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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
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|  | 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
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|  | 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
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| **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
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| **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 effectivelyLife skillsMoney 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 effectivelyFinancial 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 |