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| **Year 11 Higher 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** | **Unit 9 - Equations and inequalities** | * Find the roots of quadratic functions. * Rearrange and solve simple quadratic equations. * Solve more complex quadratic equations. * Use the quadratic formula to solve a quadratic equation. * Complete the square for a quadratic expression. * Solve quadratic equations by completing the square. * Solve simple simultaneous equations. * Solve simultaneous equations for real-life situations. * Use simultaneous equations to find the equation of a straight line. * Solve linear simultaneous equations where both equations are multiplied. * Interpret real-life situations involving two unknowns and solve them. * Solve simultaneous equations with one quadratic equation. * Use real-life situations to construct quadratic and linear equations and solve them. * Solve inequalities and show the solution on a number line and using set notation. |  | * Key Vocabulary in Retrieval starters * True and False Tasks * Problem Solving Tasks * Blooms Questioning Tasks * GCSE problems as part of plenary – focus on key words | * Engineering * Data analyst * Games design * Architect * Sport scientists | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests |
|  | **Unit 10 – Probability** | * Use the product rule for finding the number of outcomes for two or more events. * List all the possible outcomes of two events in a sample space diagram. * Identify mutually exclusive outcomes and events. * Find the probabilities of mutually exclusive outcomes and events. * Find the probability of an event not happening. * Work out the expected results for experimental and theoretical probabilities. * Compare real results with theoretical expected values to see if a game is fair. * Draw and use frequency trees. * Calculate probabilities of repeated events. * Draw and use probability tree diagrams. * Decide if two events are independent. * Draw and use tree diagrams to calculate conditional probability. * Draw and use tree diagrams without replacement. * Use two-way tables to calculate conditional probability. * Use Venn diagrams to calculate conditional probability. * Use set notation. | * Retrieval in class starter * Prior knowledge whiteboard questions * End of Topic Unit Test Intervention lessons using knowledge organiser material | * Key Vocabulary in Retrieval starters * True and False Tasks * Problem Solving Tasks * Blooms Questioning Tasks * GCSE problems as part of plenary – focus on key words | * Gaming * Statistician | * Plenary True and False Tasks * 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 11 - Multiplicative reasoning** | * Find an amount after repeated percentage changes. * Solve growth and decay problems. * Calculate rates. * Convert between metric speed measures. * Use a formula to calculate speed and acceleration. * Solve problems involving compound measures. * Use relationships involving ratio. * Use direct and indirect proportion. | * Retrieval in class starter * Prior knowledge whiteboard questions * End of Topic Unit Test Intervention lessons using knowledge organiser material | * Key Vocabulary in Retrieval starters * True and False Tasks * Problem Solving Tasks * Blooms Questioning Tasks * GCSE problems as part of plenary – focus on key words | * Scientist * Engineer | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term Tests |
| **HT2** | **Unit 12 – Similarity and congruence** | * Show that two triangles are congruent. * Know the conditions of congruence. * Prove shapes are congruent. * Solve problems involving congruence. * Use the ratio of corresponding sides to work out scale factors. * Find missing lengths on similar shapes. * Use similar triangles to work out lengths in real life. * Use the link between linear scale factor and area scale factor to solve problems. * Use the link between scale factors for length, area and volume to solve problems. | * Retrieval in class starter * Prior knowledge whiteboard questions * End of Topic Unit Test Intervention lessons using knowledge organiser material | * Key Vocabulary in Retrieval starters * True and False Tasks * Problem Solving Tasks * Blooms Questioning Tasks * GCSE problems as part of plenary – focus on key words | * Architect * Engineer * Cartographer * Car designer | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term Tests |
|  | **Unit 13 – More Trigonometry** | * Integers, Decimals, fractions, percentages, <, > and ≠ symbols * Recognise, sketch and interpret graphs of the trigonometric functions (in degrees) y = sin x, y = cos x and y = tan x for angles of any size. * Know the exact values of sin θ and cos θ for θ = 0°, 30°, 45°, 60° and 90° and exact value of tan θ for θ = 0°, 30°, 45° and 60° and find them from graphs. * Apply to the graph of y = f(x) the transformations y = –f(x), y = f(–x) for sine, cosine and tan functions f(x). * Apply to the graph of y = f(x) the transformations y = f(x) + a, y = f (x + a) for sine, cosine and tan functions f(x). * Know and apply Area = ½ ab sin C to calculate the area, sides or angles of any triangle. * Know the sine and cosine rules and use to solve 2D problems (including involving bearings). * Use the sine and cosine rules to solve 3D problems. Calculate the length of a diagonal of a cuboid. Find the angle between a line and a plane. | * Retrieval in class starter * Bespoke starters based on QLA of Mock Papers * Prior knowledge whiteboard questions * End of Topic Plenaries * Bespoke Intervention lessons using knowledge organiser material and based on individual student gaps from the Mock exams * Homework once a week online | * Key words – learned and understood * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Engage with worded exam questions * Encourage use of subject language * 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.  **Possible Careers:**  Scientist  Engineer | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Term GCSE Mock Exams * Use of diagnostic questions and pre-tests to define prior knowledge   Baseline Assessment |
| **Unit 14 – Further Statistics** | * Understand how to take a simple random sample. * Understand how to take a stratified sample. * Draw and interpret cumulative frequency tables and diagrams. * Work out the median, quartiles and interquartile range from a cumulative frequency diagram. * Find the quartiles and the interquartile range from stem-and-leaf diagrams. * Draw and interpret box plots. * Understand frequency density. * Draw histograms. * Interpret histograms * Compare two sets of data. | * Retrieval in class starter * Bespoke starters based on QLA of Mock Papers * Prior knowledge whiteboard questions * End of Topic Plenaries * Bespoke Intervention lessons using knowledge organiser material and based on individual student gaps from the Mock exams * Homework once a week online | * Key words – learned and understood * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Engage with worded exam questions * Encourage use of subject language * 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.  **Possible Careers:**  Data Analyst  Stockbroker  Meteorologist | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Term GCSE Mock Exams * Use of diagnostic questions and pre-tests to define prior knowledge   Baseline Assessment |
| **Unit 15 Equations and Graphs** | * Solve simultaneous equations graphically. * Represent inequalities on graphs. * Interpret graphs of inequalities. * Recognise and draw quadratic functions. * Find approximate solutions to quadratic equations graphically. * Solve quadratic equations using an iterative process. * Find the roots of cubic equations. * Sketch graphs of cubic functions. * Solve cubic equations using an iterative. | * Retrieval in class starter * Bespoke starters based on QLA of Mock Papers * Prior knowledge whiteboard questions * End of Topic Plenaries * Bespoke Intervention lessons using knowledge organiser material and based on individual student gaps from the Mock exams * Homework once a week online | * Key words – learned and understood * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Engage with worded exam questions * Encourage use of subject language * 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.  **Possible Careers:**  Scientist  Engineer  Teacher | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Term GCSE Mock Exams * Use of diagnostic questions and pre-tests to define prior knowledge   Baseline Assessment |
| **Year 11 Higher Curriculum Overview [2023-2024]**  **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** | **Unit 16 – Circle Theorems** | * Solve problems involving angles, triangles and circles. * Understand and use facts about chords and their distance from the centre of a circle. * Solve problems involving chords and radii. * Understand and use facts about tangents at a point and from a point. * Solve angle and length problems involving circles and tangents. * Understand, prove and use facts about angles subtended at the centre and the circumference of circles. * Understand, prove and use facts about the angle in a semicircle. * Understand, prove and use facts about angles subtended at the circumference of a circle. * Understand, prove and use facts about cyclic quadrilaterals. * Prove the alternate segment theorem. * Solve angle problems using circle theorems. * Find the equation of the tangent to a circle at a given point. | * Retrieval in class starter * Bespoke starters based on QLA of Mock Papers * Prior knowledge whiteboard questions * End of Topic Plenaries * Bespoke Intervention lessons using knowledge organiser material and based on individual student gaps from the Mock exams * Homework once a week online | * Key words – learned and understood * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Engage with worded exam questions * Encourage use of subject language * 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.  **Possible Careers:**  Architect  Engineer   * Construction | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Term GCSE Mock Exams * Use of diagnostic questions and pre-tests to define prior knowledge   Baseline Assessment |
|  | **Unit 17 – More Algebra** | * Change the subject of a formula where the power or root of the subject appears. * Change the subject of a formula where the subject appears twice. * Add and subtract algebraic fractions. * Multiply and divide algebraic fractions. * Change the subject of a formula involving fractions where all the variables are in the denominators. * Simplify algebraic fractions. * Add and subtract more complex algebraic fractions. * Multiply and divide more complex algebraic fractions. * Prove a result using algebra. * Simplify expressions involving surds. * Expand expressions involving surds. * Rationalise the denominator of a fraction. * Solve equations that involve algebraic fractions. * Use function notation. * Find composite functions. * Find inverse functions. | * Retrieval in class starter * Bespoke starters based on QLA of Mock Papers * Prior knowledge whiteboard questions * End of Topic Plenaries * Bespoke Intervention lessons using knowledge organiser material and based on individual student gaps from the Mock exams * Homework once a week online | * Key words – learned and understood * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Engage with worded exam questions * Encourage use of subject language * 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.  **Possible Careers:**  Scientist  Engineer  Software developer  IT   * Finance | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Term GCSE Mock Exams * Use of diagnostic questions and pre-tests to define prior knowledge   Baseline Assessment |
| **HT4** | **Unit 18 – Vectors and Geometric Proof** | * Understand and use vector notation. * Work out the magnitude of a vector. * Calculate using vectors and represent the solutions graphically. * Identify when vectors are parallel. * Calculate the resultant of two vectors. * Solve problems using vectors. * Use the resultant of two vectors to solve vector problems. * Express points as position vectors. * Prove lines are parallel. * Prove points are collinear. * Solve geometric problems in two dimensions using vector methods, including where vectors are divided in a given ratio. * Apply vector methods for simple geometric proofs. | * Retrieval in class starter * Bespoke starters based on QLA of Mock Papers * Prior knowledge whiteboard questions * End of Topic Plenaries * Bespoke Intervention lessons using knowledge organiser material and based on individual student gaps from the Mock exams * Homework once a week online | * Key words – learned and understood * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Engage with worded exam questions * Encourage use of subject language * 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.  **Possible Careers:**  Scientist  Engineer  Space Travel  Architecture and design | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Term GCSE Mock Exams * Use of diagnostic questions and pre-tests to define prior knowledge   Baseline Assessment |
| **Unit 19 – Proportion and Graphs** | * Write and use equations to solve problems involving direct proportion. * Write and use equations to solve problems involving direct proportion. * Solve problems involving square and cubic proportionality. * Write and use equations to solve problems involving inverse proportion. * Use and recognise graphs showing inverse proportion. * Recognise graphs of exponential functions. * Sketch graphs of exponential functions. * Match equations to graphs. * Calculate the gradient of a tangent at a point. * Estimate the area under a non-linear graph. * Understand the relationship between translating a graph and the change in its function notation. * Understand the effect reflecting a curve in one of the axes has on its function form. | * Retrieval in class starter * Bespoke starters based on QLA of Mock Papers * Prior knowledge whiteboard questions * End of Topic Plenaries * Bespoke Intervention lessons using knowledge organiser material and based on individual student gaps from the Mock exams * Homework once a week online | * Key words – learned and understood * Encourage use of subject language * Questioning * Pupil explanations and reasoning * Engage with worded exam questions * Encourage use of subject language * 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.  **Possible Careers:**  Scientist  Engineer  Software developer  IT  Finance | * Plenary - GCSE question * Peer and self-assessment * Feedback and reflective practise * End of Term GCSE Mock Exams * Use of diagnostic questions and pre-tests to define prior knowledge   Baseline Assessment |
| **Structured revision with teachers depending on outcomes from mocks.**  **Revision of key topics** | |  |  |  |  |