

Branton Community Primary School
Mathematics Progression Chart

| Place Value |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Counting | Represent | Use \& Compare | Rounding \& Problems |
| Early Learning Goals | - To count reliably with numbers from 1 to 20. <br> - To say which number is one more or one less than a given number from 1 to 20 <br> - To place numbers 1 to 20 in order. |  |  |  |
| Year 1 | - Count to and across 100, forwards and backwards, beginning with 0 or 1 , or from any given number. <br> - Count numbers to 100 in numerals; count in multiples of twos, fives and tens. | - Identify and represent number using objects and pictorial representations <br> - Read and write numbers to 100 in numerals. <br> - Read and write numbers from 1 to 20 in numerals and words. | - Give a number, identify one more and one less. |  |
| Year 2 | - Count in steps of 2,3 and 5 from 0 , and in tens from any number, forw ards and backward. | - Read and write numbers to at least 100 in numerals and words. <br> - Identify, represent and estimate numbers using different representations, including a number line. | - Recognise the place value of each digit in a two-digit number. <br> - Compare and order numbers from 0 up to 100; use < > and = signs. | - Useplace value and number facts to solve problems. |
| Year 3 | - Count from 0 in multiples of 4, 8 50 and 100; find 10 or 100 more or less than a given number. | - $\quad$ Read and write numbers up to 1000 in numerals and words. <br> - Identify, represent and estimate numbers using different representations. | - Recognise the place value of each digit in a three-digit number. <br> - Compare and order numbers up to 1000 . | - Solvenumber problems and practical problems involving these ideas. |
| Year 4 | - Count in multiples of 6, 7, 9, 25 and 1000. <br> - Count backwards through zero to include negative numbers. | - Read Roman numerals to 100 and know <br> that over time, the numeral system changed to include the concept of zero and place value. <br> - Identify, represent and estimate numbers using different representations. | - Find 1000 more or less than a given number. <br> - Recognise the place value of each digit in a four-digit number. <br> - Compare and order numbers beyond 1000. | - Round any number to the nearest 10, 100 or 1000. <br> - Solve number and practical problems that involve all of these ideas. |
| Year 5 | - Countforwards or backwards in steps of powers of 10 for any given number up to 1,000,000. <br> - Count forw ards and backwards with positive and negative whole numbers, including through zero. | - Read and write numbers to at least $1,000,000$ and determine the value of each digit. <br> - Read Roman numerals to 1000 and recognise years written in Roman numerals | - Order and compare numbers to at least 1,000,000 and determine the v alue of each digit. | - Interpret negative numbers in context. <br> - Round any number up to $1,000,000$ to the nearest 10 , $100,1000,10000$ and 100 000. <br> - Solve number and practical problems that inv ove all of these ideas. |


| Year 6 |  | - Read and write numbers to at least of each digit. | - | Order and compare numbers up to $10,000,000$ and de 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 oroblems that involve all of these ideas. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |


| Addition and Subtraction |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Recall, Represent, Use | Calculations | Solve Problems |
| Early Learning Goals | - To add and subfract two single-digit numbers and count on and back to find the answer using quantifies and objects. <br> - To solv e problems, including doubling, halving and sharing. |  |  |
| Year 1 | - Read, write and interpret mathematical statements inv olving addition, subtraction and equals signs. <br> - Represent and use number bonds and related subtraction facts within 20. | - Add and subtract one-digit and two-digif numbers to 20 , including zero. | - Solve one-step problems that inv olve addifion and <br> subtraction, using concrete objects and pictorial representations, and missing number problems. |
| Year 2 | - Recall and use addition and subtraction facts to 20 fluently, and derive ad use related facts up to 100. <br> - Show that addition can be done in any order (commutative) and subtraction of one number from another cannot. <br> - Recognise and use the inverse relationship between <br> addition and subtraction and use this to check calculations and solve missing number problems. | - Add and subtract numbers using concrete objects, <br> pictorial representations, and mentally, including: <br> - a two-digit number and ones <br> - a two-digit number and tens <br> - two two-digit numbers <br> - adding three one-digit numbers | - Solve problems with addifion and subtraction using <br> concrete objects and pictorial representations including those inv olving numbers, quantities and measure. <br> - Solve problems with increasing knowledge of mental and written methods. |
| Year 3 | - Estimate the answer to a calculation and use inverse operations to check answers. | - Add and subtract numbers mentally including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds <br> - Add and subtract numbers with up to three digits using formal written methods of columnar addition and subtraction. | - Solve problems inv olving missing number problems, using number facts, place value and more complex addition and subtraction. |
| Year 4 | - Estimate and use inverse operations to check answers to a calculation. | - Add and subtract numbers with up to four digits using formal written methods of columnar addition and subtraction where appropriate. | - Solve addifion and subtraction fwo-step problems in contexts, deciding which operations and methods to use and why. |
| Year 5 | - Use rounding to check answers to calculations and determine levels of accuracy. | - Ada and subiract Whole numbers with more than four digits, including using formal written methods. <br> - Add and subtract mentally with increasingly large numbers. | - Solve addifion and subfraction multi-step problems in contexts, deciding which operations and methods to use and why. |

## Year 6

- Performmental calculations, including with mixed operations and large numbers
- Use their knowledge of the order of operations to carry out calculations inv olv ing the four operations.
- Solv e adaition and subtraction multi-step problems in
contexts, deciding which operations and methods to use and why.

| Multiplication and Division |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Recall, Represent, Use | Calculations | Solve Problems |
| Year 1 |  |  |  division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the |
| Year 2 |  - Show that mutipiciation of two numbers san <br>  |  | division, mental methods, and multiplication and division facts, including problems in contexts. |
| Year 3 |  4 and 8 multiplication tables. | - Wrife and cacculare manemanical starements |  |
| Year 4 |  <br> - Use place value, know and deriv ed facts to <br> multiply and divide mentally, including multiplying by 0 and 1 div iding by 1 <br> together three numbers <br> - Recognise and use factor pairs and <br> ommutativity in mental calculations. |  | Soldenfoolens invoving mulipyling ond including using the distitibutive law to mulipipy two oigitit umbers by one digit, integer scaling problems and harder are connected to m objects |
| Year 5 |  <br> - Know and use the vocabulary of prime numbers, prime factors and composite <br> - Inon.pime numbers <br> - and recal herime numbers up poi: <br> - Recoognise and ves sucurar numbers and cube numbers, and the notation for squared |  - iaitifumbeas ificice umbers mentaly drowing - Divide numbers withup to four-digitsby a one-digit tumber sing the formal wititen <br>  | - Jolveproblems invoving multipication and including using their knowledge of factors and <br>  multipicication and division and a combination of these, including understanding the meaning of the equals <br> - sign. eproblems involving multipication and |


|  | and cubed. | inv olving decimals by 10, 100 and 1000. | division, including scaling by simple fractions and problems inv olving simple rates. |
| :---: | :---: | :---: | :---: |
| Year 6 | - Identify common factors, common multiples and prime numbers. <br> - Use estimation to chieck answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. | - Mulfiply multi-digif numbers with up to fourdigits by a two-digit whole number using the formal written method of long multiplication. <br> - Divide numbers with up to four-digits by a twodigit <br> 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. <br> - Divide numbers with up to four-digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. <br> - Performmental calculations, including with mixed operations and large numbers. | - Solve problems inv olving addifion, subfraction, <br> - Uultiplication and division. <br> - Use their knowledge of the order of operations to carry out calculations inv olv ing the four operations. |


| Fractions |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Recognise and Write |  | Compare | Calculations | Solve Problems |
| Year 1 | - Recognise, tind and name a half as <br> one of two equal parts of an object, shape or quantity. <br> - Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. |  |  |  |  |
| Year 2 | - Recognise, tind, name and write <br> fractions $1 / 3,1 / 4,2 / 4$ and $3 / 4$ of a length, shape, set of objects or quantity <br> - Write simple fractions for example, $1 / 2$ of $6=3$ |  | Recognise the equiv alence of $2 / 4$ and 192 . | - Write simple fractions for example, $1 / 2$ of $6=3$ |  |
| Year 3 | - Count up and down in tenths; recognise that tenths arise from div iding an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 <br> - Recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators <br> - Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators |  | Recognise and show, using diagrams, equiv alent fractions with small denominators Compare and order unit fractions and fractions with the same denominators. | - Add and subtract fractions with the same denominator within one whole | - Solve problems that involve all of the above |
| Year 4 | - Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. |  | Recognise and show, using diagrams, <br> families of common equiv alent fractions. | - Add and subtract fractions with the same denominator. | - Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answ er is a whole number. |



## Decimals

| Decimals |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Recognise and Write | Compare | Calculations and Problems |
| Year 4 | - Recognise ond write decimalequvvalents of <br> - Recognise and write decimal equivalents to $1 / 4,{ }^{1 / 2},^{3 / 4}$ | - Round decimals witione decimal place to <br> - Compare numbers with the same number of decimal places up to two decimal | Fnd the eftect or divaling a one-or wo -qugr <br>  |
| Year 5 | - Read ana write decimal numbers as fractions. <br> Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. | places Round ecimals sithtwo decimal Ilaceses to the nearestw wole number and to one deimal the ne. place. <br> - Read, write, order and compare numbers with up to three decimal places. | Solve problems involving number up to three decimal places |
| Year 6 | Identify the value of each digif in numbers given to three decimal places. |  | - Mulfing and divide numbers by 10,100 and <br> - Multiply one-digit numbers with up to two <br> decimal places by whole numbers. <br> - Use written division methods in cases where <br> - the answer has up to two de decimal places. <br> Solve eproblems which require answers to be rounded to specified degrees of accuracy. |

## Fractions, Decimals and Percentages

| Year 4 | and money problems involving tractions and decimas to two decimal places. |
| :---: | :---: |
| Year 5 | - Recognise the bercent symbol\|\%/ and understand hat percentrelares to 'number of parts per hundred', and w wite percentages as a traction with <br> - Solve problems which require knowing percentage and decimal equivalents of $1 / 2,1 / 4,1 / 5,2 / 5,4 / 5$ and those fractions with a denominator of a multiple of 10 or 25 . |
| Year 6 | : Associate a traction with division and calculate decimal fraction equiv clents fora simmerifraction |

## Ratio and Proportion

- Solve problems inv olving the relative sizes of two quantifies where missin - Solve problems inv olving the calculation of percentages and the use of percentages for comparison.
Year 6 - Solve problems inv olving 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
- Generate and describe linear number sequences
- Express missing number problems algebraically
- Find pairs of numbers that satisfy an equation with two unknowns
- Enumerate possibilities of combinations of two variables.
** Although algebraic notation is not introduced until Year 6, algebraic thinking starts much earlier as exemplified by the 'missing number' objectives in Years 1,2 and 3.

| Measure |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Using Measures | Money | Time | Perimeter, Area, Volume |
| Early Learning Goals | - To use everyday languages to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and solve problems |  |  |  |
| Year 1 | - Compare, describe and solve practical problems for: <br> - lengths and heights <br> - mass/weight <br> - capacity and volume - time <br> - Measure and begin to record the following: - lengths and heights - mass/weight <br> - capacity and volume - time | - Recognise and know the value of different denominations of coins and notes | - Sequence events in chronological order using language: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. <br> - Recognise and use language relating to dates, including days of the week, weeks, months and years <br> - fell the time to the hour and half past the hour and draw the hands on a clock face to show these times. |  |
| Year 2 | - Choose and use appropriate standard units to estimate and measure length/height in any direction ( $\mathrm{m} / \mathrm{cm}$ ); mass (kg/g); temperature ( ${ }^{\circ} \mathrm{C}$ ); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels <br> - Compare and order lengths, mass, volume/capacity and $\stackrel{\text { record the results using > , < and }}{=}$ | - Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. <br> - Find different combinations of coins that <br> equal the same amounts of money. <br> - Solve simple problems in a practical context inv olving addition and subtraction of money of the same unit, including giving change. | - Compare and sequence intervals of time. <br> - 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. <br> - Know the number of minutes in an hour and the number of hours in a day. |  |
| Year 3 | Measure, compare, add and subtract:'lengths $(\mathrm{m} / \mathrm{cm} / \mathrm{mm})$; mass $(\mathrm{kg} / \mathrm{g})$ : volume/capacity $\underset{(1 / \mathrm{ml})}{\text { mass }}$ (kg/g); volume/capacity | Add and subtract amounts of money to give change, using both $£ ~$ and $p$ in practical contexts. | - Tell and write the fime 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 | - Measure the perimeter of simple 2D shapes. |


|  |  |  | such as o'clock, a.m./p.m., morning, afternoon, noon and midnight. <br> - Know the number of seconds in a minute and the number of days in each month, year and leap year. |  |
| :---: | :---: | :---: | :---: | :---: |
| Year 4 | - Convert between different units of measure. <br> - Estimate, compare and calculate different measures. | - Estimate, compare and calculate different measures, including money in pounds and pence. | - Read, write and conv ert time between analogue and digital 12and 24 -hour clocks. <br> - Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. | - Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. <br> - Find the area of rectilinear shapes by counting squares. |
| Year 5 | - Convert between different units of metric measure. <br> - Understand and use approximate equiv alences between metric units and common imperial units such as inches, pounds and pints. <br> - Use all four operations to solve problems involving measure using decimal notation, including scaling. | - Use all four operations to solve problems <br> - involving money. | - Solve problems involving conv erting <br> - between units of time | Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. <br> - Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres ( $\mathrm{cm2}$ ) and square metres ( m 2 ) and estimate the area of irregular shapes. <br> - Estimate volume and capacity. |
| Year 6 | Solv e problems inv olving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. <br> - 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. <br> - Convert betw een miles and kilometres. | - | - Use, read, write and convert between <br> - 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. <br> - Recognise when it is possible to use <br> formulae for area and volume of shapes. <br> - Calculate the area of <br> - parallelograms and triangles. compare volume and cuboids using sta of cubes and including cubic centri units, ( cm 3 ) and cubic metres (m3) and extending to other units. |


| Geometry |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 2D Shapes | 3D Shapes | Angles and Lines | Position and Direction |
| Early Learning Goals | - To explore characteristics of ev eryday objects and shapes and use mathematical language to describe them. <br> - To recognise, create and describe patterns. |  |  |  |
| Year 1 | - Recognise and name common 2-D shapes, including: rectangles, squares, circles and triangles. | - Recognise and name common 2-D shapes, including: cuboids, cubes, pyramids and spheres. |  | - Describe position, direction and movement, including w hole, half, quarter and three quarter turns. |
| Year 2 | - Identify and describe the properties of 2-D shapes, and line symmetry in a vertical line. <br> - Identify 2-D shapes on the surface of 3-D shapes. <br> - Compare and sort common 2-D shapes and everyday objects. | - Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. <br> - Compare and sort common 3-D shapes and everyday objects. |  | - Order and arrange combinations of mathematical objects in patterns and sequences. <br> - Use mathematical vocabulary to <br> 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 threequarter turns (clockwise and anticlockwise). |
| Year 3 | - Draw 2D-Shapes. | - Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. | - Recognise angles as a property of shape or a description of a turn. <br> - 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. <br> - Identify horizontal and vertical lines and |  |


|  |  |  | pairs of perpendicular and parallel lines. |  |
| :---: | :---: | :---: | :---: | :---: |
| Year 4 | - Compare ana classity geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. <br> - Identify lines of symmetry in 2-D shapes presented in different orientations |  | - Identity acute and obtuse angles and <br> compare and order angles up to two right angles by size. <br> - Identify lines of symmetry in 2-D shapes presented in different orientations. <br> - Complete a simple symmetric figure with respect to a specific line of symmetry. | - $\quad$ Describe positions on a 2 -D gria as <br> coordinates in the firs $\dagger$ quadrant. <br> - Describe movements between positions as translations of a given unit to the left/right and up/down. <br> - Plot specified points and draw sides to complete a given polygon. |
| Year 5 | - Distinguish between regular and <br> irregular polygons based on reasoning about equal sides and angles. <br> - Use the properties of rectangles to deduce related facts and find missing lengths and angles | - Identify 3-D shapes, including cube and other cuboids, from 2-D representations | Know angles are measured in degrees: <br> estimate and compare acute, obtuse and reflex angles <br> - Draw given angles, and measure them in degrees. <br> - Identify: <br> - angles at a point and one whole turn (total 360) <br> - angles at a point on a straight line and half a turn (total 180) <br> - other multiples of 90 | - dentify, describe and represent the position of a shape follow ing a reflection or translation, using the <br> - appropriate language, and know that the shape has not changed. |
| Year 6 | - Draw 2-D shapes using given dimensions and angles. <br> - Compare and classify geometric shapes based on their properties and sizes. <br> - Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. | - $\quad$ Recognise, describe and build simple 3-D - $\quad$ shapes, including making nets. | - Find unknown angles in any triangles, quadrilaterals and regular polygons. <br> - 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 four quadrants). <br> - Draw and translate simple shapes on the coordinate plane, and reflect them in the axes. |


| Statistics |  |  |
| :---: | :---: | :---: |
|  | Present and Interpret | Solve Problems |
| Year 1 |  |  |
| Year 2 | - Interpre fand construct simple pictograms, fally charts, block diagrams and simple tables. | - Ask and answer simple quesfions by counting the number of objects in <br> - Ask and answer questions about totalling and comparing categorical data. |
| Year 3 | - Interpret and present data using bar charss, pictograms and fables | - $\begin{gathered}\text { Solve one-step and two-step questions using information presented in } \\ \text { scaled bar charts }\end{gathered}$ seal <br> and pictograms and tables. |
| Year 4 | - Interpret and present discrete and continuous data using appropriate graphical methods <br> including bar charts and time graphs. | - Solve comparison, sum and difference problems using information presented in bar <br> charts, pictograms, tables and other graphs. |
| Year 5 | - Complete, read and interroret information in fables, including timetables. | - Solve comparison, sum and difference problems using information graph. |
| Year 6 | : Inferroret and consstucr ple chars and Ine eraphs and use these to solve problems. |  |

