

Subject progression map

Subject:

	Skills	Key Vocabulary
Reception	<p><u>Number</u></p> <ul style="list-style-type: none"> Have a deep understanding of number to 10, including the composition of each number; - Subitise (recognise quantities without counting) up to 5. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. <p><u>Numerical Patterns.</u></p> <ul style="list-style-type: none"> Verbally count beyond 20, recognising the pattern of the counting system. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. 	See Rising Stars Mathematical Vocabulary Booklet
Year 1	<p><u>Number and Place Value</u></p> <ul style="list-style-type: none"> Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count and read numbers to 100 in numerals Count and write numbers to 100 in numerals Count in multiples of twos, fives and tens from 0 Identify one more and one less of a given number Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least Read and write numbers from 1 to 20 in numerals Read and write numbers from 1 to 20 in words <p><u>Number - Addition and Subtraction</u></p> <ul style="list-style-type: none"> Read and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs Write mathematical statements involving addition (+), subtraction (-) and equals (=) signs Represent and use number bonds within 20 Represent and use subtraction facts within 20 Add one-digit and two-digit numbers to 20, including zero Subtract one-digit and two-digit numbers to 20, including zero Solve one-step problems that involve addition, subtraction and missing numbers using concrete objects and pictorial representations <p><u>Number – Multiplication and Division</u></p> <ul style="list-style-type: none"> Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher Solve one-step problems involving division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher <p><u>Number – Fractions</u></p> <ul style="list-style-type: none"> 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. <p><u>Measurement</u></p> <ul style="list-style-type: none"> Compare, describe and solve practical problems for lengths and heights e.g. long/short, longer/shorter, tall/short, double/half 	

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	<ul style="list-style-type: none"> • Compare, describe and solve practical problems for mass/weight e.g. heavy/light, heavier than, lighter than • Compare, describe and solve practical problems for capacity and volume e.g. full/empty, more than, less than, half, half full, quarter • Compare, describe and solve practical problems for time e.g. quicker, slower, earlier, later • Measure and begin to record length/height • Measure and begin to record mass/weight • Measure and begin to record capacity and volume • Measure and begin to record time (hours, minutes, seconds) • Recognise and know the value of different denominations of coins and notes • Sequence events in chronological order using language e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening • Recognise and use language relating to dates, including days of the week, weeks, 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 <p><u>Geometry – Properties of Shape</u></p> <ul style="list-style-type: none"> • Recognise and name common 2-D shapes e.g. rectangles (including squares), circles and triangles • Recognise and name common 3-D shapes e.g. cuboids (including cubes), pyramids and spheres <p><u>Geometry – Position and Direction</u></p> <ul style="list-style-type: none"> • Describe position, direction and movement, including whole, half, quarter and three-quarter turns 	
<p>Year 2</p>	<p><u>Number - Number and Place Value</u></p> <ul style="list-style-type: none"> • Count in steps of 2, 3, and 5 from 0, and in tens from any number. • Recognise the place value of each digit in a two-digit number. • Identify, represent and estimate numbers using different representations, including the number line. • Compare and order numbers from 0 up to 100 including using symbols • Read and write numbers to at least 100 in numerals and in words • Use place value and number facts to solve problems. <p><u>Number - Addition and Subtraction</u></p> <ul style="list-style-type: none"> • Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. <p><u>Number - Multiplication and Division</u></p> <ul style="list-style-type: none"> • Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs • Show that multiplication of two numbers can be done in any order and division of one number by another cannot • Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. 	

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	<p><u>Number - Fractions</u></p> <ul style="list-style-type: none"> Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, and $\frac{3}{4}$ of a length, shape, set of objects or quantity Write simple fractions and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ <p><u>Measurement</u></p> <ul style="list-style-type: none"> Choose and use appropriate standard units to estimate and measure length/height in any direction; mass; temperature; capacity to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels Compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$ Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value Find different combinations of coins that equal the same amounts of money Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change Compare and sequence intervals of time Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times Know the number of minutes in an hour and the number of hours in a day <p><u>Geometry - Properties of Shape</u></p> <ul style="list-style-type: none"> Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces Identify 2D shapes on the surface of 3D shapes Compare and sort common 2D and 3D shapes and everyday objects. <p><u>Geometry - Position and Direction</u></p> <ul style="list-style-type: none"> Order and arrange combinations of mathematical objects in patterns and sequences Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) <p><u>Statistics</u></p> <ul style="list-style-type: none"> Interpret and construct simple pictograms, tally charts, 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 comparing categorical data. 	
<p>Year 3</p>	<p><u>Number and Place Value</u></p> <ul style="list-style-type: none"> Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Compare and order numbers up to 1000 Read and write numbers up to 1000 in numerals Read and write numbers up to 1000 in words Solve number problems and practical problems involving these ideas <p><u>Number - Addition and Subtraction</u></p> <ul style="list-style-type: none"> Add and subtract numbers mentally, including a three-digit number and ones Add and subtract numbers mentally, including a three-digit number and tens Add and subtract numbers mentally, including a three-digit number and hundreds Add numbers with up to three digits using the formal method of column addition 	

Subject progression map

Subject:

	<ul style="list-style-type: none"> • Subtract numbers with up to three digits using the formal method of column subtraction • Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction <p><u>Number – Multiplication and Division</u></p> <ul style="list-style-type: none"> • Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • Write and calculate mathematical statements for multiplication and division using the multiplication tables that he/she knows, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods <p><u>Number – Fractions</u></p> <ul style="list-style-type: none"> • Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators • Recognise and show, using diagrams, equivalent fractions with small denominators • Add fractions with the same denominator within one whole e.g. $5/7 + 1/7 = 6/7$ • Subtract fractions with the same denominator within one whole e.g. $6/7 - 1/7 = 5/7$ • Compare and order unit fractions, and fractions with the same denominators <p><u>Measurement</u></p> <ul style="list-style-type: none"> • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • Measure the perimeter of simple 2-D shapes • Add and subtract amounts of money to give change, using both £ and p in practical contexts • Tell the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • Write the time using an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks <p><u>Geometry – Properties of Shape</u></p> <ul style="list-style-type: none"> • Draw 2-D shapes and make 3-D shapes using modelling materials; recognize 3-D shapes in different orientations and describe them • Recognize angles as a property of shape or a description of a turn • Identify right angles and identify whether other angles are greater or less than a right angle • Recognize that two right angles make a half turn, three make three quarters of a turn and four a complete turn <p><u>Statistics</u></p> <ul style="list-style-type: none"> • Interpret and present data using bar charts, pictograms and tables • Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables. 	
<p>Year 4</p>	<p><u>Number and Place Value</u></p> <ul style="list-style-type: none"> • Count in multiples of 6, 7, 9, 25 and 1000 • Find 1000 more or less than a given number • Count backwards through zero to include negative numbers • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) • Order and compare numbers beyond 1000 • Round any number to the nearest 10, 100 or 1000 • Solve number and practical problems that involve all of the above and with increasingly large positive numbers <p><u>Number - Addition and Subtraction</u></p>	

Subject progression map

Subject:

- Add numbers with up to four digits using the formal method of column addition
- Subtract numbers with up to four digits using the formal method of column subtraction
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Number – Multiplication and Division

- Recall multiplication and division facts for multiplication tables up to 12×12
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Number – Fractions

- Recognise and show, using diagrams, families of common equivalent fractions
- Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten
- Add and subtract fractions with the same denominator
- Recognise and write decimal equivalents of any number of tenths or hundredths
- Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- 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
- Solve simple measure and money problems involving fractions and decimals to two decimal places

Measurement

- Convert between different units of measure e.g. kilometre to metre; hour to minute
- Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- Find the area of rectilinear shapes by counting squares
- Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days

Geometry – Properties of Shape

- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- Identify acute and obtuse angles and compare and order angles up to two right angles by size
- Identify lines of symmetry in 2-D shapes presented in different orientations
- Complete a simple symmetric figure with respect to a specific line of symmetry

Geometry – Position and Direction

- Describe positions on a 2-D grid as coordinates in the first quadrant
- Describe movements between positions as translations of a given unit to the left/right and up/down
- Plot specified points and draw sides to complete a given polygon

Statistics

Subject progression map

Subject:

	<ul style="list-style-type: none"> • Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs 	
<p>Year 5</p>	<p><u>Number and Place Value</u></p> <ul style="list-style-type: none"> • Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit e.g. what is the value of the '7' in 276,541? Find the difference between the largest and smallest whole numbers that can be made from using three digits • Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero • Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • Solve number problems and practical problems that involve ordering and comparing numbers to 1 000 000, counting forwards or backwards in steps, interpreting negative numbers and rounding <p><u>Number - Addition and Subtraction</u></p> <ul style="list-style-type: none"> • Add and subtract whole numbers with more than 4 digits, including using formal written methods (column addition and subtraction) • Add and subtract numbers mentally with increasingly large numbers • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why <p><u>Number – Multiplication and Division</u></p> <ul style="list-style-type: none"> • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • Recognise and use square numbers and the notation for squared (2) • Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • Recognise and use cube numbers and the notation for cubed (3) • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates <p><u>Number – Fractions</u></p> <ul style="list-style-type: none"> • Compare and order fractions whose denominators are all multiples of the same number • Identify and name equivalent fractions of a given fraction, represented visually, including tenths and hundredths • Write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • Add and subtract fractions with the same denominator and denominators that are multiples of the same number • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • Read and write decimal numbers as fractions e.g. $0.71 = \frac{71}{100}$, $8.09 = 8 + \frac{9}{100}$ • Round decimals with two decimal places to the nearest whole number and to one decimal place • Read, write, order and compare numbers with up to three decimal places 	

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	<ul style="list-style-type: none"> Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 <p>Measurement</p> <ul style="list-style-type: none"> Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes Solve problems involving converting between units of time Use all four operations to solve problems involving measure e.g. length, mass, volume, money using decimal notation, including scaling <p>Geometry – Properties of Shape</p> <ul style="list-style-type: none"> Identify 3-D shapes, including cubes and other cuboids, from 2-D representations Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees ($^\circ$) Distinguish between regular and irregular polygons based on reasoning about equal sides and angles <p>Geometry – Position and Direction</p> <ul style="list-style-type: none"> Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed <p>Statistics</p> <ul style="list-style-type: none"> Solve comparison, sum and difference problems using information presented in a line graph Complete, read and interpret information in tables, including timetables 	
Year 6	<p>Number and Place Value</p> <ul style="list-style-type: none"> Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit Round any whole number to a required degree of accuracy Use negative numbers in context, and calculate intervals across zero Solve number and practical problems that involve ordering and comparing numbers to 10 000 000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero <p>Number - Addition and Subtraction</p> <ul style="list-style-type: none"> Perform mental calculations with mixed operations and large numbers Use knowledge of the order of operations to carry out calculations involving the four operations Solve multi-step problems in contexts, deciding which operations and methods to use and why e.g. find the change from £20 for three items that cost £1.24, £7.92 and £2.55; a roll of material is 6m long: how much is left when 5 pieces of 1.15m are cut from the roll?; a bottle of drink is 1.5 litres, how many cups of 175ml can be filled from the bottle, and how much drink is left? Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy <p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> Identify common factors, common multiples and prime numbers 	

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- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- Solve problems involving multiplication and division
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
- Perform mental calculations with mixed operations and large numbers

Number – Fractions

- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- Compare and order fractions, including fractions > 1
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
- Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g. $1/4 \times 1/2 = 1/8$
- Divide proper fractions by whole numbers e.g. $1/3 \div 2 = 1/6$
- Identify the value of each digit in numbers given to three decimal places
- Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- Multiply one-digit numbers with up to two decimal places by whole numbers
- Use written division methods in cases where the answer has up to two decimal places
- Solve problems which require answers to be rounded to specified degrees of accuracy
- Associate a fraction with division and calculate decimal and fraction equivalents eg. 0.375 for $3/8$
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts e.g. one piece of cake that has been cut into 5 equal slices can be expressed as $1/5$ or 0.2 or 20% of the whole cake

Measurement

- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places
- Convert between miles and kilometres
- Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit and vice versa
- Recognise that shapes with the same areas can have different perimeters and vice versa
- Recognise when it is possible to use formulae for area and volume of shapes
- Calculate the area of parallelograms and triangles
- Calculate, estimate and compare volume of cubes and cuboids using standard units including cubic centimeters (cm^3) and cubic meters (m^3) and extending to other units (for example mm^3 and km^3)

Geometry – Properties of Shape and angles

- Draw 2-D shapes using given dimensions and angles
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- Recognise, describe and build simple 3-D shapes, including making nets

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- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
- Find unknown angles in any triangles, quadrilaterals and regular polygons

Geometry – Position and Direction

- Describe positions in the full coordinate grid (all four quadrants)
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axis

Statistics

- Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average

Ratio and Proportion

- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts e.g. find $\frac{7}{9}$ of 108
- Solve problems involving the calculation of percentages e.g. of measures, and such as 15% of 360 and the use of percentages for comparison
- Solve problems involving similar shapes where the scale factor is known or can be found
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Algebra

- Use simple formulae e.g. perimeter of a rectangle or area of a triangle
- Generate and describe linear number sequences
- Express missing number problems algebraically
- Find pairs of numbers that satisfy an equation with 2 unknowns
- Enumerate possibilities of combinations of two variables