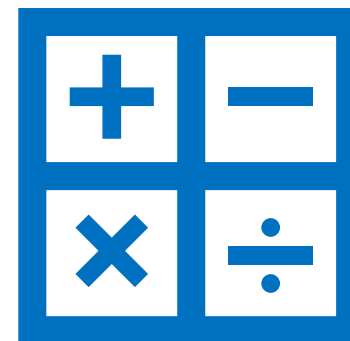


# Skills and Progression Map

## Mathematics

*'Spirituality is the bitter-sweet yearning for beauty, truth, love and wonder beyond ourselves. It is a longing we pursue together and a treasure we glimpse in ourselves and one another and seek beyond us into eternity. It is life in all its fullness.'*



### Nebula Spirituality Statement



Reception Mathematic Skills	
Expected	Early Learning Goals (ELG)
<p><b>Pupils can ...</b></p> <ul style="list-style-type: none"> <li>• Count objects, actions and sounds</li> <li>• Subitise</li> <li>• Link the number symbol (numeral) with its cardinal value</li> <li>• Count beyond ten</li> <li>• Compare numbers</li> <li>• Understand the ‘one more than/one less than’ relationship between consecutive numbers</li> <li>• Explore the composition of numbers to 10</li> <li>• Automatically recall number bonds for numbers 0-5 and some to 10</li> <li>• <a href="#">Select, rotate and manipulate shapes to develop spatial reasoning skills</a></li> <li>• <a href="#">Compose and decompose shapes so that children recognise a shape can have other shapes <i>within</i> it, just as numbers can</a></li> <li>• <a href="#">Continue, copy and create repeating patterns</a></li> <li>• <a href="#">Compare length, weight and capacity</a></li> </ul>	<p><b>Number ELG</b></p> <p>Children at the expected level of development will:</p> <ul style="list-style-type: none"> <li>• Have a deep understanding of number to 10, including the composition of each number</li> <li>• Subitise (recognise quantities without counting) up to 5</li> <li>• 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.</li> </ul> <p><b>Numerical Patterns ELG</b></p> <p>Children at the expected level of development will:</p> <ul style="list-style-type: none"> <li>• Verbally count beyond 20, recognising the pattern of the counting system</li> <li>• Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity</li> <li>• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally</li> </ul>

Non-statutory

EYFS - Key Vocabulary

Number and place value	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics	General/problem solving
Zero 1-20 Teen numbers Eleven, twelve None Count..on/ back/ up Same as Ones, tens, digit, More Fewest, fewer Larger, largest Less, least Biggest greatest Order First, second, third... Last Before, after, next between Guess How many? Add more and Make, sum, total Altogether Double One more.... How many more... Take away How many left... One less... Difference between Share, double, halve.	Measure Compare Estimate Just.... About the same... Metre Length, width, height, depth Long, Short, Tall High , low Wide, narrow Thick, thin Weigh, balance, lighter, heavier, Scales Full, empty, holds Container, Days of the week Day, week Morning, afternoon, evening, night Birthday Today, yesterday, tomorrow, quicker slower older, younger, newer, hour minute clock, time money, pounds, pence, coins, price, cost, buy sell, spend, pay.	Over, under Above, below, Top bottom side On in, outside, inside, around, in front, behind, Front, back, next to, opposite Between Left, right, up , down forwards, backwards.	Shape, pattern, Flat, curved, straight, round, hollow, solid, sort, make, build, draw, size, symmetrical Repeat, match Corner, side Rectangle, circle, triangle. Face, edge, cube, pyramid Sphere, cone	Parts of a whole Half quarter	Count sort, group, set, list	Pattern, puzzle, What could we try? Recognise Describe Compare

**Year 1  
Mathematic Skills**

Expected	Greater Depth
<p><b>Pupils can ...</b></p> <ul style="list-style-type: none"> <li>• Count to and across 100 forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>• Count, read and write numbers to 100 in numerals</li> <li>• Count in multiples of twos, fives and tens</li> <li>• Given a number, identify one more and one less</li> <li>• 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 and least</li> <li>• Count, read and write numbers to 20 in words</li> <li>• Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>• Represent (including symbols) and use number bonds and related subtraction facts within 20</li> <li>• Add and subtract 1-digit and 2-digit numbers to 20, including 0</li> <li>• Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems, such as <math>7 = \square - 9</math></li> <li>• Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with support of the teacher</li> <li>• Recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>• Recognise, find and name a quarter of one of four equal parts of an object, shape or quantity</li> <li>• Compare, describe and solve practical problems for:             <ul style="list-style-type: none"> <li>○ Lengths and heights (for example, long/short, longer/ shorter, tall/short, double/half)</li> <li>○ Mass/weight (for example, heavy/light, heavier than, lighter than)</li> <li>○ Capacity and volume (for example, full/empty, more than, less than, half, half full, quarter)</li> <li>○ Time (for example, quicker, slower, earlier, later)</li> </ul> </li> <li>• Measure and begin to record the following:             <ul style="list-style-type: none"> <li>○ Lengths and heights</li> <li>○ Mass/ weight</li> <li>○ Capacity and volume</li> <li>○ Time (hours, minutes, seconds)</li> </ul> </li> <li>• Recognise and know the value of different denominations of coins and notes</li> <li>• Sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening)</li> <li>• Recognise and use language relating to dates including days of the week, weeks, months and years</li> <li>• Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</li> <li>• Describe position, direction and movement including whole, half, quarter and 3 quarter turns</li> <li>• Recognise and name common 2D and 3D shapes, including:             <ul style="list-style-type: none"> <li>○ 2-D shapes [for example, rectangles (including squares), circles and triangles]</li> <li>○ 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]</li> </ul> </li> <li>• Describe position, direction and movement, including half, quarter and three-quarter turns</li> </ul>	<p><b>Pupils can ...</b></p> <ul style="list-style-type: none"> <li>• Count reliably well beyond 100</li> <li>• Count on and back in 3s from any given number to beyond 100</li> <li>• Say the number that is 10 more or 10 less than a number to 100</li> <li>• Know the symbols (+); (-); (=); (&lt;); (&gt;)</li> <li>• Apply my knowledge of number to solve a one-step problem involving an addition, a subtraction and simple multiplication and division</li> <li>• Add and subtract 1-digit and 2-digit numbers to 50, including zero</li> <li>• Work in a systematic, logical way to find patterns, generalise and justify mathematical thinking</li> <li>• Reason about addition using the correct mathematical language <i>A pupil can explain that when you add 0 to a number the number does not change. A pupil can explain if 2 numbers added together will total more or less than 10</i></li> <li>• Recognise patterns in the number system. For example, when counting in 10s from 0 the answer will always end in 0; when counting in 5s from 0, the number will end in 0 or 5; when they count in 2s from 0, the answer will always be even</li> <li>• Can recognise and explain when a group of objects can be shared equally and when it cannot</li> <li>• Can identify which of a selection of o'clock and half past times will occur next</li> <li>• Recognise all coins and notes and know their value</li> <li>• Use coins to pay for items bought up to £1</li> <li>• Use my knowledge of time to know when key periods of the day happen, for example, lunchtime, home time, etc.</li> <li>• Can arrange 4 containers of different sizes according to mass, or capacity</li> <li>• Can spot 2D shapes in the faces of 3D shapes.</li> </ul>

Year 1 – Key Vocabulary

Number and place value	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics	General/problem solving
<p><b>Numeral</b>  <b>Numbers to 100</b>  <b>Forwards, backwards</b>  <b>Equal to</b>  <b>Most least</b>  <b>Many</b>  <b>Multiple of...</b>  <b>Halfway between</b>  <b>Roughly</b>  <b>Addition</b>  <b>Near double</b>  <b>Subtract</b>  <b>Missing number</b>  <b>Multiplication</b>  <b>Multiply</b>  <b>Division</b>  <b>Dividing</b>  <b>Group</b>  <b>Array</b>  <b>Fraction</b>  <b>Equal part</b>  <b>Equal sharing</b>  <b>quarter</b></p>	<p><b>Measurement</b>  <b>Roughly</b>  <b>Centimetre</b>  <b>Ruler</b>  <b>Metre stick</b>  <b>Kilogram</b>  <b>Half kilogram</b>  <b>Litre</b>  <b>Half litre</b>  <b>Capacity</b>  <b>Volume</b>  <b>Quarter full</b>  <b>Months of the year</b>  <b>Seasons</b>  <b>Earlier</b>  <b>Later</b>  <b>Half past, quarter past, hour hand, minute hand, hours minutes.</b>  <b>Change, cheaper, total.</b></p>	<p><b>Underneath</b>  <b>Centre</b>  <b>Quarter turn, three quarter turn.</b></p>	<p><b>Symmetry</b>  <b>Symmetrical pattern</b>  <b>Point</b>  <b>Cuboid, cylinder,</b>  <b>Vertex, vertices.</b></p>		<p><b>Vote, table</b></p>	<p><b>How long will it be...?</b>  <b>How long will it take...?</b>  <b>How often?</b>  <b>Always, sometimes, never, often.</b>  <b>Mentally,</b></p>

**Year 2  
Mathematic Skills**

**Expected**

**Pupils can ...**

- Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward
- Recognise the place value of each digit in a 2-digit number (tens, ones)
- Identify, represent and estimate numbers using different representations, including the number line
- Compare and order numbers from 0 to 100; use  $<$ ,  $>$  and signs
- Read and write numbers to at least 100 in numerals and in words
- Use place value and number facts to solve problems
- 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
  - Partition two-digit numbers into different combinations of tens and ones. This may include using apparatus (e.g. 23 is the same as 2 tens and 3 ones which is the same as 1 ten and 13 ones)
- 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
- 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 ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs
- Show that multiplication of two numbers can be done in any order (commutative) 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
- 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 for example,  $\frac{1}{2}$  of 6 = 3 and recognise the equivalence of  $\frac{2}{4}$  and  $\frac{1}{2}$ .
- Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ( $^{\circ}$ C); capacity (litres/ml) 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 ( $\pounds$ ) and pence (p); combine amounts to make a particular value
- Find different combinations of coins that equal the same amounts of money

**Greater Depth**

**Pupils can ...**

- Work in a systematic, logical way to find patterns, generalise and justify mathematical thinking
- Read scales in divisions of ones, twos, fives and tens in a practical situation where not all numbers on the scale are given and estimate points in between
- Use multiplication facts to make deductions outside known multiplication facts (e.g. a pupil knows that multiples of 5 have one digit of 0 or 5 and uses this to reason that  $18 \times 5$  cannot be 92 as it is not a multiple of 5)
- Use reasoning about numbers and relationships to solve more complex problems and explain their thinking. E.g. solve more complex missing number problems (e.g.  $14 + - 3 = 17$ ;  $14 + \Delta = 15 + 27$ )
- Solve unfamiliar word problems that involve more than one step (e.g. which has the most biscuits, 4 packets of biscuits with 5 in each packet or 3 packets of biscuits with 10 in each packet?)
- Read and draw on hands to show the time on the clock to the nearest 5 minutes
- Describe similarities and differences of shape properties (e.g. finds 2 different 2-D shapes that only have one line of symmetry; that a cube and a cuboid have the same number of edges, faces and vertices but can describe what is different about them)

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|---|--|
| <ul style="list-style-type: none"><li>• Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</li><li>• Compare and sequence intervals of time</li><li>• 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</li><li>• Know the number of minutes in an hour and hours in a day</li><li>• Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li><li>• Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li><li>• Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</li><li>• Compare and sort common 2-D and 3-D shapes and everyday objects</li><li>• Order and arrange combinations of mathematical objects in patterns and sequences</li><li>• 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)</li><li>• Interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li><li>• Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li><li>• Ask and answer questions about totalling and comparing categorical data</li></ul> |  |
|---|--|

Year 2 – Key Vocabulary

Number and place value	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics	General/problem solving
<p><b>Numbers to one thousand.</b></p> <p><b>Hundreds</b></p> <p><b>Partition, recombine</b></p> <p><b>Greater than , less than..&lt; &gt;</b></p> <p><b>3 digit number</b></p> <p><b>Place value</b></p> <p><b>Groups of</b></p> <p><b>Times</b></p> <p><b>Share equally</b></p> <p><b>Row, column</b></p>	<p><b>Quarter past/to m/km, g/kg, ml/l</b></p> <p><b>Temperature (degrees)</b></p> <p><b>Digital / analogue</b></p> <p><b>Seconds</b></p> <p><b>Furthest</b></p>	<p><b>Rotation</b></p> <p><b>Clockwise, anticlockwise</b></p> <p><b>Straight line</b></p> <p><b>Ninety-degree turn, right angle</b></p>	<p><b>Surface</b></p> <p><b>Symmetrical, line of symmetry</b></p> <p><b>Fold</b></p> <p><b>Mirror line, reflection</b></p> <p><b>Pattern, repeating pattern</b></p> <p><b>Rectangular, circular,</b></p>	<p><b>Three quarters, one third, a third</b></p> <p><b>Equivalence, equivalent</b></p> <p><b>Numerator</b></p> <p><b>Denominator</b></p> <p><b>Mixed number</b></p>	<p><b>Count, tally, sort</b></p> <p><b>Graph, block graph, pictogram,</b></p> <p><b>Represent</b></p> <p><b>Group, set, list, table</b></p> <p><b>Label, title</b></p> <p><b>Most popular, most common, least popular, least common</b></p>	<p><b>Predict</b></p> <p><b>Describe the pattern, describe the rule</b></p> <p><b>Find, find all, find different</b></p> <p><b>Investigate</b></p>



**Year 3**  
**Mathematic Skills**

**Expected**

**Pupils can ...**

- Count from 0 in multiples of 4, 8, 50 and 100; find 10 more 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
- Identify, represent and estimate numbers using different representations
- Read and write numbers up to 1000 in numerals and words
- Solve number problems and practical problems involving these ideas
- Add and subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- Estimate the answer to a calculation and use inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction
- 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 they know, including for two- digit numbers times one-digit numbers, using mental and progressing to formal written methods
- Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.
- 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 use fractions as numbers: unit fractions and non-unit fractions with small denominators
- Recognise and show, using diagrams, equivalent fractions with small denominators
- Add and subtract fractions with the same denominator within one whole (for example,  $5/7 + 1/7 = 6/7$ )
- Compare and order unit fractions, and fractions with the same denominators
- Solve problems that involve all of the above

**Greater Depth**

**Pupils can ...**

- Work in a systematic, logical way to find patterns, generalise and justify mathematical thinking
- Reason and represent place value in different ways using mathematical language
- Partition a 3-digit number and use that to work out its complement to 1000, explaining their reasoning using the language of place value
- Calculate mentally using efficient strategies
- Solve missing numbers problems such as  $384 = 171 + ?$
- Use formal methods to solve problems, including multi-step and apply skills to create own multi-step problems using mathematical language:
- Solve problems such as ‘A fish weighs 50g, another fish weighs 8 times as much, how much does the larger fish weigh?’
- Solve problems such as, ‘Dad drives a truck. Last week he drove 267 miles on Monday, 186 on Tuesday and 198 on Wednesday. This week Dad drove 282 miles in total. What is the difference in mileage between this week and last week.’
- Recognise relationships between fractions and decimals and express them as equivalent quantities – Jimmy has 6 marbles. This is 0.4 or  $2/5$ s of the total number. What is the total number of marbles
- Calculate using fractions and decimals
- Calculate  $2/4 + 3/4 = 5/4$  and  $5/4 - 3/4 = 2/4$ . They realise that  $5/4$  is greater than one and can suggest ways to record this
- Calculate with measures (time, capacity, length, mass) – 6 toy cars balance 2 dolls. 4 dolls balance 1 toy robot. If the robot weighs 3 kg, what does each toy car weigh?
- Use mathematical reasoning to compare angles – Can you draw a quadrilateral with: 1 right angle? 2 right angles? 5 right *angles*? *No right angles*? Can you draw a triangle with 1 right angle? 2 Right angles?  
Are some of these impossible, can you explain why?

- 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 and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- 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, a.m./p.m., morning, afternoon, noon and midnight
- Know the number of seconds in a minute and the number of days in each month, year and leap year
- Compare durations of events (for example to calculate the time taken by particular events or tasks)
- Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- Recognise angles as a property of a shape or a description of a turn
- Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines
- Interpret and present data using bar charts, pictograms and tables
- Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts and pictograms and tables

**Year 3 – Key Vocabulary**

Number and place value	Addition and subtraction	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics
<b>Approximately</b>	<b>Column addition and subtraction</b>	<b>Product</b> <b>Multiples of four, eight, fifty and one hundred</b> <b>Scale up</b>	<b>Leap year</b> <b>Century</b>  <b>Twelve-hour/twenty-four-hour clock</b>  <b>Roman numerals I to XII</b> <b>Millimetre</b> <b>perimeter</b>	<b>Greater/less than ninety degrees</b>  <b>Orientation (same orientation, different orientation)</b> <b>Compass points</b> <b>Horizontal, vertical, diagonal,</b> <b>Angle , right angle</b> <b>Acute /obtuse.</b>	<b>Horizontal, vertical, perpendicular and parallel lines</b> <b>Pentagon, hexagon, octagon, quadrilateral</b> <b>Prism</b> <b>hemisphere</b>	<b>Numerator, denominator</b>  <b>Unit fraction, non-unit fraction</b>  <b>Compare and order</b>  <b>Tenths</b>	<b>Chart, bar chart, frequency table, Carroll diagram, Venn diagram</b>  <b>Axis, axes</b>  <b>Diagram</b> <b>Chart</b>

**Year 4**  
**Mathematic Skills**

**Expected**

**Pupils can ...**

- Count in multiples of 6, 7, 9, 25 and 1000
- Find a 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 (1000s, 100s, 10s, 1s)
- Order and compare numbers beyond 1000
- Identify, represent and estimate numbers using different representations
- 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
- Read roman numerals up to 100 (I to C) and know that over time, the number system changed to include the concept of 0 and place value
- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Estimate and use inverse operations to check answers in a calculation
- Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why
- Recall multiplication and division facts for multiplication tables up to 12 x 12
- Use place value, known and derived facts to multiply and divide mentally including: multiplying by 0 and 1; dividing by 1 and multiplying together 3 numbers
- Recognise and use factor pairs and commutativity in mental calculations
- Multiply two-digit and three-digit numbers by a one-digit number using a formal written layout
- Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
- 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
- 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.
- 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

**Greater Depth**

**Pupils can ...**

- Work in a systematic, logical way to find patterns, generalise and justify mathematical thinking.
- Reason about place value: *How many different ways can you write 5510. Pupils suggest ways such as 551 tens, 55 hundreds and 1 ten 5510 ones*
- *Arrange the digit cards 1 4 5 and 8 to make the number closest to 6000 and can justify their choice using the language of place value.*
- Calculate mentally using efficient strategies: *Write 3 calculations in which you would use mental calculation strategies and 3 where you would apply a column method and explain the decision you made with each calculation Can work out  $345 \times 6$  mentally by calculating  $300 \times 6$  is 1800  $40 \times 6$  is 240 and  $5 \times 6$  is 30 to get 2070*
- Apply formal methods to solve multi-step problems: *Sarah buys 5 pens at £1.25 each, 3 pencils at 38p each and a ruler for 85p. How much change does she get from £10?*
- Recognise relationships between fractions and decimals and express them as equivalent quantities: *Can you order these decimals and fractions on a number line? 0.35  $\frac{3}{4}$  0.5  $\frac{1}{5}$   $\frac{4}{9}$*
- Calculate using fractions and decimals: *A soup recipe uses  $\frac{3}{4}$  as many onions as carrots. Jo is making the soup and has 8 carrots. How many onions does Jo use? Explain how you worked out the number of onions? Did you use the same method each time?*
- Substitute values into a simple formula to solve problems:  $3 \times a + 2 = 17$  *What is the value of a?*
- Calculate with measures (time, capacity, length, mass): *Converting and ordering across a range of measures*
- Use mathematical reasoning to compare and order angles
- Compare angles in order to decide whether a polygon is regular

- 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
- Estimate, compare and calculate different measures, including money in pounds and pence
- Convert between different units of measure (for example, kilometre to metre: hour to minute)
- Measure and calculate the perimeter and area of rectilinear shapes – including squares in m and cm
- Find the area of rectilinear shapes by counting squares
- Estimate, compare and calculate different measures, including money in pounds and pence
- Use multiplication to convert from larger digits to smaller digits.
- Build on understanding of place value and decimal notation to record metric measures, including money.
- Read, write and convert time between analogue and digital 12- and 24-hour clocks
- Solve problems involving converting time from hours to minutes, minutes to seconds, years to months and weeks to days.
- 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 2 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.
- Describe positions on a 2-D grid as co-ordinates 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
- 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

Year 4 - Key Vocabulary

Number and place value	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics
<p>Tenths, hundredths Decimal (places)</p> <p>Round (to nearest)</p> <p>Thousand more/less than Positive Negative integers</p> <p>Count through zero – minus Consecutive Roman numerals (I to C)</p>	<p>Multiplication facts (up to 12x12)</p> <p>Division facts</p> <p>Inverse</p> <p>Derive</p>	<p>Convert Metric unit Area, Cm 2</p>	<p>Coordinates</p> <p>Translation</p> <p>Quadrant</p> <p>x-axis, y-axis</p> <p>Perimeter and area</p>	<p>Equalateral/ isosceles / scalene triangle. Heptagon, parrellogram, rhombus, trapezium, polygon Spherical</p>	<p>Equivalent decimals and fractions proportion</p>	<p>Continuous data</p> <p>Line graph Arrive, depart</p>

**Year 5**  
**Mathematic Skills**

**Expected**

**Pupils can ...**

- Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit
- 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 forward and backwards with positive and negative whole numbers, including through 0
- 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 all of the above
- Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.
- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- Add and subtract numbers mentally with increasingly large numbers.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.
- Establish whether a number up to 100 is prime and recall prime numbers up to 19.
- 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
- Multiply and divide numbers mentally, drawing upon known facts
- 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 cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)
- Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes
- 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

**Greater Depth**

**Pupils can ...**

- Work in a systematic, logical way to find patterns, generalise and justify mathematical thinking
- Reason and represent place value in different ways using mathematical language: *Pupils can work the connection between finding the difference between negative numbers and subtracting them*
- Calculate mentally using efficient strategies: *Pupils can write a variety of calculations derived from  $15 + 63 = 78$  and generalize to describe further calculations  $20 \times 7 \times 5 = 20 \times 5 \times 7 = 100 \times 7 = 700$*
- Use formal methods to solve problems, including multi-step: *Sam and Tom have £67.80 between them. If Sam has £6.20 more than Tom, how much does Tom have?*
- Solve problems between fractions and decimals and percentages and express them as equivalent quantities: *Jack and Jill each go out shopping. Jack spends  $\frac{1}{4}$  of his money. Jill spends 20% of her money. Frank says Jack spent more because  $\frac{1}{4}$  is greater than 20%. Alice says you cannot tell who spent more. Who do you agree with, Frank or Alice? Explain why?*
- Use the numbers 3 4 5 and 6 makes this sum have the smallest possible answer: *I spent  $\frac{3}{5}$ s of my money and had £1.40 left to buy lunch. How much money did I have to begin with?*
- Substitute values into a simple formula to solve problems
- Find the perimeter of a rectangle or the area of a triangle: *A rectangle has a perimeter of 20. What is the largest possible area it could have?*
- Calculate with measures (time, capacity, length, mass) - *True or false?  $1.5\text{kg} + 600\text{g} = 2.1\text{kg} + 300\text{g}$   $32\text{cm} + 1.05\text{m} = 150\text{cm} - 0.13\text{m}$   $\frac{3}{4}\text{L} + 0.05\text{L} = \text{half of } 1.6\text{L}$  Explain your reasoning*
- Apply angle properties in different contexts
- Construct a triangle with angles of 48 degrees 60 degrees and 72 degrees and draw any rectilinear shape, with given dimensions, to the nearest millimetre

- Compare and order fractions whose denominators are all multiples of the same number
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- 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,  $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ ]
- 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 [for example,  $0.71 = \frac{71}{100}$ ]
- Compare and order fractions whose denominators are all multiples of the same number
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
- Read, write, order and compare numbers with up to 3 decimal places
- Solve problems involving number up to 3 decimal places
- 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
- 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
- Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; gram and kilogram; litre and millilitre).
- Understand and use approximate equivalences between metric units and common imperial units, such as inches, pounds and pints
- Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes
- Estimate volume (for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)) and capacity (for example, using water).
- Solve problems involving converting between different units of time
- Use all four operations to solve problems involving measure (for example, length, mass, volume, money ) using decimal notation, including scaling
- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- Recognise mixed numbers and improper fractions and convert them from one form to the other and write mathematical statements  $> 1$  as a mixed number
- Recognise and describe linear number sequences, including those involving fractions and decimals and find the term to term rule.



- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• Add and subtract fractions with the same denominators and with denominators with the same multiples of the same number</li><li>• Multiply proper fractions and mixed numbers by whole numbers (supported by materials and diagrams)</li><li>• Know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles</li><li>• Draw given angles, and measure them in degrees (<math>^{\circ}</math>)</li><li>• Identify:<ul style="list-style-type: none"><li>○ angles at a point and 1 whole turn (total <math>360^{\circ}</math>)</li><li>○ angles at a point on a straight line and half a turn (total <math>180^{\circ}</math>)</li><li>○ other multiples of <math>90^{\circ}</math></li><li>○ use the properties of rectangles to deduce related facts and find missing lengths and angles</li><li>○ distinguish between regular and irregular polygons based on reasoning about equal sides and angles</li></ul></li><li>• 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<ul style="list-style-type: none"><li>○ Use 2d grids and coordinates in the first quadrant</li><li>○ Complete, read and interpret information in tables, including timetables</li><li>○ Solve comparison, sum and difference problems using information presented in a line graph</li></ul></li></ul> |  |
|---|--|

Year 5 - Key Vocabulary

Number and place value	Addition and subtraction	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions, decimals and percentages
<b>Powers of 10</b> <b>Thousandths,</b>	<b>Efficient written method</b>	<b>Factor pairs</b>  <b>Composite numbers, prime number, prime factors, square number, cubed number</b>  <b>Formal written method</b>	<b>Volume</b>  <b>Imperial units, pint gallon, metric units</b> <b>Square mm</b> <b>Square m</b>	<b>Reflex angle</b>  <b>Dimensions</b> <b>X axis</b> <b>Y axis</b>  <b>Reflective symmetry</b> <b>Quadrant</b> <b>coordinate</b>	<b>Regular and irregular</b> <b>Polygons</b>	<b>Proper fractions, improper fractions, mixed numbers</b>  <b>Percentage</b>  <b>Half, quarter, fifth, two fifths, four fifths</b>  <b>Ratio, proportion</b>

**Year 6**  
**Mathematic Skills****Expected****Pupils can ...**

- Demonstrate an understanding of place value, including large numbers (up to 10 000 000) and decimals (e.g. what is the value of the '7' in 276,541?; )
- 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 0
- Solve number and practical problems that involve all of the above
- 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
- Perform mental calculations including mixed operations and large numbers
- Identify common factors, common multiples and prime numbers
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Solve problems involving addition, subtraction, multiplication and division
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
- 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 [for example,  $4 \frac{1}{2} \times 2 \frac{1}{2} = 8 \frac{1}{2}$ ]
- Divide proper fractions by whole numbers [for example,  $3 \frac{1}{2} \div 2 = 6 \frac{1}{2}$ ]
- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example,  $\frac{3}{8}$ ]
- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1,000 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 2 decimal places
- Solve problems which require answers to be rounded to specified degrees of accuracy
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- Solve problems involving the calculation of percentages [for example, 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
- Use simple formulae
- Generate and describe linear number sequences
- Express missing number problems algebraically
- Find pairs of numbers that satisfies an equations with 2 unknown
- Enumerate possibilities of combinations of 2 variables
- Solve problems involving the calculation and conversion of units of measure, using decimals 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 to up to three decimal places
- Convert between miles and kilometres
- 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 centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units [for example, mm<sup>3</sup> and km<sup>3</sup>].
- Draw 2-D shapes using given dimensions and angles
- Recognise, describe and build simple 3-D shapes, including making nets
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- 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.
- Describe positions on the full coordinate grid (all 4 quadrants)
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
- Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average.
- 

**Greater Depth**

**Pupils can ...**

- Work in a systematic, logical way to find patterns, generalise and justify mathematical thinking
- Have sufficient depth of knowledge and understanding to reason and explain mathematical concepts and procedures and use them to solve a variety of problems, using mathematical language

Year 6 - Key Vocabulary

Number and place value	Addition and subtraction	Multiplication and division	Geometry (position and direction)	Geometry (properties of shape)	Fractions, decimals and percentages	Algebra	Data/statistics
<b>Numbers to ten million</b>	<b>Order of operations</b>	<b>Order of operations</b> <b>Factorise</b> <b>Digit total</b>  <b>Common factors, common multiples</b>  <b>Ratio</b> <b>Proportion</b>	<b>Four quadrants (for coordinates)</b>	<b>Vertically opposite (angles)</b>  <b>Circumference, radius, diameter</b> <b>Intersecting, net,</b>	<b>Degree of accuracy</b>  <b>Simplify</b>	<b>Linear number sequence</b>  <b>Substitute</b>  <b>Variables</b>  <b>Symbol</b>  <b>Known values</b> <b>Unknown variable</b> <b>Formula equation</b>	<b>Mean</b>  <b>Pie chart</b>  <b>Construct</b>

## SEN

### Provision for Pupils with SEND

Here are some recommendations for ways the Maths curriculum can be adapted to meet the needs of children with SEN.

- Having a range of equipment available for use to support maths work.
- Developing memory strategies for key skills
- Having visual aids available to support recall of key vocabulary and concepts.
- Adult assistance to support recording of ideas and explanations.
- Break down sessions into smaller manageable chunks.
- Ensuring photocopies and texts are printed clearly and large enough to be easily read and understood. Children working below ARE could have adapted activities that meet the skills from year groups below their own.
- Identify their strengths in this subject and encourage them to teach their peers (*e.g. prior knowledge*).

DEEPER LEARNING

Deeper Learning Challenges

Children are challenged to apply their learning through a variety of reasoning questions and investigations.  
Some examples are shown below.

**Year 1 :**

Which number bond is the odd one out?

$3 + 4$      $5 + 2$      $6 + 1$      $3 + 5$

Explain your answer.

**Year 4:**

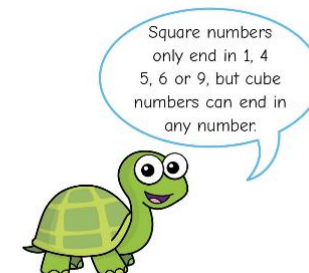


Use the clues to work out Tommy's number.

- The thousands digit is 3 greater than the tens digit.
- The total sum of digits is 16
- The 4-digit number is odd.
- The tens digit is 2
- The hundreds digit is double the ones digit.

Think of another 4-digit number and challenge a partner to work out your number from clues.

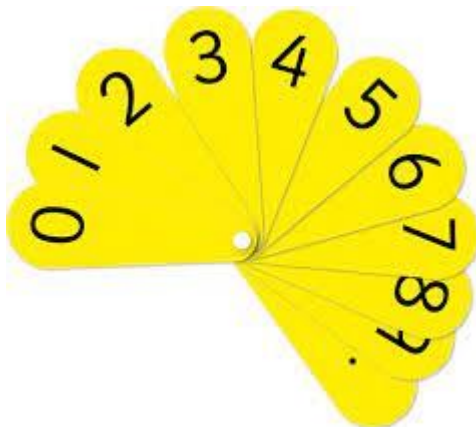
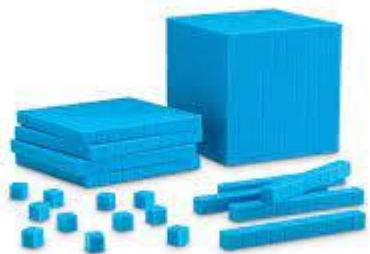
**Year 6:**



Do you agree with Tiny?

## RESOURCES

Resources which can be used to support Maths



Parts of a Number Line

