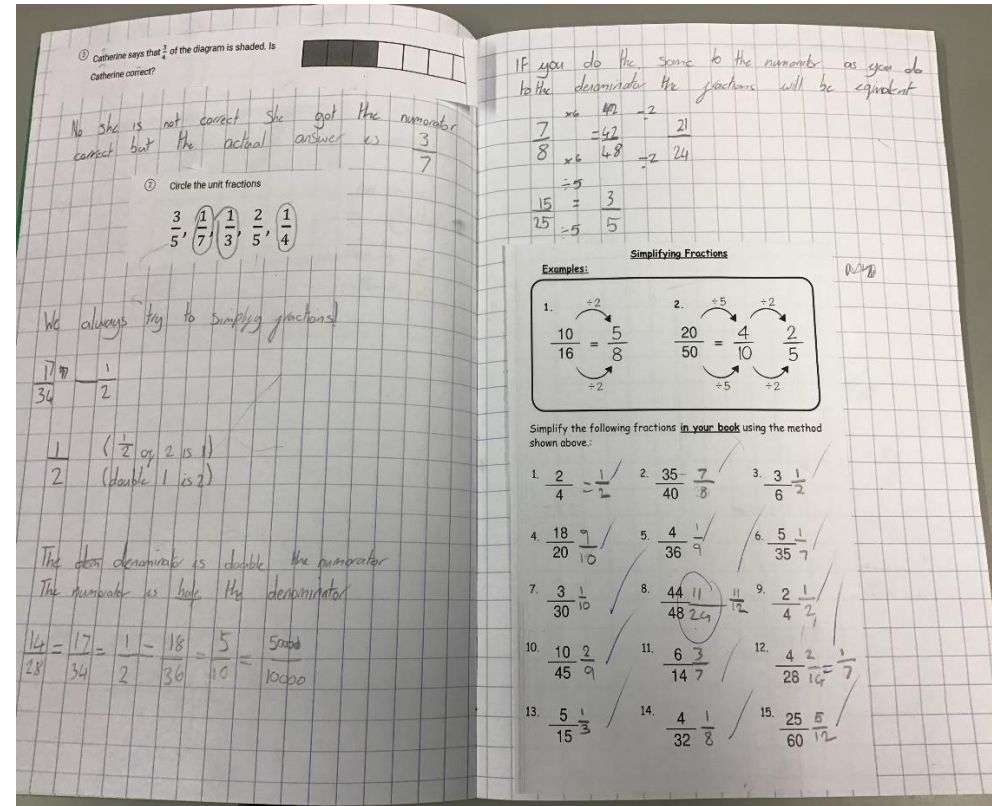


Progression of Skills and Knowledge in Mathematics



Maths

Progression of Skills and Knowledge in Mathematics

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number sense						
<p>(Number) Have a deep understanding of number to 10, including the composition of each number</p> <p>- Subitise (recognise quantities without counting) up to 5</p> <p>(Numerical Patterns) Verbally count beyond 20, recognising the pattern of the counting system</p> <p>- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity</p>	<p>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</p> <p>Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s</p> <p>Given a number, identify 1 more and 1 less</p> <p>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</p> <p>Read and write numbers from 1 to 20 in numerals and words</p>	<p>Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward</p> <p>Recognise the place value of each digit in a two-digit number (10s, 1s)</p> <p>Identify, represent and estimate numbers using different representations, including the number line</p> <p>Compare and order numbers from 0 up to 100; use <, > and = signs</p> <p>Read and write numbers to at least 100 in numerals and in words</p> <p>Recall doubles and halves up to 20</p> <p>Recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20</p> <p>Use place value and number facts to solve problems</p> <p>Use estimation to check that his/her answers to a calculation are reasonable</p>	<p>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</p> <p>Recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)</p> <p>Compare and order numbers up to 1,000 identify, represent and estimate numbers using different representations</p> <p>Read and write numbers up to 1,000 in numerals and in words</p> <p>Solve number problems and practical problems involving these ideas</p>	<p>Count in multiples of 6, 7, 9, 25 and 1,000</p> <p>Find 1,000 more or less than a given number</p> <p>Count backwards through 0 to include negative numbers</p> <p>Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s)</p> <p>Order and compare numbers beyond 1,000</p> <p>Identify, represent and estimate numbers using different representations</p> <p>Round any number to the nearest 10, 100 or 1,000</p> <p>Solve number and practical problems that involve all of the above and with increasingly large positive numbers</p> <p>Read roman numerals to 100 (I to c) and know that over time, the numeral system changed to include the concept of 0 and place value</p>	<p>Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0</p> <p>Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000</p> <p>Solve number problems and practical problems that involve all of the above</p> <p>Read roman numerals to 1,000 (m) and recognise years written in roman numerals</p>	<p>Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit</p> <p>Round any whole number to a required degree of accuracy</p> <p>Use negative numbers in context, and calculate intervals across 0</p> <p>Solve number and practical problems that involve all of the above</p>

Progression of Skills and Knowledge in Mathematics

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition & Subtraction						
<p>(Number) 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> <p>(Numerical Patterns) Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p> <p>Represent and use number bonds and related subtraction facts within 20</p> <p>Add and subtract onedigit and two-digit numbers to 20, including 0</p> <p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$</p>	<p>Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures</p> <p>Solve problems with addition and subtraction: applying their increasing knowledge of mental and written methods</p> <p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p> <p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> - a two-digit number and 1s - a two-digit number and 10s - 2 two-digit numbers - adding 3 one-digit numbers - show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot <p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</p>	<p>Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> - a three-digit number and 1s - a three-digit number and 10s - a three-digit number and 100s <p>Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction</p> <p>Estimate the answer to a calculation and use inverse operations to check answers</p> <p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</p>	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</p> <p>Estimate and use inverse operations to check answers to a calculation</p> <p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</p>	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> <p>Add and subtract numbers mentally with increasingly large numbers</p> <p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>	<p>Use their knowledge of the order of operations to carry out calculations involving the 4 operations</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p> <p>Solve problems involving addition, subtraction, multiplication and division</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</p> <p>Perform mental calculations, including with mixed operations and large numbers</p>

Progression of Skills and Knowledge in Mathematics

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions					
<p>Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity</p> <p>Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity</p>	<p>Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape,</p> <p>Write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ set of objects or quantity</p>	<p>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</p> <p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</p> <p>Recognise and use fractions as numbers: unit fractions and non unit fractions with small denominators</p> <p>Recognise and show, using diagrams, equivalent fractions with small denominators</p> <p>Add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]</p> <p>Compare and order unit fractions, and fractions with the same denominators</p> <p>Solve problems that involve all of the above</p>	<p>Recognise and show, using diagrams, families of common equivalent fractions</p> <p>Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10</p> <p>Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number</p> <p>Add and subtract fractions with the same denominator</p> <p>Recognise and write decimal equivalents of any number of tenths or hundreds</p> <p>Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$</p> <p>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</p> <p>Round decimals with 1 decimal place to the nearest whole number</p> <p>Compare numbers with the same number of decimal places up to 2 decimal places</p> <p>Solve simple measure and money problems involving fractions and decimals to 2 decimal places</p>	<p>Compare and order fractions whose denominators are all multiples of the same number</p> <p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$]</p> <p>Add and subtract fractions with the same denominator, and denominators that are multiples of the same number</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p> <p>Read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place</p> <p>Read, write, order and compare numbers with up to 3 decimal places</p> <p>Solve problems involving number up to 3 decimal places</p> <p>Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction</p> <p>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>	<p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>Compare and order fractions, including fractions > 1</p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]</p> <p>Divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]</p> <p>Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] For a simple fraction [for example, $\frac{3}{8}$]</p> <p>Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places</p> <p>Multiply one-digit numbers with up to 2 decimal places by whole numbers</p> <p>Use written division methods in cases where the answer has up to 2 decimal places</p> <p>Solve problems which require answers to be rounded to specified degrees of accuracy</p> <p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</p> <p>Ration and proportion</p> <p>Solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts</p> <p>Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</p>

Progression of Skills and Knowledge in Mathematics

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement						
	<p>Compare, describe and solve practical problems for:</p> <ul style="list-style-type: none"> -Lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] -Mass/weight [for example, heavy/light, heavier than, lighter than] -Capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] -Time [for example, quicker, slower, earlier, later] <p>Measure and begin to record the following:</p> <ul style="list-style-type: none"> - Lengths and heights - Mass/weight - Capacity and volume - Time (hours, minutes, seconds) <p>Recognise and know the value of different denominations of coins and notes</p> <p>Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</p> <p>Recognise and use language relating to dates, including days of the week, weeks, months and years</p> <p>Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</p>	<p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</p> <p>Compare and order lengths, mass, volume/capacity and record the results using >, < and =</p> <p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</p> <p>Find different combinations of coins that equal the same amounts of money</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</p> <p>Compare and sequence intervals of time</p> <p>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</p> <p>Know the number of minutes in an hour and the number of hours in a day</p> <p>Read scales in divisions of ones, twos, fives and tens</p> <p>Know the value of different coins</p>	<p>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</p> <p>Measure the perimeter of simple 2-D shapes</p> <p>Add and subtract amounts of money to give change, using both £ and p in practical contexts</p> <p>Tell and write the time from an analogue clock, including using roman numerals from i to xii, and 12-hour and 24-hour clocks</p> <p>Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year</p> <p>Compare durations of events [for example, to calculate the time taken by particular events or tasks]</p>	<p>Convert between different units of measure [for example, kilometre to metre; hour to minute]</p> <p>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <p>Find the area of rectilinear shapes by counting squares</p> <p>Estimate, compare and calculate different measures, including money in pounds and pence</p> <p>Read, write and convert time between analogue and digital 12- and 24-hour clocks</p> <p>Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days</p>	<p>Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]</p> <p>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</p> <p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p> <p>Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes</p> <p>Estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]</p> <p>Solve problems involving converting between units of time</p> <p>Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</p>	<p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate</p> <p>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 to up to 3 decimal places</p> <p>Convert between miles and kilometres</p> <p>Recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>Recognise when it is possible to use formulae for area and volume of shapes</p> <p>Calculate the area of parallelograms and triangles</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]</p>

Progression of Skills and Knowledge in Mathematics

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry						
	<p>Recognise and name common 2-D and 3-D shapes, including:</p> <ul style="list-style-type: none"> - 2-D shapes (for example, rectangles (including squares), circles and triangles) - 3-D shapes (for example, cuboids (including cubes), pyramids and spheres) <p>Describe position, direction and movement, including whole, half, quarter and three-quarter turns</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line</p> <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</p> <p>Identify 2-D shapes on the surface of 3-D shapes, (for example, a circle on a cylinder and a triangle on a pyramid)</p> <p>Compare and sort common 2-D and 3-D shapes and everyday objects</p> <p>Order and arrange combinations of mathematical objects in patterns and sequences</p> <p>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 anticlockwise)</p>	<p>Draw 2-D shapes and make 3-D shapes using modeling materials</p> <p>Recognise 3-D shapes in different orientations and describe them</p> <p>Recognise angles as a property of shape or a description of a turn</p> <p>Identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle</p> <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines</p>	<p>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</p> <p>Identify acute and obtuse angles and compare and order angles up to 2 right angles by size</p> <p>Identify lines of symmetry in 2-d shapes presented in different orientations</p> <p>Complete a simple symmetric figure with respect to a specific line of symmetry</p> <p>Describe positions on a 2-D grid as coordinates in the first quadrant</p> <p>Describe movements between positions as translations of a given unit to the left/right and up/down</p> <p>Plot specified points and draw sides to complete a given polygon</p>	<p>Identify 3-D shapes, including cubes and other cuboids, from 2-d representations</p> <p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p> <p>Draw given angles, and measure them in degrees (°)</p> <p>Identify:</p> <ul style="list-style-type: none"> - Angles at a point and 1 whole turn (total 360°) - Angles at a point on a straight line and half a turn (total 180°) - Other multiples of 90° <p>Use the properties of rectangles to deduce related facts and find missing lengths and angles</p> <p>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles</p> <p>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>	<p>Draw 2-D shapes using given dimensions and angles</p> <p>Recognise, describe and build simple 3-D shapes, including making nets</p> <p>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p> <p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</p> <p>Describe positions on the full coordinate grid (all 4 quadrants)</p> <p>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes</p>

Progression of Skills and Knowledge in Mathematics

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Statistics						
		<p>Interpret and construct simple pictograms, tally charts, block diagrams and tables</p> <p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</p> <p>Ask-and-answer questions about totalling and comparing categorical data</p>	<p>Interpret and present data using bar charts, pictograms and tables</p> <p>Solve one-step and twostep questions [for example 'how many more?' And 'how many fewer?']</p> <p>Using information presented in scaled bar charts and pictograms and tables</p>	<p>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</p> <p>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</p>	<p>Solve comparison, sum and difference problems using information presented in a line graph</p> <p>Complete, read and interpret information in tables, including timetables</p>	<p>Interpret and construct pie charts and line graphs and use these to solve problems</p> <p>Calculate and interpret the mean as an average</p>

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Algebra						
	<p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$</p>	<p>Solve addition and subtraction problems involving missing numbers</p>	<p>Solve addition and subtraction, multiplication and division problems that involve missing numbers</p>	<p>Solve addition and subtraction, multiplication and division problems that involve missing numbers</p>	<p>Solve addition and subtraction, multiplication and division problems that involve missing numbers</p>	<p>Use simple formulae</p> <p>Generate and describe linear number sequences</p> <p>Express missing number problems algebraically</p> <p>Find pairs of numbers that satisfy an equation with 2 unknowns</p> <p>Enumerate possibilities of combinations of 2 variables</p>