Topic: Unit 7 – Multiplication and Division		**Duration: 16 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Multiply Divide Powers Integers Decimals Order of operations	**I know that:** •multiplication is repeated addition • the decimal point always sits between the units and tenths column **I know how:** • to use bar models and arrays to explain properties of multiplication and division •to test methods for efficient multiplying and dividing •to multiply by powers of 10 using place value charts •to use grid method to multiply integers •to use column method to multiply integers •to use order of operations to complete calculations	**I know that:** • multiplying by 0.1 is the same as dividing by 10 and multiplying by 0.01 is the same as dividing by 100 **I know how:** •to complete Venn diagrams for factors of numbers and find the Highest Common Factor for two numbers using the diagram •to find multiples of numbers and solve problems •to explain reasoning using examples as evidence •to use multiplication and division by powers of 10 to convert between units of measurement •to use mental and written strategies for division •to multiply decimals by 10 to make them easier to multiply and divide •to use mental and written strategies for division, including decimals •to use mental and written strategies for division •to use multiplication when creating sequences •to apply knowledge to a variety of problems in contexts such as area and averages •to use multiplication and division with algebra	Previous: Column method Various mental strategies Simple money problems Simple problem involving length

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
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SEND

- Visually impaired check resources have correct paper, colour and font size.
- Key vocabulary introduced using precision teaching prior to a new topic. Can be shared via printed documents or Google classroom.
- Repetition of key vocabulary regularly throughout lessons, especially equation, expression, simplify, like terms, inequalities, substitute
- Adjust language and speed of explanation when needed.
- Allow more processing time for solving problems both verbal and written where needed. Lesson notes can be shared through Google classroom both before and after lessons.
- Repetition – start each lesson with knowledge recall based questions.
- Praise and reward for effort and engagement.
- Demonstrate and model mathematic problems. Students can take photographs for recording modelling or printed copies given.
- Multi-sensory- kinaesthetic learning created so that pupils can move the maths learning around – dienes, counters, Cuisenaire rods, etc.
- Technology use of interactive white boards to demonstrate methods – Sites such as Mathsframe, Mathswatch (clips: 7, 33, 36, 93, 95, 137) can be used to reinforce skills.
- Cultural capital – Mathematician of the week, link questions to local area, such as shopping calculations, sharing a bill, calculating project costs, planning an event

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Topic: Unit 8 – Fractions and Percentages of Amounts		**Duration: 5 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Fraction Percentage Bar model Whole	**I know that:** • the denominator tells us how many parts the whole has been dividing up into **I know how:** • to find a percentage of an amount •to use mental methods to find percentages of amounts •to use a calculator to solve fraction problems •to find equivalent fractions and percentages	**I know that:** • percentages are always out of 100 parts **I know how:** • to use bar models to show percentages of amounts •to use known multiplication and division facts to find unit and non-unit fractions of amounts •to solve problems involving finding fractions and percentages of amounts, giving evidence and reasoning for answers and decisions • to find the whole when given a fraction of the whole – use bar models to demonstrate •to complete balancing equations for fractions of amounts •to use algebra when calculating with fractions and percentages •to find fractions and percentages greater than 1 whole	Previous: Find 10% and 1% of an amount Find unit fractions of amounts

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Topic: Unit 9 – Directed Numbers		Duration: 14 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Directed number Negative Positive Product Add Subtract Multiply Subtract	**I know that:** • directed numbers involves direction travelled on number lines, including negative numbers **I know how:** • to represent directed numbers using place value counters, number lines and temperatures scales • to use place value counters to calculate with directed numbers •to complete sequences using directed numbers • to use number lines to solve calculations across zero • Confidently add, subtract, multiply and divide with directed numbers	**I know that:** • negative numbers are less than zero • adding a negative number to a positive number, results in a negative step • subtracting a negative number from a negative number, results in a negative step • adding a positive number to a negative number, results in a positive step •multiplying a negative number by a positive number, results in a negative product •multiplying a negative number by a negative number, results in a positive product •dividing by a negative number or dividing a negative number by a positive, results in a negative answer • dividing a negative number by a negative number, results in a positive answer **I know how:** • to add and subtract directed numbers • To multiply and divide with directed numbers • use a calculator to solve directed number calculations • to simplify algebraic expressions using directed numbers • to solve simple two-step equations with directed numbers • to solve problems involving directed numbers	Previous: Add and subtract on a number line Use number lines to add from a negative number Future: Solve more complex two-step equations using directed numbers

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Topic: Unit 10 – Addition & Subtraction of Fractions		Duration: 12 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Fraction Numerator Denominator	**I know that:** • fractions are parts of a whole •Fractions can be represented in a variety of ways •fractions have to have the same denominator in order to be added or subtracted **I know how:** • to represent fractions in different ways, e.g. shapes, grids and number lines • convert between mixed numbers and improper fractions • add fractions with the same denominator • represent equivalent fractions with bar models and shapes •add and subtract any fractions, including mixed numbers	**I know that:** • a fraction where the numerator and denominator are the same, is a whole e.g. 4/4 = 1 **I know how:** • to draw representations of improper fractions • show mixed numbers and improper fractions on a number line • recognise and find equivalent fractions for mixed numbers and improper fractions • Use knowledge about fractions to reason and explain with fraction problems • add and subtract fractions from integers •find a simple, shared common multiple • Add and subtract unit and non-unit fractions with different denominators •add and subtract mixed numbers •solve simple equations involving fractions •complete sequences involving fractions •solve more complex equations involving fractions	Previous: Find equivalent fractions using a fraction wall and fraction tiles Adding fractions with the same denominator Finding common multiples Future: Solving more complex algebraic fractions

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