|  |
| --- |
| **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 |   |  |  |  |