

Secondary Scheme of Work: Stage 6

Unit	Lessons	Key 'Build a Mathematician' (BAM) Indicators	Essential knowledge
Numbers and the number system	12	<ul style="list-style-type: none"> • Multiply and divide numbers with up to three decimal places by 10, 100, and 1000 • Use long division to divide numbers up to four digits by a two-digit number • Use simple formulae expressed in words • Generate and describe linear number sequences • Use simple ratio to compare quantities • Write a fraction in its lowest terms by cancelling common factors • Add and subtract fractions and mixed numbers with different denominators • Multiply pairs of fractions in simple cases • Find percentages of quantities • Solve missing angle problems involving triangles, quadrilaterals, angles at a point and angles on a straight line • Calculate the volume of cubes and cuboids • Use coordinates in all four quadrants • Calculate and interpret the mean as an average of a set of discrete data 	<ul style="list-style-type: none"> • Know percentage and decimal equivalents for fractions with a denominator of 2, 3, 4, 5, 8 and 10 • Know the rough equivalence between miles and kilometres • Know that vertically opposite angles are equal • Know that the area of a triangle = $\text{base} \times \text{height} \div 2$ • Know that the area of a parallelogram = $\text{base} \times \text{height}$ • Know that volume is measured in cubes • Know the names of parts of a circle • Know that the diameter of a circle is twice the radius • Know the conventions for a 2D coordinate grid • Know that mean = $\text{sum of data} \div \text{number of pieces of data}$
Checking, approximating and estimating	7		
Calculating	11		
Calculating: division	7		
Visualising and constructing	8		
Investigating properties of shapes	8		
Algebraic proficiency: using formulae	4		
Exploring fractions, decimals and percentages	8		
Proportional reasoning	6		
Pattern sniffing	5		
Measuring space	6		
Investigating angles	4		
Calculating fractions, decimals and percentages	12		
Solving equations and inequalities	4		
Calculating space	8		
Mathematical movement	4		
Presentation of data	4		
Measuring data	4		
Total:	122	Stage 6 BAM Progress Tracker Sheet	

Maths Calendar

Based on 7 maths lessons per fortnight, with at least 35 'quality teaching' weeks per year

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Numbers and the number system 6M1 BAM			Checking, approximating etc		Calculating 6M2 BAM			Calculating: division		Visualising and constructing		
Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
Assessment and enrichment		Investigating properties of shapes		Formulae 6M3 BAM	Exploring FDP 6M6 BAM		Proportional reasoning 6M5 BAM		Pattern sniffing 6M4 BAM		Measuring space	
Week 27	Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39
Assessment	Angles 6M10 BAM	Calculating fractions, decimals and percentages 6M7 BAM, 6M8 BAM, 6M9 BAM			Solving equations		Calculating space 6M11 BAM		Movement 6M12 BAM	Presenting data	Measuring data 6M13 BAM	Assessment

Numbers and the number system

Key concepts (Upper Key Stage 2 National Curriculum statements)

- identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- read, write, order and compare numbers up to 1000000 and determine the value of each digit
- use negative numbers in context, and calculate intervals between positive integers
- identify factors and multiples (extending to common factors, multiples and prime numbers for most able)

Checking, approximating and estimating

Key concepts (Upper Key Stage 2 National Curriculum statements)

- solve problems which require answers to be rounded to specified degrees of accuracy
- rounding to nearest integer, 10's, 100's, 100's (extend to 10ths and 100ths)
- round any whole number to a required degree of accuracy

Calculating

Key concepts (Upper Key Stage 2 National Curriculum statements)

- perform mental calculations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- multiply multi-digit numbers up to 3 digits by a two-digit whole number using the formal written method of long multiplication
- solve problems involving addition, subtraction and multiplication

Calculating: division

Key concepts (Upper Key Stage 2 National Curriculum statements)

- divide numbers up to 3 digits by a one-digit whole number using short or long division; interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide numbers up to 3 digits by a 10, 11 and 12 using short or long division as appropriate, interpreting remainders according to the context
- solve problems involving division

Visualising and constructing

Key concepts (Upper Key Stage 2 National Curriculum statements)

- draw 2-D shapes using given dimensions and angles. including measuring
- sketch representations of 2D and 3D shapes
- recognise, name and describe and build simple 3-D shapes, including making nets

Investigating properties of shapes

Key concepts (Upper Key Stage 2 National Curriculum statements)

- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals
- number bonds to 90°, 180° and 360°
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

Exploring fractions and decimals

Key concepts (Upper Key Stage 2 National Curriculum statements)

- use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- compare and order fractions, including fractions > 1
- associate a fraction with division and calculate decimal fraction equivalents ($\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{1}{10}$ $\frac{1}{100}$)
- recall and use equivalences between simple fractions and decimals

Algebraic proficiency: using formulae

Key concepts (Upper Key Stage 2 National Curriculum statements)

- use simple formulae (and application to times tables)
- introducing the concept of an unknown
- introduction to algebraic terminology

Proportional reasoning

Key concepts (Upper Key Stage 2 National Curriculum statements)

- solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts (equivalent ratios)
- solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Pattern sniffing

Key concepts (Upper Key Stage 2 National Curriculum statements)

- generate and describe linear number sequences (links to times table patterns)

Measuring space

Key concepts (Upper Key Stage 2 National Curriculum statements)

- use, read, write and convert between standard units, converting metric measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- telling the time (analogue and digital)

Investigating angles

Key concepts (Upper Key Stage 2 National Curriculum statements)

- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles (including number bonds to 90° , 180° and 360°)

Calculating fractions and percentages

Key concepts (Upper Key Stage 2 National Curriculum statements)

- add and subtract fractions with different denominators, using the concept of equivalent fractions
- multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
- Multiply small integers with simple proper fractions
- Linking percentages to simple fraction/integer multiplication
- divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
- multiply one-digit numbers with up to two decimal places by whole numbers
- solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

Solving equations and inequalities

Key concepts (Upper Key Stage 2 National Curriculum statements)

- express missing number problems algebraically

Calculating space

Key concepts (Upper Key Stage 2 National Curriculum statements)

- recognise that shapes with the same areas can have different perimeters and vice versa
- investigating area and perimeter of simple shapes (including repeated addition and multiplication)
- calculate the area of parallelograms and triangles (using squared grids)
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3)

Mathematical movement

Key concepts (Upper Key Stage 2 National Curriculum statements)

- describe positions on the full coordinate grid (all four quadrants – link to squares and rectangles)

Presentation of data

Key concepts (Upper Key Stage 2 National Curriculum statements)

- interpret and construct pie charts and line graphs and use these to solve problems (link to fractions and fractions of 360°)

Measuring data

Key concepts (Upper Key Stage 2 National Curriculum statements)

- calculate and interpret range, median and mode