * GCSE problems as part of plenary – focus on key words | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively   - Using a calculator effectively.   * Finance * Science * Engineering * Medicine * Data Analyst * Insurance * Meteorologist * Construction * Engineering * Pilot * Architecture * Finance * Business * Jobs that require basic number skills * Hairdressers * Retail * Education * Construction * Engineering * Pilot * Architecture * Jobs that require basic number skills * Jobs that require basic number skills | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term GCSE tests.   Use of diagnostic questions and pre-tests to define prior knowledge |
| **Unit 10 - Transformations** | * Translate a shape on a coordinate grid. * Use a column vector to describe a translation. * Draw a reflection of a shape in a mirror line. * 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. * Find the centre of enlargement. * Describe an enlargement. * Transform shapes using more than one transformation. * Describe combined transformations of shapes on a grid. |
| **Unit 11 – Ratio and Proportion** | * Use ratio notation. * Write a ratio in its simplest form. * Solve problems using ratios. * Solve simple problems using ratios. * Use ratios to convert between units. * Write and use ratios for shapes and their enlargements. * Divide a quantity into 2 parts in a given ratio. * Divide a quantity into 3 parts in a given ratio. * Solve word problems using ratios. * 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. * Recognise different types of proportion. * Solve word problems involving direct and inverse proportion. |
| **Unit 12 – Right-angled Triangles** | * Understand Pythagoras’ theorem. * Calculate the length of the hypotenuse in a right-angled triangle. * Solve problems using Pythagoras’ theorem. * Calculate the length of a line segment AB. * Calculate the length of a shorter side in a right-angled triangle. * Understand and recall the sine ratio in right-angled triangles. * Use the sine ratio to calculate the length of a side in a right-angled triangle. * Use the sine ratio to solve problems. * Use the sine ratio to calculate an angle in a right-angled triangle. * Use the sine ratio to solve problems. * Understand and recall the cosine ratio in right-angled triangles. * Use the cosine ratio to calculate the length of a side in a right-angled triangle. * Use the cosine ratio to calculate an angle in a right-angled triangle. * Use the cosine ratio to solve problems. * Understand and recall the tangent ratio in right-angled triangles. * Use the tangent ratio to calculate the length of a side in a right-anglesd triangle * Use the tangent ratio to calculate an angle in a right-angled triangle. * Solve problems using an angle of elevation or depression. * Understand and recall trigonometric ratios in right-angled triangles. * Use trigonometric ratios to solve problems. * Know the exact values of the sine, cosine and tangent of some angles. |
| **Unit 13 - Probability** | * Calculate 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. * Find and interpret probabilities based on experimental data. * Make predictions from experimental data. * 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. * Understand when events are not independent.   Solve probability problems involving events that are not independent. |
| **Unit 14 – Multiplicative Reasoning** | * Calculate 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. * Use ratio and proportion in measures and conversions. * Use inverse proportions. |
|  | **Unit 15 – Construction, Loci and Bearings** | * Recognise 3D shapes and their properties. * Describe 3D shapes using the correct mathematical words. * Understand the 2D shapes that make up 3D objects. * Identify and sketch planes of symmetry of 3D shapes. * Understand and draw plans and elevations of 3D shapes. * Sketch 3D shapes based on their plans and elevations. * 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 * Draw diagrams to scale. * Correctly interpret scales in real-life contexts. * Use scales on maps and diagrams to work out lengths and distances. * Know when to use exact measurements and estimations on scale drawings and maps. * Draw lengths and distances correctly on given scale drawings. * 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. * Draw accurately using rulers and compasses. * 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. * Use angles at parallel lines to work out bearings. * Solve problems involving bearings and scale diagrams. | * Retrieval in class starter * Prior knowledge whiteboard questions   End of Topic Unit Test Intervention lessons using knowledge organiser material | * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Problem Solving Tasks   GCSE problems as part of plenary – focus on key words | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively   - Using a calculator effectively.   * Engineering * Meteorologist * Construction * Engineering * Pilot * Architecture |  |
| **Year 11 Foundation Curriculum Overview [2022-2023]**  **Mathematics** | | | | | | |
| **Spring**  **Term** | **Knowledge & Understanding** | | | **Literacy Skills**  **Opportunities for**  **developing**  **literacy skills** | **Employability Skills**  **[if any]** | **Assessment Opportunities** |
| **Composites** | **Components**  **[KEY concepts & subject specific vocab]** | **Formal Retrieval**  **[if any]** |
| **HT3**  **HT4** | **Unit 16 – Quadratic equations and graphs** | * Multiply double brackets. * Recognise quadratic expressions. * Square single brackets. * Plot graphs of quadratic functions. * Recognise a quadratic function. * Use quadratic graphs to solve problems. * Solve quadratic equations ax2 + bx + c = 0 using a graph. * Solve quadratic equations ax2 + bx + c = k using a graph. * Factorise quadratic expressions. * Solve quadratic functions algebraically. | * Retrieval in class starter * Prior knowledge whiteboard questions * End of Topic Unit Test Intervention lessons using knowledge organiser material | * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Problem Solving Tasks * GCSE problems as part of plenary – focus on key words | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively   - Using a calculator effectively.   * Construction * Engineering * Architecture * Data analyst * Statistician | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term GCSE tests.   Use of diagnostic questions and pre-tests to define prior knowledge |
| **Unit 17 – Perimeter, area and volume (2)** | * Calculate the circumference of a circle. * Solve problems involving the circumference of a circle. * Calculate the circumference and radius of a circle. * Work out percentage error intervals. * Work out the area of a circle. * Work out the radius or diameter of a circle. * Solve problems involving the area of a circle. * Give answers in terms of π. * Understand and use maths language for circles and perimeters. * Work out areas of semicircles and quarter circle and perimeters. * Solve problems involving sectors of circles. * Solve problems involving areas and perimeters of 2D shapes. * Work out the volume and surface area of cylinders. * Work out the volume of a pyramid. * Work out the surface area of a pyramid. * Work out the volume of a cone. * Work out the surface area of a cone. * Work out the volume of a sphere. * Work out the surface area of a sphere. * Work out the volume and surface area of composite solids. |
| **Unit 18 – Fractions, Indices and Standard Form** | * Multiply and divide mixed numbers and fractions. * To know and use the laws of indices. * Write large numbers in standard form. * Convert large numbers from standard form into ordinary numbers. * Write small numbers in standard form. * Convert numbers from standard form with negative powers of ordinary numbers * To multiply and divide numbers in standard form. * To add and subtract numbers in standard form. |
|  | **Unit 19 – Congruence, similarity and vectors** | * Understand similarity. * Use similarity to solve angle problems. * Find the scale factor of an enlargement. * Use similarity to solve problems. * Understand the similarity of regular polygons. * Calculate perimeters of similar shapes. * Recognise congruent shapes. * Use congruence to work out unknown angles. * Use congruence to work out unknown sides. * Add and subtract vectors. * Find the resultant of two vectors. * Subtract vectors. * Find multiples of a vector. | * Retrieval in class starter * Prior knowledge whiteboard questions * End of Topic Unit Test Intervention lessons using knowledge organiser material | * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Problem Solving Tasks * GCSE problems as part of plenary – focus on key words | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively   - Using a calculator effectively.   * Data analyst * Statistician | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term GCSE tests.   Use of diagnostic questions and pre-tests to define prior knowledge |
| **Unit 20 – More algebra** | * Draw and interpret graphs of cubic functions. * Draw and interpret graphs of y = 1/x. * Draw and interpret non-linear graphs to solve problems. * Solve simultaneous equations by drawing a graph. * Write and solve simultaneous equations. * Solve simultaneous equations algebraically. * Change the subject of a formula. * Identify expressions, equations, formulae and identities. * Prove results using algebra. |
| **Year 11 Foundation Curriculum Overview [2023-2024]**  **Mathematics** | | | | | | |
| **Summer**  **Term** | **Knowledge & Understanding** | | | **Literacy Skills**  **Opportunities for**  **developing**  **literacy skills** | **Employability Skills**  **[if any]** | **Assessment Opportunities** |
| **Composites** | **Components**  **[KEY concepts & subject specific vocab]** | **Formal Retrieval**  **[if any]** |
| **HT5** |  | Revision and Exams |  |  |  |  |
| **HT6** |  | Revision and Exams |  |  |  |  |