Primary maths subject map

Year 1

Number and place value
- Count to and across 100, forwards and backwards beginning with 0 or 1, or from any given number in 1s,2s,5s and 10s.
- Read, write and order numbers from 1 to 20 in digits and words.
- Revise identifying a number one more and one less than any given number up to 100.
- Identify and represent numbers using concrete objects, number line and use =,>,<,most, least up to 100.

Addition and subtraction
- Continue to develop an understanding of all related mathematical vocabulary e.g. add, total, sum, find the difference etc.
- Add 2 single digits up to 20.
- Add a single digit to a 2-digit number up to 20.
- Add 3 single digits up to 20 leading to instant recall of number bonds.
- Subtract a single digit from a 2-digit number up to 20 leading to instant recall of number bonds.
- Learn addition and subtraction number bonds to 20 leading to instant recall understand number trios e.g. 9+7=16; 7+9=16; 16-9=7.
- Solve simple one-step problems that involve addition and subtraction up to 100, using concrete objects, pictorial representations and missing number problems.

Multiplication and division
- Solve simple one-step problems involving multiplication and division up to 20 using concrete objects, pictorial representations and arrays with support of the teacher.
- Understand the x and ÷ sign and revise doubling and halving.

Fractions
- Recognise, find and name a half as one of two equal parts of an object, shape or quantity.
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

Measures
- Measure and begin to record lengths/heights, mass/weights, capacity/volume, time using standard units.
- Recognise and use language relating to dates, including days of the week, months and years.
- Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

Geometry: properties of shape
- Recognise and name common 3-D shapes (cuboids, cubes, pyramids and spheres).

	Geometry: position, direction, motion • Describe position using all related mathematical vocabulary and movements, including half, quarter and three-quarter turns.
Year 2	**Number and place value** • Count in steps of 2, 3 and 5 from 0, and count in tens from any number forward or backward. • Compare and order at least three numbers both increasing and decreasing from 0 up to 100; use <, > and = signs. • Read, write numbers to at least 100 in numerals and in words. • Use place value and number facts to solve missing number problems. • Know all odd and even numbers up to 100. **Addition and subtraction** • Add and subtract numbers using concrete objects, pictorial representation, and mentally, including: two two-digit numbers, adding three one-digit numbers up to100. • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. • Solve simple addition and subtraction word problems up to 100. • Add 2 2-digit numbers using column method with no carrying. • Subtract 2 2-digit using column method and no exchanging. **Multiplication and division** • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication and division and equals signs. • Solve one-step problems involving multiplication and division up to 100, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. **Fractions** • Recognise the equivalence of two quarters and one half. • Calculate third and quarter of numbers up to 100. • Count in quarters up to 10. **Measures** • Choose and use appropriate standard units to estimate and measure length/height; mass; temperature; capacity to the nearest unit, using measuring equipment. • Read relevant scales to the nearest numbered unit. • Understand 0˚C and 100˚C and estimate the outside room temperature. • Tell and write the time to five minutes, and draw the hands on a clock face to show these times. • Compare and sequence intervals of time. • Combine amounts to make a particular value up to £50 and match different combinations of coins to equal amounts of money, add and subtract money of the same unit, including giving change up to £5. **Geometry: properties of shape** • Compare, identify describe and sort the properties of 2-D shapes, including the number of sides, right angles and symmetry in a vertical line.

- Compare, identify describe and sort the properties of 3-D shapes, including the number of edges, vertices, faces and right angles.
- Explore nets of cubes and cuboids.
- Make own symmetrical shapes by drawing lines using a ruler.

Geometry: position, direction, motion
- Use appropriate mathematical vocabulary to describe position, direction and movement.

Statistics
- Interpret and construct block diagrams and simple tables.
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.
- Ask and answer questions about totalling and compare categorical data.

Year 3	**Number and place value** - Read, and write numbers to at least 1000 in numerals and words. - Count from 0 – 96 in 8s. - Compare and order numbers up to 1000 using =,>,<. **Addition and subtraction** - Add and subtract numbers with up to 3-digits, using the column method with carrying and exchanging. - Estimate the answer to a calculation and use the inverse operations to check answers. - Solve problems including missing number problems, using number facts, place value, and more complex addition/subtraction. - Mentally add and subtract a 3-digit number and a hundreds number. **Multiplication and division** - Multiply a 2-digit number by a single digit using a simple grid. - Recall and use multiplication and division facts for the 2, 3, 4, 5, 8, 10, 11 multiplication tables. - Solve problems, including missing number problems. - Solve correspondence problems e.g. 3 hats and 4 coats – how many different outfits? **Fractions** - Recognise and show using diagrams, equivalent fractions with small denominators. - Add and subtract fractions with the same denominator within one whole. - Find pairs of fractions that add up to a whole. - Solve problems that involve all aspects of fractions learnt so far. - Recognise, find and write fractions of a discrete set of objects: non unit fractions with small denominators. **Measures** - Add and subtract amounts of money to give change using both £ and p in practical contexts and give change from £10. - Tell and write the time using Roman numerals, 12-hour and 24-hour clocks. - Estimate and read time to the nearest minute; record and compare time in terms of seconds, minutes, hours and O'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight.

- Compare duration of events, e.g. to calculate the time taken by particular events or tasks.

Geometry: properties of shape
- Identify and draw horizontal, vertical, perpendicular and parallel lines in relation to other lines.

Geometry: position, direction, motion
- Know a right angle has 90˚ and a straight angle has 180˚.
- Use a compass to draw a circle with a radius up to 10cm.

Statistics
- Interpret and present data using tables.
- Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in tables.

Year 4	**Number and place value** - Read Roman numerals to 100 and understand how, over time, the numeral system changed to include the concept of zero and place value. - Count backwards through zero to include negative numbers and understand that -2 is greater than -3 - Read, write, compare and order numbers up to 10,000 using =,>,<. - Count in multiples of 9 and 25. - Round any numbers up to 10,000 to the nearest 1000. **Addition and subtraction** - Solve 2-step problems in contexts, deciding which operation to use and why. - Estimate and use inverse operations to check answers to a calculation. **Multiplication and division** - Recall multiplication and division facts for multiplication tables up to 12x12 and know all the square numbers. - Recognise and use factor pairs and commutatively in mental calculations. - Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written method. - Solve problems involving multiplying and adding, including using the distributive law, integer scaling and harder multiplication problems such as n objects are connected to m objects. - Understand the term prime factors and work out the factors within any number up to 144. **Fractions (including decimals)** - Recognise and write decimal equivalents to ¼, ½, ¾. - Round decimals with one decimal place to the nearest whole number. - Compare numbers with the same number of decimal places up to two decimal places. - Identify and name equivalent fractions of a given fraction including tenths and hundredths. - Revise add and subtract fractions with the same denominator. **Measures** - Know the formula for measuring the area of a square or rectangle. - Know the formula for measuring the perimeter of a square or rectangle. **Geometry: properties of shape**

- Compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes.
- Identify acute and obtuse angles compare and order angles up to two right angles by size.
- Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres and the area by counting.
- Solve simple measure and money problems involving fractions and decimals to two decimal places.

Statistics
- Interpret and present discrete data using bar charts and continuous data using line graphs.
- Solve comparison, sum and different problems using information presented in bar charts and simple line graphs.

Year 5	**Number and place value** - Count forwards and backwards in steps of 1,000 and 100,000 for any given number up to 1,000,000. - Round any number up to 1000,000 to the nearest 100,000 10,000. - Read Roman numerals to 1000(M) and recognise years written in Roman numerals. **Addition and subtraction** - Revise mentally addition and subtraction of any 2 and 3-digit numbers. - Add and subtract any 1000s number from any 5-digit number. - Revise adding and subtracting 2 5-digit numbers. **Multiplication and division** - Identify multiples and factors including finding all factor pairs. - Recognise and use squared numbers and cube numbers and the correct notation. - Use the square root sign $\sqrt{}$. - Solve problems where larger numbers are used by decomposing them into their factors. - Multiply numbers up to 4-digits by a 1-digit or 2-digit number using an efficient written method, including long multiplication for 2-digit numbers. - Divide numbers up to 4-digits by a 1-digit number using short division written method. **Fractions (including decimals and percentages)** - Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25. - Mentally add and subtract tenths and mixed numbers with tenths. - Add and subtract decimals up to 3 decimal points. - Solve problems by comparing and ordering fractions whose denominators are all multiples of the same number. - Add and subtract fractions with the same denominator and related fractions; write mathematical statements >1 as a mixed number. - Multiply mixed numbers by whole numbers up to 10, supported by materials and diagrams. **Measures** - Understand and use basic equivalences between metric and common imperial units and express them in approximate terms. - Measure and calculate the perimeter and area of composite rectilinear shapes in standard units.

Geometry: properties of shape
- Draw squares, rectangles and all triangles using given dimensions (to the nearest millimetre) and angles with a protractor.
- State and use the properties of a rectangle (including squares) to deduce related facts.
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
- Identify: Multiples of 90°; angles at a point on a straight line and ½ a turn (total 180°); angles at a point and one whole turn (total 360°; reflex angles and compare different angles

Geometry: position, direction, motion
- Identify, describe and represent the position of a shape following a reflection or translation in all four quadrants, using the appropriate language, and know that the shape has not changed

Statistics
- Solve comparison, sum and difference problems using information presented in line graphs
- Interpret information stored in a pie chart

Year 6

Number and place value
- Use negative numbers in context and calculate intervals across zero.
- Solve number problems and practical problems that involve all these aspects.

Addition, subtraction, multiplication and division
- Perform mental calculations including with mixed operations and large numbers.
- Divide numbers up to 4 digits by a 2-digit whole number up to 20 using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.
- Solve multi-step problems involving the 4 rules and use estimations to check answers to calculations and determine in the context of a problem, levels of accuracy.
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations.

Fractions (including decimals and percentages)
- Multiply simple pairs of proper fractions writing the answer in its simplest form (e.g. ¼ x ½ =1/8).
- Divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6).
- Use written division methods in cases where the answer has up to 2 decimal places.
- Solve problems which require answers to be rounded to specified degrees of accuracy.

Ratio and proportion
- Solve problems involving similar shapes where the scale factor is known or can be found.
- Solve simple ratio and proportion problems and reduce a given ratio to its lowest terms.

Algebra
- Find pairs of numbers that satisfy number sentences involving two unknowns e.g. what is 2a+3b if a=2 and b=3.
- Enumerate all possibilities of combinations of two variables.

Measures
- Calculate the area of parallelograms and triangles and be able to use the correct formulae.

	• Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed and cubic metres and extending to other units, such as mm cubed and km cubed. **Geometry: properties of shape** • Find missing angles in a parallelogram, rhombus, trapezium by working out diagonally opposite angles. **Statistics** • Interpret and construct pie charts and use these to solve problems by connecting understanding of angles, fractions and percentages. • Interpret and construct line graphs and use these to solve problems