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| **Year 7 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** | **Sequences** | * Describe and continue a sequence given diagrammatically
* Predict and check the next term(s) of a sequence
* Represent sequences in tabular and graphical forms
* Recognise the difference between linear and non-linear sequences
* Continue numerical linear sequences
* Continue numerical non-linear sequences
* Explain the term-to-term rule of numerical sequences in words
* **H - Find missing numbers within sequences**
 | * Retrieval in class starter
* Prior knowledge whiteboard questions
* End of Topic Unit Test Intervention lessons using knowledge organiser material
 | * Key Vocabulary in Retrieval starters
* Encourage use of subject language
* Questioning
* Pupil explanations and reasoning
* 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
* Financial management – predicting financial models
* Nuclear engineers – prediction of radioactive models
 | * Baseline Assessment
* Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
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|  | **Understanding Algebraic Notation** | * Given a numerical input, find the output of a single function machine
* Use inverse operations to find the input given the output
* Use diagrams and letters to generalise number operations
* Use diagrams and letters with single function machines
* Find the function machine given a simple expression
* Substitute values into single operation expressions
* Find numerical inputs and outputs for a series of two function machines
* Use diagrams and letters with a series of two function machines
* Find the function machine given a two-step expression
* Substitute values into two-step expressions
* Generate sequences given an algebraic rule
* Represent one- and two-step functions graphically
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 |
|  | **Equality and Equivalence** | * Understand the meaning of equality
* Understand and use fact families, numerically and algebraically
* Solve one-step linear equations involving addition and subtraction using inverse operations
* Solve one-step linear equations involving multiplication and division using inverse operations
* Understand the meaning of like and unlike terms
* Understand the meaning of equivalence
* Simplify algebraic expressions by collecting the like term using the ≡ symbol
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| **HT2** | **Place Value and Ordering Integers and Decimals** | * Recognise the place value of any digit in an integer up to one billion
* Understand and write integers up to one billion in words and figures
* Work out intervals on a number line
* Position integers on a number line
* Round intervals to the nearest power of 10
* Compare two numbers using =, ≠, <, >, ≤ and ≥
* Order a list of integers
* Find the range of a set of numbers
* Find the median of a set of numbers
* Understand place value for decimals
* Position decimals on a number line
* Compare and order any number up to one billion
* Round a number to 1 significant figure
* **H - Write 10, 100, 1000 etc as powers of 10**
* **H - Write positive integers in the form A x 10^n**
* **H - Investigate negative powers of 10**
* **H - Write decimals in the form A x 10^n**
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- Using a calculator 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 Test
 |
|  | **Fraction, Decimals and Percentage Equivalence** |  | * Retrieval in class starter
* Prior knowledge whiteboard questions
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|  | **Solving Problems with Addition and Subtraction** | * Represent tenths and hundredths as diagrams
* Represent tenths and hundredths on number lines
* Interchange between fractional and decimal number lines
* Convert between fractions and decimals - tenths and hundredths
* Convert between fractions and decimals - fifths and quarters
* **H - Convert between fractions and decimals - eighths and thousandths**
* Understand the meaning of percentage using a hundred square
* Convert fluency between simple fractions, decimals and percentages
* Use and interpret pie charts
* Represent any fraction as a diagram
* Represent fractions on number lines
* Identify and use simple equivalent fractions
* Simplify fractions (no small step on this - but this is in the assessment)
* Understand fractions as division
* Convert fluently between FDP
* **H - Explore fractions above one, decimals and percentages**
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- Using a calculator effectively.* 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
 |
| **Year 7 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** | **Solving problems with Multiplication and Division** | * Properties of multiplication and division
* Understand and use factors
* Understand and use multiples
* Multiply and divide integers and decimals by powers of 10
* **H - Multiply by 0.1 and 0.01**
* Convert metric units
* Use formal methods to multiply integers
* Use formal methods to multiply decimals
* Use formal methods to divide integers
* Use formal methods to divide decimals
* Understand and use order of operations
* Solve problems using the area of rectangles and parallelograms
* Solve problems using the area of triangles
* **H - Solve problems using the area of trapezia**
* Solve problems using the mean
* **H - Explore multiplication and division in algebraic expressions**
 | * Retrieval in class starter
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* Feedback and reflective practise
* End of Topic Tests
 |
|  | **Fractions & Percentages of Amounts** | * Find a fraction of a given amount
* Use a given fraction to find the whole and/or other fractions
* Find a percentage of a given amount using mental methods
* Find a percentage of a given amount using a calculator
* **H - Solve problems with fractions greater than 1 and percentages greater than 100%**
 | * Retrieval in class starter
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 |
| **HT4** | **Operations and Equations with Directed Number** | * Understand and use representations of directed numbers
* Order directed numbers using lines and appropriate symbols
* Perform calculations that cross zero
* Add directed numbers
* Subtract directed numbers
* Multiplication of directed numbers
* Multiplication and division of directed numbers
* Use a calculator for directed number calculations
* Evaluate algebraic expressions with directed number
* Introduction to two-step equations
* Solve two-step equations
* Use order of operations with directed numbers
* **H - Understand that positive numbers have more than one square root**
* **H - Explore higher powers and roots**
 |  | * Key Vocabulary in Retrieval starters
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 |
|  | **Addition and Subtraction of Fractions** | * Understand representations of fractions
* Convert between mixed numbers and fractions
* Add and subtract unit fractions with the same denominator
* Add and subtract fractions with the same denominator
* Add and subtract fractions from integers expressing the answer as a single fraction
* Understand and use equivalent fractions
* Add and subtract fractions where denominators share a simple common multiple
* Add and subtract fractions with any denominator
* Add and subtract improper fractions and mixed numbers
* Use fractions in algebraic contexts
* Use equivalence to add and subtract decimals and fractions
* **H - Add and subtract simple algebraic fractions**
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| **Year 7 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** | **Constructing, Measuring and Using Geometric Notation** | * Understand and use letter and labelling conventions including those for geometric figures
* Draw and measure line segments including geometric figures
* Understand angles as a measure of turn
* Classify angles
* Measure angles up to 180 degrees. Draw angles up to 180 degrees.
* Draw and measure angles between 180 and 360 degrees
* Identify parallel and perpendicular lines.
* Recognise types of triangle
* Identify polygons up to decagons.
* Recognise types of quadrilaterals
* Construct triangles using SSS
* Construct triangles using SSS, SAS and ASA
* Construct more complex polygons
* Interpret simple pie charts using proportion
* Interpret pie charts using a protractor
* Draw pie charts
 | * Retrieval in class starter
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- Using a calculator effectively.* Engineering and architecture and planning
 | * Plenary True and False Tasks
* Peer and self-assessment
* Feedback and reflective practise
* End of Topic Tests
 |
|  | **Developing Geometric Reasoning** | * Understand and use the sum of angles at a point
* Understand and use the sum of angles on a straight line
* Understand and use the equality of vertically opposite angles
* Know and apply the sum of angles in a triangle
* Know and apply the sum of angles in a quadrilateral
* Solve angle problems using properties of triangles and quadrilaterals
* Solve complex angle problems
* **H - Find and use the angle sum of any polygon**
* **H - Investigate angles in parallel lines**
* **H - Understand and use parallel line angle rules**
* **H - Use known facts to obtain simple proofs**
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 |
| **HT6** | **Developing Number Sense** | * Know and use mental addition and subtraction strategies for integers
* Know and use mental multiplication and division strategies for integers
* Know and use mental strategies for decimals
* Know and use mental strategies for fractions
* Use factors to simplify calculations
* Use estimation as a method for checking mental calculations
* Use known number facts to derive other facts
* Use known algebraic facts to derive other facts
* Know when to use a mental strategy, formal written method or a calculator
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|  | **Sets and Probability** | * Identify and represent sets
* Interpret and create Venn diagrams
* Understand and use the intersection of sets
* Understand and use the union of sets
* H - Understand and use the complement of sets
* Know and use the vocabulary of probability
* Generate sample spaces for single events
* Calculate the probability of a single event
* Understand and use the probability scale
* Know that the sum of probabilities of all possible outcomes is 1
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|  | **Prime Numbers and proof** | * Find and use multiples
* Identify factors of numbers and expressions
* Recognise and identify prime numbers
* Recognise square and triangular numbers
* Find common factors of a set of numbers including the HCF
* Find common multiples of a set of numbers including the LCM
* Write a number as a product of its prime factors
* **H - Use a Venn diagram to calculate the HCF and LCM**
* Make and test conjectures
* Use counterexamples to disprove a conjecture
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