<table>
<tr><td colspan="2">Topic: Unit 7 – Brackets, Equations and Inequalities</td><td colspan="2">Duration: 13 lessons</td><td>Composite:</td></tr>
<tr><td>Key vocabulary:</td><td>Powerful knowledge components</td><td colspan="2">Core knowledge Components</td><td>Links to previous and future topics</td></tr>
<tr><td>Algebraic
Expression
Binomial
Brackets
Formulae
Identity
Expand
Terms
Simplify
Substitute</td><td>I know that:
-algebra can be used to generalise
-letters (variables) are used to indicate unknown values

I know how:
-to form simple algebraic expression e.g. 2 more than x is x + 2
-to simplify algebraic expression by collecting like terms
-to substitute values into an algebraic expression-to expand single brackets
-to solve simple equations
- to form and solve inequalities
-use formulae to find the area of a trapezium</td><td colspan="2">I know that:
-an algebraic expression which contains only two terms is called a binomial

I know how:
-to form algebraic expressions from worded statements
-to form algebraic expressions including brackets
- to use directed numbers within algebraic expression
-to expand single brackets and use models to demonstrate the multiplication
-to factorise into a single bracket and use models to demonstrate
-to expand multiple single brackets and simplify
-to expand double brackets (pair of binomials) and use diagrams to demonstrate (Higher)
-to solve equations including fractions and brackets
-to form and solve equations, including brackets
-to solve equations and inequalities with unknowns on both sides (Higher)
-Identify and use formulae, expressions, identities and equations</td><td>Previous:
Collect like terms

Solve simple equations

Use < and >

Expand single brackets

Future:
Expand double brackets

Solve more complex equations and inequalities

Factorise quadratics</td></tr>
<tr><td colspan="2">Impressive reading</td><td>Impressive speaking</td><td>Impressive writing</td><td>Resilience</td><td colspan="2">Employability via:</td></tr>
</table>

• 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.
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- 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.
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- 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 8 – Sequences		Duration: 4 lessons	Composite:
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Linear Sequence Algebraic Term nth term substitution	**I know that:** - A linear sequence goes from one term to the next by always adding or subtracting the same value **I know how:** -to describe the rule of a sequence -to find missing terms in a sequence -to use substitution to find terms in a sequence, using the algebraic rule	**I know that:** -substitution is used in the nth term to predict other terms in a sequence **I know how:** -to generate a sequence using a rule in words or a picture pattern -generate sequences when given an algebraic rule -generate sequences when given a more complex algebraic rule -to predict terms in a sequence -to find the rule for the nth term of a linear sequence -to use the nth term to calculate other terms in a sequence	Previous: Describe rules for a sequence Find missing terms Predict terms in a simple sequence Future: Geometric sequences Quadratic sequences

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Topic: Unit 9 - Indices		**Duration: 6 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Indices Terms Simplify Expression Algebraic	**I know that:** -terms with indices follow the same 'like term' rules as those without indices e.g. $x^2 + x^2 + x^3 = 2x^2 + x^3$ **I know how:** -to add and subtract with indices and use diagrams to visualise and explain -to demonstrate multiplying terms with indices -to demonstrate dividing terms with indices	**I know that:** -terms with indices can be expanded to show the multiplication e.g. $b^4 = b \times b \times b \times b$ **I know how:** -to simplfy algebraic expression by multiplying indices - to simplfy expressions when multiplying terms with indices, showing full expansion of the term e.g. $a^2 \times a^3 = a \times a \times a \times a \times a = a^5$ - to simplfy expressions when dividing terms with indices - to simplfy expressions when multiplying terms with indices (add the indices) - to simplfy expressions when dividing terms with indices (subtract the indices)	Previous: Calculate values of numbers with indices Future: More complex problems with indices

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Topic: Unit 10 – Fractions & Percentages		**Duration: 13 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Fraction Decimals Percentages Numerator Denominator Reverse % Increase Decrease	**I know that:** -the denominator indicates how many parts the amount has been divided into -the numerator indicates how many parts are required. **I know how:** -to convert fluently between fractions, decimals and percentages -Calculate key fractions, decimals and percentages of an amount without a calculator -to use a multiplier when calculating percentage decrease (with and without a calculator) -to solve some word problems involving finding fractions and percentages of amounts	**I know that:** -Function machines can be used to calculate reverse percentages **I know how:** -to use grids and diagrams to show the equivalence between fractions, decimals and percentage -to order fractions, decimals and percentages -complete balancing equations with fractions of amounts -use different calculator methods to calculate fractions, decimals and percentages of amounts - to convert between fractions, decimals and percentages over 100% - to express one number as a fraction/percentage of another (with and without calculator) -to work out percentage change e.g. % profit and loss -solve problems involving fractions, percentages and decimals and explain reasoning -to find the original amount, given the percentage less than and more than 100 (reverse percentages – Higher) - to solve ore complex percentage problems (Higher)	Previous: Find fractions of amounts Convert between key fractions, decimals and percentages Start to use a calculator to calculate fractions of amounts Future: More complex calculations with fractions, decimals and percentages Using algebra within fraction problems.

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Topic: Unit 11 – Standard Index Form		**Duration: 11 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Standard form Power Positive Negative Indices Index Fractional	**I know that:** -numbers can be expressed as a power of 10 e.g. 10^3= 10 x 10 x10 = 1000 **I know how:** -to express numbers as powers of 10 -how to convert a normal number into standard form -how to convert standard form into a normal number -to redistribute the numbers in a standard form calculation to make it easier	**I know that:** -in standard form, the digit before the decimal point has to be between 1 and 9 -a negative power of 10 in index form, will result in a decimal number **I know how:** -to express numbers greater than 1 in standard form -to investigate positive and negative powers of 10 -to express numbers less than 1 in standard form - order numbers in standard form -mentally calculate with numbers in standard form -to add and subtract numbers in standard form -to multiply and divide numbers in standard form -use a calculator when calculating with standard form -to use negative indices in standard form calculations problems (higher) -to use fractional indices in standard form calculations	Previous: Powers of 10 Decimals Future: More complex calculations with standard form

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Topic: Unit 12 – Number Sense		**Duration: 11 lessons**	**Composite:**
Key vocabulary:	**Powerful knowledge components**	**Core knowledge Components**	**Links to previous and future topics**
Length Mass Capacity Volume Area error interval Rounding Decimal place Significant figure Volume BIDMAS	**I know that:** - digits after the decimal point are called decimal places -the first significant figure is the first digit of any value in a number -the key units of length we use are mm, cm, m and km -the key units of mass we use are g and kg -the key units of capacity we use are ml and l -the key units of volume we use are mm^3 and cm^3 -the key units of area we use are mm^2, cm^2 and m^2 **I know how:** -to round numbers to the nearest 10, 100, 100 etc-to round numbers to a certain number of decimal places -to calculate using order of operations - to calculate using order of operation (BIDMAS) -to convert between £ and p	**I know that:** -BIDMAS can help us decide on which order to complete parts of a calculator -when converting from a bigger unit to a smaller unit, we multiply by the correct power of 10 -when converting from a smaller unit to a bigger unit, we divide by the correct power of 10 **I know how:** -to round numbers to a certain number of significant figures -to estimate the answer to a calculation by rounding -to understand and use error interval notation (Higher) -to solve problems involving money -to convert metric measures of length -to convert metric measurements of mass and capacity -to convert metric units of area (Higher) -to convert metric units of volume (Higher) -to solve problems involving time and the calendar	Previous: BIDMAS Solving simple problems involving measurements, money and time Future: More complex problems

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