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| **Year 10 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** | Similarity and Congruence | * Enlarge a shape by a positive integer scale factor * Enlarge a shape by a fractional scale factor * Enlarge a shape by a negative scale factor Identify similar shapes * Work out missing sides and angles in a pair given similar shapes * Use parallel line rules to work out missing angles * Establish a pair of triangles are similar * Explore areas of similar shapes (1) * Explore areas of similar shapes (2) * Explore volumes of similar shapes * Solve mixed problems involving similar shapes * Understand the difference between congruence and similarity * Understand and use conditions for congruent triangles * Prove a pair of triangles are congruent | * 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 * **Key words:** Enlarge, Scale Factor, Ratio, Origin, Object, Image | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively * Engineering and architecture and planning | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term Tests |
|  | Trigonometry | * Explore ratio in similar right-angled triangles * Work fluently with the hypotenuse, opposite and adjacent sides * Use the tangent ratio to find missing side lengths * Use the sine and cosine ratio to find missing side lengths * Use sine, cosine and tangent to find missing side lengths * Use sine, cosine and tangent to find missing angles * Calculate sides in right-angled triangles using Pythagoras’ Theorem * Select the appropriate method to solve right-angled triangle problems * Work with key angles in right-angled triangles(1) & (2) * Use trigonometry in 3-D shapes * Use the formula 𝟏 𝟐 𝒂𝒃𝐬𝐢𝐧𝑪to find the area of a triangle * Understand and use the sine rule to find missing lengths * Understand and use the sine rule to find missing angles * Understand and use the cosine rule to find missing lengths * Understand and use the cosine rule to find missing angles * Choosing and using the sine and cosine rules (1)& (2) | * 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 * **Keywords**: Enlarge, Scale Factor, Ratio, Corresponding, Constant | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Engineering and architecture and planning  • Number skills involved in many areas of different work. | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **HT2** | Representing solutions of equations & inequalities | * Understand the meaning of a solution * Form and solve one-step and two-step equations * Form and solve one-step and two-step inequalities * Show solutions to inequalities on a number line * Interpret representations on number lines as inequalities * Represent solutions to inequalities using set notation * Draw straight line graphs * Find solutions to equations using straight line graphs * Represent solutions to single inequalities on a graph * Represent solutions to multiple inequalities on a graph * Form and solve equations with unknowns on both sides * Form and solve inequalities with unknowns on both sides * Form and solve more complex equations and inequalities * Solve quadratic equations by factorisation\* (\*Also Foundation tier. Higher cover now, Core will cover in Year 11) * Solve quadratic inequalities in one variable | * 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 * **Key words:** Variable, Solve, Solution, Equation, Expression | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively   • Engineering and architecture and planning  • Number skills involved in many areas of different work. | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term Tests |
|  | Simultaneous Equations | * Understand that equations can have more than one solution * Determine whether a given (𝑥,𝑦)is a solution to a pair of linear simultaneous equations * Solve a pair of linear simultaneous equations by substituting a known variable * Solve a pair of linear simultaneous equations by substituting an expression (1) & (2) * Solve a pair of linear simultaneous equations using graphs * Solve a pair of linear simultaneous equations by subtracting equations * Solve a pair of linear simultaneous equations by adding equations * Use a given equation to derive related facts * Solve a pair of linear simultaneous equations by adjusting one equation * Solve a pair of linear simultaneous equations by adjusting both equations * Form a pair of linear simultaneous equations from given information * Form and solve pair of linear simultaneous equations from given information * Determine whether a given (𝒙,𝒚)is a solution to both a linear and quadratic equation * Solve a pair of simultaneous equations (one linear, one quadratic) using graphs * Solve a pair of simultaneous equations (one linear, one quadratic) algebraically * Solve a pair of simultaneous equations involving a third unknown | * 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 * **Key words:** Possible, Solutions, Infinite, Finite, Variables, Equation | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively   • Engineering and architecture and planning  • Number skills involved in many areas of different work. | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term Tests |
| **HT3** | Angles and Bearings | * Use cardinal directions and related angles * Draw and interpret scale diagrams * Understand and represent bearings * Measure and read bearings * Make scale drawings using bearings * Calculate bearings using angles rules * Solve bearings problems using Pythagoras and trigonometry * Solve bearings problems using the sine and cosine rules | * 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 * **Key words:** Compass, Point, Angle, Turn, Three letter notation | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively * Construction   • Surveyor  • Architecture  • Carpet fitter  • Decorator | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests * End of Term Tests |
|  | Angles and Bearings | * Use cardinal directions and related angles * Draw and interpret scale diagrams * Understand and represent bearings * Measure and read bearings * Make scale drawings using bearings * Calculate bearings using angles rules * Solve bearings problems using Pythagoras and trigonometry * Solve bearings problems using the sine and cosine rules | * 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 * **Key words:** Compass, Point, Angle, Turn, Three letter notation | * Personal skills - Thinking and problem solving - Working together and communicating * Fundamental skills - Using numbers effectively - Using language effectively * Construction   • Surveyor  • Architecture  • Carpet fitter  • Decorator | * 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** | Working with Circles | * Recognise and label parts of a circle * Calculate fractional parts of a circle * Calculate the length of an arc * Calculate the area of a sector * Circle theorem: Angles at the centre and circumference * Circle theorem: Angles in a semicircle * Circle theorem: Angles in the same segment * Circle theorem: Angles in a cyclic quadrilateral * Understand and use the volume of a cylinder and cone * Understand and use the volume of a sphere * Understand and use the surface area of a sphere * Understand and use the surface area of a cylinder and cone * Solve area and volume problems involving similar shapes | * 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 * **Key words:** Radius, Diameter, Chord, Centre, Tangent, Arc, Sector, Segment | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Statistician  • Data Analyst  • Law | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | Vectors | * Understand and represent vectors * Use and read vector notation * Draw and understand vectors multiplied by a scalar * Draw and understand addition of vectors * Draw and understand addition and subtraction of vectors * Explore vector journeys in shapes * Explore quadrilaterals using vectors * Understand parallel vectors * Explore collinear points using vectors * Use vectors to construct geometric arguments and proofs | * 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 * **Key words:** Column vector, Direction, Scalar, Size, Magnitude | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Engineering and architecture and planning  • Number skills involved in many areas of different work. | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **HT4** | Ratios and Fractions | * Compare quantities using a ratio * Link ratios and fractions * Share in a ratio (given total or one part) * Use ratios and fractions to make comparisons * Link ratios and graphs * Solve problems with currency conversion * Link ratios and scales * Use and interpret ratios of the form 1∶𝑛and 𝑛∶1 * Solve ‘best buy’ problems * Combine a set of ratios * Link ratio and algebra * Ratio in area problems * Ratio in volume problems * Mixed ratio 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 * **Key words:** Ratio, Simplest Form, Convert, Unit, Equivalent | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Chef  • Working in the catering industry • Business  • Architecture  • Surveyor  • Financial  • Currency exchange  • Hairdressers  • Medical | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | Percentages and Interest | * Convert and compare fractions, decimals and percentages * Workout percentages of amounts (with and without a calculator) * Increase and decrease by a given percentage * Express one number as a percentage of another * Calculate simple and compound interest * Repeated percentage change * Find the original value after a percentage change * Solve problems involving growth and decay * Understand iterative processes * Solve problems involving percentages, ratios and fractions | * 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 * **Key words:** Fraction, Decimal Percentage, Equivalent, Convert | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Engineering and architecture and planning  • Number skills involved in many areas of different work. | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | Probability | * Know how to add, subtract and multiply fractions * Find probabilities using equally likely outcomes * Use the property that probabilities sum to 1 * Using experimental data to estimate probabilities * Find probabilities from tables, Venn diagrams and frequency trees * Construct and interpret sample spaces for more than one event * Calculate probability with independent events * Use tree diagrams for independent events * Use tree diagrams for dependent events * Construct and interpret conditional probabilities (Tree diagrams) * Construct and interpret conditional probabilities (Venn diagrams and two-way tables) | * 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 * **Key words**: Numerator, Denominator, Exact Value, LCM, Simplest Form | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Engineering and architecture and planning  • Number skills involved in many areas of different work. | * 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** |
| **Composites** | **Components**  **[KEY concepts & subject specific vocab]** | **Formal Retrieval**  **[if any]** |
| **HT5** | **Delving into Data**  **Collecting Representing and Interpreting Data** | * Understand populations and samples * Construct a stratified sample * Primary and secondary data * Construct and interpret frequency tables and frequency polygons * Construct and interpret two-way tables * Construct and interpret line and bar charts (including composite bar charts) * Construct and interpret pie charts * Criticise charts and graphs * Construct histograms * Interpret histograms * Find and interpret averages from a list * Find and interpret averages from a table * Construct and interpret time series graphs * Construct and interpret stem-and-leaf diagrams * Construct and interpret cumulative frequency diagrams * Use cumulative frequency diagrams to find measures * Construct and interpret box plots * Compare distributions using charts and measures * Compare distributions using complex charts and measures * Construct and interpret scatter graphs * Draw and use a line of best fit * Understand extrapolation | * 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 * **Key words:** Population, Sample Representative, Biased, Random | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Data Analyst  • Statistician | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Non-calculator Methods** | * Mental/written methods of integer/decimal addition and subtraction * Mental/written methods of integer/decimal multiplication and division * The four rules of fraction arithmetic * Exact answers * Rational and irrational numbers (convert recurring decimals here) * Understand and use surds * Calculate with surds * Rounding to decimal places and significant figures * Estimating answers to calculations * Understand and use limits of accuracy * Upper and lower bounds * Use number sense * Solve financial maths problems * Break down and solve multi-step 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 * **Key words:** Add, Subtract, Balance, Adjust Credit/Debit, Profit/Loss | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  Life skills  Money management | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
| **HT6** | **Types of Number and Sequences** | * Understand the difference between factors and multiples * Understand primes and express a number as a product of its prime factors * Find the HCF and LCM of a set of numbers * Describe and continue arithmetic and geometric sequences * Explore other sequences * Describe and continue sequences involving surds * Find the rule for the 𝑛th term of a linear sequence * Find the rule for the 𝑛th term of a quadratic sequence | * 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 * **Keywords:** Integer, Factor, Multiple, Area, Factorise, Prime | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  Financial management – predicting financial models    Nuclear engineers – prediction of radioactive models | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Indices and Roots** | * Square and Cube numbers * Calculate higher powers and roots * Powers of ten and standard form * The addition and subtraction rules for indices * Understand and use the power zero and negative indices * Work with powers of powers * Understand and use fractional indices * Calculate with 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 * Key words: Square, Cube, Root, Prime, Prime Factorisation, Integer | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Engineering and architecture and planning  • Number skills involved in many areas of different work. | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |
|  | **Manipulating Expressions** | * Simplify algebraic expressions * Use identities * Add and subtract simple algebraic fractions * Add and subtract complex algebraic fractions * Multiply and divide simple algebraic fractions * Multiply and divide complex algebraic fractions * Form and solve equations and inequalities with fractions * Solve equations with algebraic fractions * Represent numbers algebraically * Algebraic arguments and proof | * 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 * Key words: Expression, Term, Simplify, Coefficient, Power, Like/Unlike | * Personal skills - Thinking and problem solving - Working together and communicating   Fundamental skills - Using numbers effectively - Using language effectively  • Analytical skills •Algebraic reasoning  •General reasoning  • Number skills  • Communication •Retail  • Hairdressers  •Builders  • Constructions  •Teachers  • Medical | * Plenary True and False Tasks * Peer and self-assessment * Feedback and reflective practise * End of Topic Tests   End of Term Tests |