Topic: Unit 1 – Sequences		**Duration: 8 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Sequence Term Linear Constant Rule Nth term Tracking calculation	**I know that:** -sequences can be linear and non-linear -a linear sequences as defined by constant difference between each term -a non-linear sequence will not have a common difference. **I know how:** - to find the next term in a sequence -to identify a position-to-term rule given a linear sequence -to identify linear sequences from growing patterns -to form sequences given a term-to-term rule and a starting number	**I know:** -the features of linear and non-linear sequences -that sequences can be represented in horizontal and vertical lines, and in grids **I know how:** -to describe a sequence using the common difference in a linear sequence -to continue a sequence -to find missing terms within a sequence -to identify ascending and descending linear sequences --to use position-to-term rules to work out terms in linear sequences - to find the nth term - to create a sequence, give the nth term	Previous: – Finding missing numbers in sequences. -Describing rules for sequences. Future: nth term Special sequences

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
• Read out loud • Selective mutism – peer 1:1 or teacher support • Reading Word problems • Identifying key information from text. • Interpreting written information.	• Speak out loud • Selective mutism – 1:1 discussion, visual communication cards. • Explain calculation strategies. Present evidence when investigating patterns and hypotheses. • Share mathematical reasoning and understanding using key vocabulary.	• Students show logical steps in developing an argument. • Use of appropriate specific language to explain reasoning.	Compare methods. Did you use the same approach? Did your partner discover a better approach than yours? Why do you think so? Can you do it a different way? Why is this one trickier? What strategy will you use to help you? How can we solve this?	Raise students' awareness of their problem-solving strategies useful for the workplace. Use of work-related problems in worded question. Functional maths skills for everyday life, including the workplace.

SEND

- Visually impaired check resources have correct paper, colour and font size.
- Key vocabulary introduced using precision teaching prior to a new topic.
- Repetition of important vocabulary needed in the lesson., especially highlighting the difference between a digit and a number.
- 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.
- Repetition – start each lesson with knowledge recall based questions.
- Praise and reward for effort and engagement.
- Demonstrate and model mathematic problems – Students can take a phot of modelled examples and/or examples can be shared via Google classroom before and after lesson.
- Multi-sensory- kinaesthetic learning created so that pupils can move the maths learning around – Use place value cards/counters, place value boards, dienes etc
- Technology- use of interactive white boards to demonstrate methods – e.g. Mathsframe, Mathswatch (**clip 138, 139)** - website for games involving place value.

Cultural capital – Mathematician of the week, link problem solving to local business and the local area e.g. School population size compared to Telford population size

Topic: Unit 2 – Algebraic Notation		Duration: 12 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Algebra Operation Expression Equation Value Substitute Graph Bar model Calculate Input Output Sequence Function	**I know that:** • function machines can be used to find the value of an unknown number. • letters and diagrams (bar models) can be used to represent an unknown value in a calculation • Equations can be represented graphically **I know how:** • to calculate the output for a single step function machine, when given the input • to calculate the output for a 2-step function machine, when given the input •substitute values into simple expressions • to use bar models to create algebraic expressions • to create algebraic expressions using the rules of algebra and knowledge of the meaning of mathematical operations e.g. a x b = ab, a ÷ b = a/b	**I know that:** • the inverse operation of addition is subtraction and vice versa • the inverse operation of multiplication is division and vice versa **I know how:** • to use the inverse operation to calculate the input for a single step functions machine, when given the output • to use letters and diagrams within single operation function machines •to create a function machine for a simple expression • to substitute values into single operation algebraic expressions •to calculate outputs to 2-step function machines, when given the input •to use inverse operations to calculate the input to 2-step function machines, when given the output • to create a function machine for a 2-step expression • to substitute values into a two-step expression • to generate sequences given an algebraic rule • to substitute values into an expression to find a specific term in a sequence • to represent simple algebraic equations graphically, using substitution to find the co-ordinate values • to reason using examples of substitution and knowledge of the meaning of mathematical operations	Previous: Simple function machines Missing values in all operations (pre-algebra) Future: Straight line graphs Solving equations

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
• Read out loud • Selective mutism – Peer support or 1:1 teacher support. • Reading Word problems. • Identifying key information from text.	• Speak out loud • Selective mutism – 1:1 peer support/small group. Picture cards. • Explain what a expression/equation or inequality etc is. • Using topic specific vocabulary when reasoning about answers and proofs. • Taking part in group discussions for investigations.	• Famous Mathematician - historical review. • Use key vocabulary in explanations and reasoning. • Explain, in words, the meaning of equation, inequality, expression, substitution etc.	Compare methods. Did you use the same approach? Did your partner discover a better approach than yours? What strategies can you use to when substituting in a value? Is there a more efficient method? Can you find a pattern? Can you prove the hypothesis?	Raise students' awareness of their problem-solving strategies and to encourage them to critique them in an effort to develop better strategies. Use of work-related problems in worded questions. Functional maths skills for everyday life, including the workplace.

SEND

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- 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
- Share exemplar work on Google Classroom.

Topic: Unit 3 – Equivalence and Equality		Duration: 12 lessons	
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Expression, Equation, Inequality, substitute, sequence, Integers Simplify	**I know that:** • equality means two or more expressions have equal value • an expression does not have an = sign. • an equation has an + sign. **I know how:** • to use known facts to create fact families • to manipulate expressions into their simplest form. • to use function machines • Substitute numerical values into expressions and evaluate. **I know when:** • algebra can be used, including in sequences, to construct expressions, equations and inequalities, and make generalisations.	**I know that:** • algebraic expressions can be used to make generalisations. **I know how:** • to use fact families to create equations • to recognise like and unlike terms • to collect like terms to simplify expressions • to preserve equality in written equations. • to solve one step addition and subtraction equations using positive and negative numbers • to solve one step multiplication and division equations using positive and negative numbers • Represent algebraic expressions using a variety of models including arrays and bar models. • to substitute in a value for an unknown and then calculate an answer to an expression or equation. • I know when: • the identity (≡) symbol can be used – when two or more expressions are always true, regardless of the value of the variable.	Multiplication, Division, Addition and Subtraction (KS2 SOW) Forming and solving equations and inequalities (Year 8 SOW) Linear Graphs (Year 8 SOW) Sequences (Year 10 SOW)

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
• Read out loud • Selective mutism – Peer support or 1:1 teacher support. • Reading Word problems. • Identifying key information from text.	• Speak out loud • Selective mutism – 1:1 peer support/small group. Picture cards. • Explain what a expression/equation or inequality etc is. • Using topic specific vocabulary when reasoning about answers and proofs. • Taking part in group discussions for investigations.	• Famous Mathematician - historical review. • Use key vocabulary in explanations and reasoning. • Explain, in words, the meaning of equation, inequality, expression, substitution etc.	Compare methods. Did you use the same approach? Did your partner discover a better approach than yours? What strategies can you use to when substituting in a value? Is there a more efficient method? Can you find a pattern? Can you prove the hypothesis?	Raise students' awareness of their problem-solving strategies and to encourage them to critique them in an effort to develop better strategies. Use of work-related problems in worded questions. Functional maths skills for everyday life, including the workplace.

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- 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

- Share exemplar work on Google Classroom.

Topic: Year 7 Unit 2 - Place Value & Ordering		Duration: 8 Lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Integer Decimal Place value Represent Determine Exchange Calculation Factor Value	**I know that:** - the position of a digit in a place value chart, determines its value -digits to the left of the decimal point are integers -digits to the right of the decimal point are decimals **I know how:** **-**to determine the value of a digit in a number up to billions **-**to recognise an integer and a decimal - to order and compare numbers up to 1 billion -to determine the value of a digit in a decimal number - -to multiply or divide any integer or decimal by 10 or 100	**I know that:** **-**digits move to the left in the place value chart when multiplied by 10, 100 etc -digits move to the right in the place value chart when divided by 10, 100 etc. **I know how:** -important the role of number 10 is in the base 10 number system. -to express integers and decimals in different ways, including number lines - to round a number to 1 significant figure -to write 10, 100, 1000 etc, as a power of 10 -how and why digits move left or right when a number is being multiplied or divided by 10 or 100 -to write integers as a power of 10 in the form a x 10^{n} **-**to express numbers in the form a x 10^{-n} (negative index)	Previous: -Understand the value of a digit in a number up to millions -Be able to multiply an integer by 10 and 100 -Start to multiply and divide decimals by 10 and 100 Future -metric conversions

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
• Read out loud • Selective mutism – Peer support or 1:1 teacher support. • Reading Word problems. • Identifying key information from text.	• Speak out loud • Selective mutism – 1:1 peer support/small group. Picture cards. • Explain what a factor/multiple/prime etc is. • Using topic specific vocabulary when reasoning about answers and proofs. • Taking part in group discussions for investigations.	• Famous Mathematician - historical review. • Use key vocabulary in explanations and reasoning. • Explain, in words, the meaning of square, prime, cube numbers etc.	Compare methods. Did you use the same approach? Did your partner discover a better approach than yours? What strategies can you use to find 14 x6? Is there a more efficient method? Can you find a pattern? Can you prove the hypothesis?	Raise students' awareness of their problem-solving strategies and to encourage them to critique them in an effort to develop better strategies. Use of work-related problems in worded questions. Revision of basic concepts transferrable to many jobs including accountancy, architecture, building, retail, etc, where multiplication and division skills are important.

SEND

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- Repetition of key vocabulary regularly throughout lessons, especially arrays, associativity, commutativity, distributivity.
- 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, number cards etc.
- Technology - use of interactive white boards to demonstrate methods – Sites such as Mathsframe and BBC Bitesize can be used to reinforce skills.
- Cultural capital – Mathematician of the week, link questions to local area, such as working out the number of
- Share exemplar work on Google Classroom.

Topic: Unit 5 – FDP Equivalence		Duration: 15 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Fraction Numerator Denominator Improper Mixed Decimal Percentage Convert Multiply Divide Pie charts	**I know that:** • fractions, decimals and percentages are parts of a whole •when the denominator and numerator are the same, the fraction is equal to 1 e.g. 5/5 = 1 whole •100% is 1 whole • Mixed numbers will have a whole number and a fraction e.g. 1 ½ • Decimals can be more than 1 e.g. 22.65 •percentages can be more than the whole e.g. 200% **I know how:** • to represent fractions on a diagram such as a hundred square •to use a hundred square to represent a percentage • to convert fluently between fractions, decimals and percentages •to interpret pie charts • convert between improper fractions and mixed numbers •to use a calculator to convert between fractions, decimals and percentages	**I know that:** • fractions are division e.g. 3/5 = 3÷5 **I know how:** • to convert between tenths and hundredths • to represent fractions on a number line and use reasoning to explain its position •place fractions and decimals on the same number line to show equivalence • convert between fractions and decimals – tenths/hundredths, fifths/quarters, eighths/thousands, •use fractions and percentages to interpret pie charts •use reasoning with fractions to find and explain fractions on different diagrams •to identify equivalent fractions and interpret different methods and representations •to use fractions to divide in a variety of contexts •to convert between improper fractions and mixed numbers •to express 1 amount as a fraction of another, using shape problems •to use a fractional algebra rule to create a sequence	Previous: Find simple fractions of amounts Find equivalent fractions Using bar models to represent fractions Recognise common fractions, decimals and percentages Future: Find more complex fractions/percentages of amounts Reverse percentages

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
• Read out loud • Selective mutism – Peer support or 1:1 teacher support. • Reading Word problems. • Identifying key information from text.	• Speak out loud • Selective mutism – 1:1 peer support/small group. Picture cards. • Explain what a expression/equation or inequality etc is. • Using topic specific vocabulary when reasoning about answers and proofs. • Taking part in group discussions for investigations.	• Famous Mathematician - historical review. • Use key vocabulary in explanations and reasoning. • Explain, in words, the meaning of equation, inequality, expression, substitution etc.	Compare methods. Did you use the same approach? Did your partner discover a better approach than yours? What strategies can you use to when substituting in a value? Is there a more efficient method? Can you find a pattern? Can you prove the hypothesis?	Raise students' awareness of their problem-solving strategies and to encourage them to critique them in an effort to develop better strategies. Use of work-related problems in worded questions. Functional maths skills for everyday life, including the workplace.

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- 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

- Share exemplar work on Google Classroom.