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| **Year 9 Curriculum Overview [2023-2024]**  **Mathematics** | | | | | | |
| **Autumn Term** | | | | | | |
| **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** | **Reasoning with Algebra**  Straight line graphs | * R - Lines, parallel to the axes, y=x and y=-x * Using table of values * Compare gradients * Compare intercepts * Understand and use y=mx+c * Write an equation in the form y=mx+c * Find the equation of a line from a graph * Interpret gradient and intercepts of real-life graphs * Model real-life graphs involving inverse proportion (H) * Explore perpendicular lines (H) | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term Tests |
|  | **Reasoning with Algebra**  Forming and solving equations | * R - Solve one and two-step equations and inequalities * R - Solve one and two-step equations and inequalities with brackets * Inequalities with negative numbers * Solve equations with unknowns on both sides * Solve inequalities with unknowns on both sides * Solving equations and inequalities in context * Substituting into formulae and equations * Rearranging formulae (one-step) * Rearranging formulae (two-step) * Rearrange complex formulae including brackets and squares (H) | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Reasoning with Algebra**  Testing Conjectures | * R - Factors, multiples and primes * True or false * Always, sometimes, never true * Show that * Conjectures about number * Expand a pair of binomials * Conjectures with algebra * Explore the 100 grid | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **HT2** | **Constructing in 2 and 3 dimensions**  Three dimensional shapes | * Know names of 2-D and 3-D shapes * Recognise prisms * Accurate nets of cuboids and other 3-D shapes * sketch and recognise nets of cuboids and other 3-D shapes * plans and elevations * R - Find area of 2-D shapes * Surface area of cubes and cuboids * surface area of triangular prisms * surface area of a cylinder * volume of cubes and cuboids * Volume of other 3-D shapes - prisms and cylinders * Explore volumes of cone, pyramids and spheres (H) | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Constructing in 2 and 3 dimensions**  Construction and congruency | * R - draw and measure angles * R - construct and interpret scale drawings * Locus of distance from a point * Locus of distance from a straight line/shape * Locus of points equidistant from two points * construct a perpendicular bisector * Construct a perpendicular from a point * Construct a perpendicular to a point * Locus of distance from two lines * Construct an angle bisector * R - Construct triangles from given information * Identify congruent figures * Explore congruent triangles * Identify congruent triangles | * Retrieval in class starter * Prior knowledge whiteboard questions * End of Topic Unit Test Intervention lessons using knowledge organiser material |  | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Reasoning with Number**  Numbers | * Integers, real and rational numbers * Understand and use surds (H) * R - Work with directed number * Solve problems with integers * Solve problems with decimals * R - HCF and LCM * R - Adding and subtracting fractions * R - Multiplying and dividing fractions * Solving problems with fractions * R - Numbers in standard form | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **Spring term** | | | | | | |
| **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** | **Reasoning with Number**  Using Percentages | * R - Use the equivalence of fractions, decimals and percentages * R - Calculate percentage increase and decrease * R - Express a change as a percentage * Solve 'reverse' percentage problems * Recognise and solve percentage problems (non-calc) * R - Recognise and solve percentage problems (calc) * Solve problems with repeated percentage change (H) | * 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 |  |  |
|  | **Reasoning with Number**  Maths and Money | * Solve problems with bills and bank statements * Calculate simple interest * Calculate compound interest * Solve problems with VAT * Calculate wages and taxes * Solve problems with exchange rates * Solve unit pricing 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **HT4** | **Reasoning with Geometry**  Deductions | * R - Angles in parallel lines * Solving angles problems (using chains of reasoning) * Angles problems with algebra * Conjectures with angles * Conjectures with shapes * Link constructions and geometrical reasoning |  | * Key Vocabulary in Retrieval starters * True and False Tasks * Problem Solving Tasks * Blooms Questioning Tasks | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Reasoning with Geometry**  Rotation and translation | * Identify the order of rotational symmetry of a shape * Compare and contrast rotational symmetry with line symmetry * Rotate a shape about a point on a shape * Rotate a shape about a point not on a shape * Translate points and shapes by a given vector * Compare rotation and reflection of shapes * Find the result of a series of transformations | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Reasoning with Geometry**  Pythagoras | * R - Squares and square roots * Identify the hypotenuse of a right-angled triangle * Determine whether a triangle is right angled * Calculate the hypotenuse of a right-angled triangle * Calculate missing sides in right-angled triangles * Use Pythagoras' theroem on coordinate axes * Explore proofs of Pythagoras' theorem * Use Pythagoras' theorem in 3-D shapes |  |  | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **Summer term** | | | | | | |
| **Summer**  **Term** | **Knowledge & Understanding** | | | **Literacy Skills**  **Opportunities for**  **developing**  **literacy skills** | **Employability Skills**  **[if any]** | **Assessment Opportunities** |
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| **HT5** | **Reasoning with Proportion**  Enlargement and similarity | * Recognise enlargement and similarity * Enlarge a shape by a positive integer scale factor * Enlarge a shape by a positive integer scale factor from a point * Enlarge a shape by a positive **fractional** scale factor * Enlarge a shape by a negative scale factor * Work out missing sides and angles in a pair of given similar shapes * Solve problems with similar triangles * Explore ratios in right-angled triangles | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Reasoning with Proportion**  Solving ratio and proportion questions. | * R - Solve problems with direct proportion * R - Direct proportion and conversion graphs * Solve problems with inverse proportion * Graphs of inverse relationships * R - Solve ratio problems given the whole or part * Solve 'best-buy' problems * Solve problems ratio and algebra | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Reasoning with Proportion**  Rates | * Know and use mental addition and subtraction * Solve speed, distance and time problems without a calculator * Solve speed, distance and time problems with a calculator * Use distance/time graphs * Solve problems with density, mass and volume * Solve flow problems and their graphs * Rates of change and their units * Convert compound units(H) | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **HT6** | **Representation**  Probability | * R - Single event probability * Relative frequency - include convergence * Expected outcomes * Independent events * Use tree diagrams (H) * Use tree diagrams to solve 'without replacement' problems(H) * Use tree diagrams to work out probabilities | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Representation**  Algebraic representation | * Draw and interpret quadratic graphs * Interpret graphs, including reciprocal and piece-wise * Investigate graphs of simultaneous equations * Represent inequalities | * 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 | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |