

Long Term Plan for Mathematics



Year 1

<u>Maths Topic</u>	<u>Hours</u>	<u>Overview of Learning Objectives</u>
1. Investigating Number Systems	12	Reading and writing numbers in words and numerals Representing numbers with a range of objects and pictures
2. Pattern Sniffing	12	Counting (forwards and backwards) Counting in 2s, 5s and 10s
3. Solving Calculation Problems	10	Number bonds Add and subtract numbers to 20 Read and write mathematical statements
4. Exploring Shape	8	Recognise and name common 2D and 3D shapes
5. Generalising Arithmetic	8	Solve addition and subtraction problems using objects and pictures Read and write mathematical statements to represent these problems
6. Reasoning with Measures	8	Recognise and know the value of money
7. Discovering Equivalence	8	Recognise, find and name a half and a quarter of an object, shape or quantity Represent half and quarter using different objects and pictures.
8. Investigating Statistics	8	Make and begin to record measurements
9. Solving Number Problems	8	Solve simple multiplication and division problems, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher
10. Reasoning with Fractions	8	Recognise, find and name a half and a quarter of an object, shape or quantity Represent half and quarter using different objects and pictures.
11. Visualising Shape	8	Recognise and name common 2D and 3D shapes Begin to describe the properties
12. Exploring Change	8	Sequence events Use the language of dates Tell/show the time to the hour and half hour
13. Proportional Reasoning	8	Solve simple multiplication and division problems, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher
14. Describing Position	8	Describe position, direction and movement Describe whole, half, quarter and three-quarter turns
15. Measuring and Estimating	8	Compare, describe, measure, begin to record and solve practical problems involving lengths, masses, capacity and time.

Year 2

<u>Maths Topic</u>	<u>Hours</u>	<u>Overview of Learning Objectives</u>
1. Investigating Number Systems	8	Reading and writing numbers in words and numerals to 100 Recognise place value; compare and order numbers
2. Pattern Sniffing	8	Counting in 2s, 3s and 5s; recall and use times table facts for these Arrange patterns; recognise odd and even numbers
3. Solving Calculation Problems	12	Recall addition and subtraction facts to 20; derive them to 100 Add and subtract numbers using objects and pictures up to $2d+2d$ Show commutativity of addition (and non-commutativity of subtraction)
4. Exploring Shape	8	Identify and describe properties of 2D and 3D shapes
5. Generalising Arithmetic	8	Add and subtract numbers using objects and pictures up to $2d+2d$ in context Solving missing number problems using inverse idea
6. Reasoning with Measures	8	Use £ and p symbols; find combinations of coins for a given total; solve simple addition and subtraction problems using money
7. Discovering Equivalence	8	Recognise, find and name $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ of a length, shape, set of objects or quantity Write simple fractions and recognise equivalence of $\frac{2}{4}$ and $\frac{1}{2}$
8. Investigating Statistics	8	Interpret and construct simple pictograms, tally charts, block diagrams and tables Count, sort, total and compare categorical data
9. Solving Number Problems	8	Calculate and write mathematical statements for multiplication and division Show commutativity of multiplication (and non-commutativity of division) Solve simple problems using multiplication and division
10. Reasoning with Fractions	8	Recognise, find and name $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ of a length, shape, set of objects or quantity
11. Visualising Shape	8	Identify 2D shapes on the surface of 3D shapes
12. Exploring Change	8	Sequence time intervals Know number of minutes in an hour and hours in a day Tell/show the time to the nearest 5 minutes
13. Proportional Reasoning	8	Recall and use 2, 5 and 10 times tables Calculate and write mathematical statements for multiplication and division Show commutativity of multiplication (and non-commutativity of division)
14. Describing Position	8	Describe position, direction and movement using mathematical language, distinguishing between straight line movement and rotation
15. Measuring and Estimating	8	Choose and use suitable units; compare and order lengths, masses and capacities

Year 3

<u>Maths Topic</u>	<u>Hours</u>	<u>Overview of Learning Objectives</u>
1. Investigating Number Systems	8	Read and write numbers to 1000 in words and numerals; recognise place value up to 3 digits; identify, represent and estimate numbers; compare and order numbers up to 1000.
2. Pattern Sniffing	10	Count in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number; recall multiplication tables for 3s, 4s and 8s.
3. Solving Calculation Problems	10	Add and subtract mentally up to 3 digits plus ones, or tens or hundreds; add and subtract up to 3d using formal methods; estimate answers and use inverse operations to check a calculation.
4. Exploring Shape	8	Identify horizontal and vertical lines; identify pairs of parallel or perpendicular lines; recognise angles in shapes or as turns; identify right angles; recognise multiples of right angles.
5. Generalising Arithmetic	8	Revisit mental addition and subtraction (3d + 1s or 10s or 100s) and formal methods of calculation for addition and subtraction up to 3d. Solve problems using addition and subtraction including missing number problems, number facts, place value etc.
6. Reasoning with Measures	8	Add and subtract money in practical contexts to give change etc. Measure perimeter of simple 2D shapes
7. Discovering Equivalence	8	Recognise, find and write fractions of a discrete set of objects; recognise and use fractions as numbers; compare and order unit fractions; compare and order fractions with the same denominator; recognise and show equivalent fractions.
8. Investigating Statistics	8	Interpret and construct simple tally charts, pictograms, block diagrams and tables; ask and answer simple questions by counting and sorting; ask and answer questions by totalling and comparing data.
9. Solving Number Problems	8	Write statements for multiplication and division using times tables, including up to 2d x 1d. Solve problems involving multiplication and division including missing numbers, scaling and correspondence problems.
10. Reasoning with Fractions	8	Revisit fractions from Unit 7. Add and subtract fractions with same denominator within one whole.
11. Visualising Shape	8	Draw 2D shapes and make 3D shapes; recognise 3D shapes in various orientations and describe them.
12. Exploring Change	8	Tell and show the time to nearest minute using analogue and digital clocks, using 12 and 24 hours. Know number of seconds in a minute, number of days in each month, year and leap year. Compare durations of events.
13. Proportional Reasoning	8	Revisit writing statements for multiplication and division using times tables – develop formal methods for up to 2d x 1d. Solve problems involving multiplication and division.
14. Describing Position	0	
15. Measuring and Estimating	6	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Year 4

<u>Maths Topic</u>	<u>Hours</u>	<u>Overview of Learning Objectives</u>
1. Investigating Number Systems	11	Read Roman numerals to 100, recognise place value up to 4 digits; identify, represent and estimate numbers using different representations; round to the nearest 10, 100 and 1000; order and compare numbers beyond 1000
2. Pattern Sniffing	10	Count in multiples of 6, 7, 9, 25 and 1000; find 1000 more or less than a given number; recall multiplication tables up to 12x12; use factor pairs and commutativity in mental calculations.
3. Solving Calculation Problems	10	Add and subtract up to 4d using formal methods where appropriate; use inverse operations to check a calculation; solve addition and subtraction 2-step problems
4. Exploring Shape	8	Identify lines of symmetry; identify acute and obtuse angles; compare and order angles up to 180 degrees; compare and classify geometric shapes, including triangles and quadrilaterals.
5. Generalising Arithmetic	8	Multiply 2dx1d or 3dx1d using a formal written layout; multiply and divide mentally using place value, known facts etc to help; use inverse operations to check a calculation
6. Reasoning with Measures	8	Estimate, calculate and compare money in £ and p; Perimeter of rectilinear shapes; area of rectilinear shapes by counting
7. Discovering Equivalence	8	Recognise and show equivalent families of fractions; count in tenths; recognise tenths from dividing an object into 10 equal pieces and dividing a number by 10; recognise and write decimal equivalents of any number of tenths or hundredths; recognise and write decimal equivalents to $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$; order and compare decimals to 2dp; round decimals to the nearest integer.
8. Investigating Statistics	8	Interpret and present data appropriately including bar charts and time graphs Solve problems from bar charts, pictograms, tables etc
9. Solving Number Problems	8	Divide a (1 or 2d) number by 10 and 100; recap mental multiplication skills; recap formal multiplication; solve problems involving multiplying and adding, using the distributive law. Solve measures problems.
10. Reasoning with Fractions	8	Add and subtract fractions with same denominator; solve problems involving fractions to calculate quantities, including non-unit fractions
11. Visualising Shape	4-8	Complete a simple symmetric figure
12. Exploring Change	8	Read, write and convert time between 12 and 24 hour clocks (analogue and digital) Solve problems converting between units of time; describe positions on a grid as coordinates
13. Proportional Reasoning	8-10	Recall multiplication tables up to 12x12; Recap mental calculations; revisit formal methods for multiplication; solve correspondence problems and those involving the distributive law
14. Describing Position	8	Describe positions on grid in first quadrant as coordinates; describe movements between positions as translations using up/down and left/right; plot specified points and complete to make a polygon
15. Measuring and Estimating	6	Convert between different units of measure

Year 5

<u>Maths Topic</u>	<u>Hours</u>	<u>Overview of Learning Objectives</u>
1. Investigating Number Systems	8	Read, write, compare and order numbers up to 1 000 000; read Roman numerals to 1000; read, write and interpret negative numbers. Round integers to powers of 10, round decimals to 2dp, order decimals to 3dp
2. Pattern Sniffing	8	Count forwards, backwards in steps of powers of 10; multiply and divide numbers mentally Recognise and use square and cube numbers Identify factors and multiples, know and use prime numbers
3. Solving Calculation Problems	8-12	Add and subtract numbers mentally; Formal addition and subtraction up to 4d; Solve addition and subtraction multi-step problems in context; Formal multiplication up to 4d x 1d. Use rounding to check answers
4. Exploring Shape	8	Estimate and compare acute, obtuse and reflex angles Use properties of rectangles to find missing lengths and angles; identify regular polygons
5. Generalising Arithmetic	8	Multiply and divide whole numbers and decimals by 10, 100, 1000 Formal division up to 4d /1d.
6. Reasoning with Measures	8	Perimeter of rectilinear shapes; area of rectangles; estimate area of irregular shapes; estimate volume.
7. Discovering Equivalence	12	Mixed number and improper fractions; compare and order fractions with multiple denominators; identify and name equivalent fractions; count in hundredths; write decimals as fractions; recognise and use thousandths; understand per cent and % sign; write percentages as fractions over 100; solve problems involving equivalence of simple FDP.
8. Investigating Statistics	6	Line graphs – comparison, sum and difference problems; complete, read and interpret tables
9. Solving Number Problems	8	Recap multiplication and division by powers of 10, recap formal multiplication and division Solve problems involving any of the four operations, including problems of factors, multiples and squares, problems of scaling by fractions, problems of simple rates and problems involving decimals up to 3dp.
10. Reasoning with Fractions	8	Add and subtract fractions with same denominators or those that are multiples of each other Multiply proper fractions and mixed numbers by integers (supported diagrammatically)
11. Visualising Shape	6-8	Draw given angles, measure them in degrees; identify 3D shapes from 2D representations
12. Exploring Change	4	Solve problems converting between units of time; coordinates – first quadrant
13. Proportional Reasoning	8-10	Recap mental calculations; revisit formal methods for multiplication and division; solve calculation problems for 4 operations.
14. Describing Position	8	Describe position of shape following reflection or translation
15. Measuring and Estimating	8	Solve problems involving four operations and measures; convert between metric units; understand approximate metric-imperial conversions

Year 6

<u>Maths Topic</u>	<u>Hours</u>	<u>Overview of Learning Objectives</u>
1. Investigating Number Systems	11	Recognise place value; compare and order numbers up to 10 000 000 and to 3 decimal places; Negative numbers; Rounding
2. Pattern Sniffing	9	Generate and describe linear sequences Identify common factors, common multiples and prime numbers
3. Exploring Calculation	14	Mental calculations; Solve addition and subtraction problems; Formal multiplication up to 4dx2d; Multiply a decimal with up to 2 dp by a single digit; Estimation; Use simple formulae
4. Exploring Shape	12	Name parts of circles Angles in polygons; angles at a point, on a straight line and vertically opposite Compare and classify geometric shapes
5. Generalising Arithmetic	8	Mental calculations; Formal division up to 4d / 2d; Divide a decimal by an integer; Order of operations; Solve problems involving all 4 operations
6. Reasoning with Measures	8	Area of parallelograms and triangles; appreciation of range of shapes with same area or perimeter; appreciation of formulae for area; volume of cuboids
7. Discovering Equivalence	12	Compare and order fractions <1; Simplify fractions and express them with a common denominator; Solve percentage calculation problems; FDP equivalence
8. Investigating Statistics	8	Interpret and construct pie charts and line graphs Calculate and interpret the mean as an average
9. Solving Number Problems	4-8	Multiply and divide numbers (inc decimals) by powers of 10; revisit formal methods for multiplication and division; solve calculation problems for 4 operations (inc rounding)
10. Reasoning with Fractions	8	Add and subtract fractions with different denominators Multiply and divide proper fractions
11. Visualising Shape	6-8	Draw 2D shapes accurately; recognise, describe and build 3D shapes
12. Exploring Change	2-4	Coordinates – 4 quadrants
13. Proportional Reasoning	8	Mental calculations; revisit formal methods for multiplication and division; solve calculation problems for 4 operations (inc rounding); solve problems involving measures. Solve scaling problems; solve similar shapes problems; solve unequal sharing problems
14. Describing Position	4-8	Coordinates – 4 quadrants; Translations
15. Measuring and Estimating	8	Solve problems involving calculation and conversion of measures and units.

Extension – Year 7 Material

<u>Maths Topic</u>	<u>Hours</u>	<u>Overview of Learning Objectives</u>
1. Investigating Number Systems	10	Place value (with very large or very small numbers, and when calculating with decimals); Round numbers and measures as desired; order positive and negative integers and decimals.
2. Pattern Sniffing	12	Generate a sequence from a term-to-term rule; Triangular, square and cube numbers, simple arithmetic progressions. Prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor and lowest common multiple; Positive integer powers and associated roots; recognise powers of 2, 3, 4, 5
3. Solving Calculation Problems	12	Four operations, including formal written methods, for integers and decimals; Order of operations, including brackets; Use of the symbols =, ≠, <, >, ≤, ≥; Estimate answers; Check calculations using approximation and estimation Substitute into formulae and expressions; Use standard mathematical formulae; Concepts and vocabulary of expressions, equations, formulae and terms; Use and interpret algebraic notation.
4. Exploring Shape	8	Identify properties of the faces, surfaces, edges and vertices of 3D shapes. Use conventional geometrical terms and notations and standard labelling conventions for the sides and angles of triangles Angles at a point, angles at a point on a straight line, vertically opposite angles Properties of special types of quadrilaterals, triangles and other plane figures
5. Generalising Arithmetic	8	Review four operations for integers, decimals, fractions and mixed numbers; order of operations. Review algebraic notation, concepts and vocabulary of expressions, equations, formulae and terms, and use of the symbols =, ≠, <, >, ≤, ≥ Recognise and use relationships between operations, including inverse operations Simplify and manipulate algebraic expressions by collecting like terms and multiplying a single term over a bracket
6. Reasoning with Measures	8	Calculate perimeters of 2D shapes; Calculate area of triangles, parallelograms, trapezia; Know the formulae for circumference and area of a circle; Calculate volume of cuboids.
7. Discovering Equivalence	8	Define percentage as 'number of parts per hundred'; Interpret percentages and percentage changes as a fraction or a decimal, including multiplicatively; Express one quantity as a percentage of another; Compare two quantities using percentages; Solve problems involving percentage change. Interpret fractions and percentages as operators; order positive and negative integers, decimals and fractions
8. Investigating Statistics	8	Interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data.