# Progression in Mathematics

This document has been designed to assist teachers and leaders in ensuring progression across the mathematics curriculum, from an exemplification of the Early Learning Goals through to Year 6 expectations.

From Year 1 onwards, individual strands of national curriculum mathematics are mapped across the year groups so teachers can see prior learning expectations and the foundations of their current year group expectations.

**Contents** **Page**


| | |
|---|---|
| Number: Place Value | 1 |
| Addition and Subtraction | 4 |
| Multiplication and Division | 6 |
| Fractions, Decimals and Percentages | 10 |
| Ratio and Proportion | 15 |
| Algebra | 16 |
| Measurement | 17 |
| Geometry – Properties of Shapes | 21 |
| Geometry – Position, Direction and Movement | 23 |
| Statistics | 24 |

## Progression in Mathematics

# Number and Place Value

## Counting

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Counting 1:1 correspondence to 20 – count a set amount and give a set amount | **count within 100, forwards and backwards, beginning with 0 or 1, or from any given number** | | | count backwards through zero to include negative numbers | interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero | use negative numbers in context, and calculate intervals across zero |
| Count to and across 20, forwards and backwards beginning with zero, starting from any given number | count, read and write numbers to 100 in numerals; **count in multiples of twos, fives and tens, including through odd numbers** | count in steps of 2, 3, and 5 from 0, and in tens from any number *to 100*, forward and backward | count from 0 in multiples of 2, 5, 10, 3 (previous year group) 4, 6, 7, 8, 50 and 100 | count in multiples of 2, 5, 10, 3, 4 and 6, (previous year group) 7, 9, 25 and 1000 | count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 | |
| Subitise a number to 10 | given a number, identify one more and one less | | find 10 or 100 more or less than a given number | find 1000 more or less than a given number – *any number* | | |

## Comparing Numbers

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Use the language to say one more or one less within 20 | use the language of: equal to, more than, less than (fewer), most, least | compare and order numbers from 0 up to 100 (using place value); use <, > and = signs | compare and order numbers up to 1000 | order and compare numbers beyond 1000 | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in reading and writing numbers) | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in reading and writing numbers) |
| Recognise numbers to 20 – when not in order and order numbers to 20 | | | | Compare numbers with the same numbers of decimal places (copied from fractions) | | |

## Identifying, Representing and Estimating Numbers

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Use objects and pictorial representation to represent numbers to 20 | identify and represent numbers using objects and pictorial representations including the number line | identify, represent and estimate numbers using different representations, including the number line | identify, represent and estimate numbers using different representations | identify, represent and estimate numbers using different representations | | |

## Progression in Mathematics

| Reading and Writing Numbers (including Roman Numerals) | | | | | | |
|---|---|---|---|---|---|---|
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Read and write numbers from 0 to 20 in numerals. | read and write numbers from 0 to 20 in numerals and words. | read and write numbers to at least 100 in numerals and in words | read and write numbers up to 1000 in numerals and in words | read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (also appears in comparing numbers) | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value) |
| | | | Tell and write the time from an analogue clock, including using Roman Numerals from I to XII and 12 hour and 24 hour clocks (copied from measurement) | | read Roman numerals to 1000 (M) and recognise years written in Roman numerals. | |

| Understanding Place Value | | | | | | |
|---|---|---|---|---|---|---|
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | **recognise the place value of each digit in a two-digit number (tens, ones) and compose and decompose two-digit numbers using standard and non-standard partitioning.** | **recognise the place value of each digit in a three-digit number (hundreds, tens, ones) and compose and decompose three digit numbers using standard and non-standard partitioning.** | **recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) and compose and decompose four-digit numbers using standard and non-standard partitioning.** | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) |
| | | | | Find the effect of dividing a one or two digit number by 10 and 10, identifying the value of the digits in the answer as units, tenths and hundredths (copied from fractions) | Recognise an use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from fractions) | Identify the value of each digit to three decimal places and multiply and divide numbers be 10, 100 and 1,000 where the answers are up to three decimal places (copied from fractions) |

| Rounding | | | | | | |
|---|---|---|---|---|---|---|
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | | **round any number to the nearest 10, 100 or 1000** | round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 | round any whole number to a required degree of accuracy *(10, 100, 1000, 10,000, 100,000)* |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | round decimals with one decimal place to the nearest whole number (copied from fractions) | round decimals with one decimal place to the nearest whole number and to one decimal place (copied from fractions) | Solve problems which require answers to be rounded to specified degrees of accuracy (copied form fractions) |
| **Problem Solving** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | use place value and number facts to solve problems. | solve number problems and practical problems involving these ideas. | solve number and practical problems that involve all of the above and with increasingly large positive numbers | solve number problems and practical problems that involve all of the above | solve number and practical problems that involve all of the above. |

# Addition and Subtraction

## Number Bond

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| represent and use number bonds and related subtraction facts to 10 | represent and use number bonds and related subtraction facts within 20 | recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 | | | | |

## Mental Calculation

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Add 2 single digits, numbers within 10, by counting on using objects.<br><br>Subtract 2 single digits, numbers within 10, by counting back using objects. | add and subtract one-digit and two-digit numbers to 20, including zero | **add and subtract numbers using concrete objects, pictorial representations, and mentally, including:**<br>o **a two-digit number and ones**<br>o **a two-digit number and tens**<br>o **two two-digit numbers**<br>o adding three one-digit numbers | add and subtract numbers mentally, including:<br>• a three-digit number and ones<br>• a three-digit number and tens<br>• a three-digit number and hundreds | | add and subtract numbers mentally with increasingly large numbers e.g 12 462 – 2300 = 10 162 | Perform mental calculations, including mixed operations and large numbers |
| Use language in practical work of adding and subtracting – altogether, more than, plus, add, total, take away, subtract, less than, fewer | **read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs** | show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot | | | | Use knowledge of the order of operations to carry out calculations involving the four operations |

## Written Methods

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Use language in practical work of adding and subtracting – altogether, more than, plus, add, total, take away, subtract, less than, fewer | **read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs** | | **add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction** | add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate | add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) | |

## Progression in Mathematics

| Inverse Operations, Estimating and Checking Answers | | | | | | |
|---|---|---|---|---|---|---|
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | estimate the answer to a calculation and use inverse operations to check answers | estimate and use inverse operations to check answers to a calculation | use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy | use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |
| **Problem Solving** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Practically solve, one-step problems that involve addition and subtraction, using concrete objects | solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ?–9. | solve problems with addition and subtraction:<br>• using concrete objects and pictorial representations, including those involving numbers, quantities and measures<br>• applying their increasing knowledge of mental and written methods | solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. *(Vary the context and complexity of questions)* | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why |

# Multiplication and Division

## Multiplication and Division Facts

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Double and half numbers to 10 using concrete resources<br><br>Half a number of objects by sharing | **count in multiples of twos, fives and tens, including through odd numbers** (copied from Number and place value). | count in steps of 2, 3, and 5 from 0, and in tens from any number *to 100*, forward and backward (copied from number and place value). | count from 0 in multiples of 2, 5, 10, 3 (previous year group) 4, 6, 7, 8, 50 and 100 | count in multiples of 2, 5, 10, 3, 4 and 6, (previous year group) 7, 9, 25 and 1000 | count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value). | |
| Share an amount of objects into equal groups | | recall and use multiplication and division facts for the **2, 5 and 10 multiplication tables**, including recognising odd and even numbers *(to at least 100)* | recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables | **recall multiplication and division facts for multiplication tables up to 12 × 12** | | |

## Mental Calculation: Multiplication and Division

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| | | | 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 (appears also in written methods). | **use place value, known and derived facts to multiply and divide mentally *(reworded below)*,** including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers | multiply and divide numbers mentally drawing upon known facts | perform mental calculations, including with mixed operations and large numbers |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot | | **recognise** and use factor pairs and **commutativity** in mental calculations (appears also in Properties of Numbers) | **multiply and divide** whole **numbers** and those involving decimals **by 10, 100 and 1000** | associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] (copied from Fractions). |
| **Written Calculation: Multiplication and Division** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | calculate mathematical statements for multiplication and division within the multiplication tables and **write them using the multiplication (×), division (÷) and equals (=) signs** | 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 (appears also in Mental Methods). | multiply two-digit and three-digit numbers by a one-digit number using formal written layout | **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 multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication 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 one-digit number using the formal written method of short division and interpret remainders appropriately for the context** | 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 |
| **Properties of numbers: Multiples, Primes, Square and Cube Numbers** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | | **recognise** and use factor pairs and **commutativity** in mental calculations (repeated). | **identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers**<br>know and use the vocabulary of prime numbers, prime factors | identify common factors, common multiples and prime numbers<br>**use common factors to simplify fractions;** *(identify equivalent fractions)* use common multiples to express |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | and composite (non-prime) numbers<br>establish whether a number up to 100 is prime and recall prime numbers up to 19 | fractions in the same denomination (Copied from Fractions). |
| | | | | | Recognise and use square numbers and cube numbers and the notation for squared and cubed. | calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ($cm^3$) and cubic metres ($m^3$), and extending to other units [for example, $mm^3$ and $km^3$]. |
| **Order of Operations** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | | | | use their knowledge of the order of operations to carry out calculations involving the four operations *BIDMAS* |
| **Inverse Operations: Estimating and Checking Answers** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction). | estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction). | | use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |
| **Problem Solving** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations | solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and | solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and | solve problems involving multiplying and adding, including using the **distributive law (understand and apply the distributive property of multiplication**) to | 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 arrays with the support of the teacher | division facts, including problems in contexts. | correspondence problems in which n objects are connected to m objects. | multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. | 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. | solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion). |

# Fractions, Decimals and Percentages

## Counting in Fractional Steps

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| | | Pupils should count in fractions up to 10, starting from any number using the ½ and 2/4 equivalence on the number line (non statutory guidance). | count up and down in tenths | count up and down in hundredths | | |

## Recognising Fractions

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| | recognise, find and name a half as one of two equal parts of an object, shape or quantity | 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 | recognise, **find** and **write** fractions of a discrete set of objects: **unit fractions** and non-unit fractions with small denominators | recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. | recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (also appears in equivalence) | |
| | | | 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 name a quarter as one of four equal parts of an object, shape or quantity. | | recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators | | | |

## Comparing Fractions

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| | | | Compare and order unit fraction and fractions with the same denominator | | Compare and order fractions whose denominators are all multiples of the same numbers | Compare and order fractions including > 1 |

| Comparing Decimals | | | | | | |
|---|---|---|---|---|---|---|
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | | compare numbers with the same number of decimal places up to two decimal places | read, write, order and compare numbers with up to three decimal places | identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places |
| **Rounding including Decimals** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | | round decimals with one decimal place to the nearest whole number | round decimals with two decimal places to the nearest whole number and to one decimal place | Solve problems which require answers to be rounded to specified degrees of accuracy |
| **Equivalence (including Fractions, Decimals and Percentages)** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ | recognise and show, using diagrams, equivalent fractions with small denominators | recognise and show, using diagrams, families of common equivalent fractions | identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths | Use common factors to simplify fractions; use common multiples to express fractions in the same denomination |
| | | | | recognise and write decimal equivalents of any number of tenths or hundredths | read and write decimal numbers as fractions [for example, 0.71 = $\frac{71}{100}$ ]<br>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents | associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$ ] |
| | | | | recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ | recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a | Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | fraction with denominator 100, and as a decimal | |
| **Addition and Subtraction of Fractions** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | **add and subtract fractions with the same denominator within one whole** [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] | add and subtract fractions with the same denominator | add and subtract fractions with the same denominator and denominators that are multiples of the same number | add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions |
| | | | | | 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] | |
| **Multiplication and Division of Fractions** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | | | multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams | multiply simple pairs of proper fractions, writing the answer in its simplest form [$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] |
| | | | | | | Multiply one-digit numbers with up to two decimal places by whole numbers |
| | | | | | | divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] |
| **Multiplication and Division of Decimals** | | | | | | |

## Progression in Mathematics

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| | | | | | | Multiply one-digit numbers with up to two decimal places by whole numbers |
| | | | | **find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value f the digits in the answer as ones, tenths and hundredths** | | Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimals places |
| | | | | | | identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places |
| | | | | | | associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$ ] |
| | | | | | | Use written division methods in cases where the answer has up to two decimal places |
| **Problem Solving** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | solve problems that involve all of the above. | 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 | solve problems involving number up to three decimal places | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | solve simple measure and money problems involving fractions and decimals to two decimal places. | 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 | |

| Ratio and Proportion | | | | | | |
|---|---|---|---|---|---|---|
| Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 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 |

| Algebra | | | | | | |
|---|---|---|---|---|---|---|
| Equations | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ?– 9.<br>(copied from addition and subtraction). | recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.<br>(copied from addition and subtraction) | solve problems, including **missing number** problems, using number facts, place value, and more complex addition and subtraction.<br>(copied from addition and subtraction).<br>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.<br>(copied from multiplication and division) | | use the properties of rectangles to deduce related facts and find missing lengths and angles – *use angle sum facts*<br>(Copied from shape and geometry) | express missing number problems algebraically |
| | | recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100<br>(copied from addition and subtraction) | | | | find pairs of numbers that satisfy an equation with two unknowns |
| | represent and use number bonds and related subtraction facts within 20<br>(copied from addition and subtraction) | | | | | enumerate possibilities of combinations of two variables |

| Measurement | | | | | | |
|---|---|---|---|---|---|---|
| Comparing and Estimating | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Order 3 items by length, mass and capacity | Compare, describe and solve practical problems for:<br>• lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]<br>• mass/weight [for example, heavy/light, heaver than, lighter than]<br>• capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]<br>• time [for example, quicker, slower, earlier, later] | Compare and order lengths, mass, volume/capacity and record the results using >, < and = | | estimate, compare and calculate different measures, including money in pounds and pence | **Calculate and compare the area of rectangles (including squares), and including using standard units,** square centimetres ($cm^2$) and square metres ($m^2$) and estimate the area of irregular shapes (also appears in measuring)<br><br>Estimate volume [for example, using 1 $cm^3$ blocks to build cuboids (including cubes)] and capacity [for example, using water] | calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ($cm^3$) and cubic metres ($m^3$), and extending to other units [for example, $mm^3$ and $km^3$]. |
| Begin to understand ordinal language | Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] | Compare and sequence intervals of time | compare durations of events [for example to calculate the time taken by particular events or tasks]. | | | |
| | | | 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 (appears in telling the time) | | | |

## Measuring and Calculating

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Use language of length (longer, long, longest, shortest, shorter, shortest, | Measure(*using a ruler, weighing scales and* | choose and use appropriate standard units to estimate and | measure, compare, add and subtract: lengths (m/cm/mm); mass | Estimate, compare and calculate different measures, including | use all four operations to solve problems involving measure [for example, | solve problems involving the calculation and conversion of units of |

| | | | | | | |
|---|---|---|---|---|---|---|
| wide, narrow, tall, taller, tallest) mass (heavy, heavier, heaviest, light, lighter, lightest, balance) capacity (full, empty, nearly fully, half full, space inside container). | *containers)* and begin to record the following:<br>• lengths and heights<br>• mass/weight<br>• capacity and volume<br>• time (hours, minutes, seconds) | 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 | (kg/g); volume/capacity (l/ml)- *including mixed units* | money in pounds and pence (appears in comparing) | length, mass, volume, money] using decimal notation, including scaling. | measure, using decimal notation up to three decimal places where appropriate (appears in converting) |
| | | | measure the perimeter of simple 2-D shapes | Measure and calculate the **perimeter** of a rectilinear figure (including squares) in centimetres and metres | Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres *with unknown lengths* | Recognise that shapes with the same areas can have different perimeters and vice versa |
| Talk about money using the terms pennies, change and amount. Pay for items using pennies. | Recognise and know the value of different denominations of coins and notes | Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value<br>Find different combinations of coins that equal the same amounts of money<br>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change | add and subtract amounts of money to give change, using both £ and p in practical contexts *(introduce formal decimal recording if appropriate)* | | | |
| | | | | Find the area of rectilinear shapes by counting squares | **calculate and compare the area of rectangles (including squares), and including using standard units,** square centimetres ($cm^2$) and square metres ($m^2$) and estimate the area of irregular shapes<br><br>Recognise and use square numbers and cube numbers, and the | Calculate the area of parallelograms and triangles<br>calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ($cm^3$) and cubic metres ($m^3$), and extending to other |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | notation for squared ($^2$) and cubed ($^3$) (Copied from multiplication and division) | units [for example, $mm^3$ and $km^3$]. |
| | | | | | | Recognise when it is possible to use formulae for area and volume of shapes |
| **Telling the Time** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. | 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 | Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks | read, write and convert time between analogue and digital 12 and 24 hour clocks (appears in converting) | | |
| Know the days of the week and months of the year.<br>Understand day and night.<br>Use the language before, after, morning, after lunch, evening, later, afternoon, yesterday, today, first, next, now | Recognise and use language relating to dates, including days of the week, weeks, months and years | Know the number of minutes in an hour and the number of hours in a day. (appears in converting) | 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 (appears in comparing and estimating). | | | |
| | | | | solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears in converting) | solve problems involving converting between units of time | |

| **Converting** |
|---|

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| | | know the number of minutes in an hour and the number of hours in a day (also appears in Telling the Time) | Know the number of seconds in a minute and the number of days in each month, year and leap year | Convert between different units of measure [for example, kilometre to metre; hour to minute] | **convert between different units of** metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) | 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 |
| | | | | Read, write and convert time between analogue and digital 12 and 24 hour clocks (appears in converting) | Solve problems involving converting between units of time | Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears in measuring and calculating) |
| | | | | solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears in telling the time) | understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints | Convert between miles and kilometres and *connect conversion from kilometres to miles in measurement to its graphical representation* |

## Geometry – Properties of Shapes

### Identifying Shapes and their properties

## Progression in Mathematics

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Begin to recognise and name 2d shapes; circle, triangle, square, rectangle, pentagon, hexagon, heptagon, octagon<br><br>Begin to recognise and name 3d shapes; cube, sphere, cone, cylinder | **recognise and name common 2-D and 3-D shapes**, including:<br><br>2-D shapes [for example, rectangles (including squares), circles and triangles]<br><br>3-D shapes [for example, cuboids (including cubes, pyramids and spheres)<br><br>**presented in different orientations and know that triangles, rectangles, cuboids and pyramids are not always similar to one another.** | **Use precise language to describe the properties of 2-D shapes and compare shapes by reasoning about similarities and differences in properties,** including the number of sides and line symmetry in a vertical line<br><br>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces – *wide range of shapes*<br><br>Identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid] | | **Identify lines of symmetry in 2-D shapes presented in different orientations** | Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. | Recognise, describe and build simple 3-D shapes, including making nets (appears in drawing and constructing)<br><br>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius |

## Drawing and Constructing

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| | | | Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them | **Complete a simple symmetric figure with respect to a specific line of symmetry**. | Draw given angles, and measure them in degrees (°) | draw 2-D shapes using given dimensions and angles – *increased range*<br><br>recognise, describe and build simple 3-D shapes, including making nets (appears in identifying shape and their properties) |

## Comparing and Classifying

| Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| | | compare and sort common 2-D and 3-D shapes and everyday objects | | Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes *( e.g parallelogram, rhombus and trapezium)* | use the properties of rectangles to deduce related facts and find missing lengths and angles<br><br>distinguish between regular and irregular polygons based on reasoning about equal sides and angles. | Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons |
| **Angles** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | **Recognise right angles as a property of shape or a description of a turn** | | Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles | |
| | | | **Identify right angles in 2D shapes presented in different orientations,** 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 acute and obtuse angles and compare and order angles up to two right angles by size | Identify:<br>• angles at a point and one whole turn (total 360°)<br>• angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)<br>• other multiples of 90° | Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. |
| | | | **Identify** horizontal and vertical lines and pairs of **perpendicular and parallel lines.** | | | |

## Geometry – Position, direction and movement

## Progression in Mathematics

| Position, Direction and Movement | | | | | | |
|---|---|---|---|---|---|---|
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Understand and use positional language; on top, underneath, next to, in between, full turn, behind, in front, forwards, opposite and backwards. | Describe position, direction and movement, including whole, half, quarter and three-quarter turns. | Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise). | | Describe positions on a 2-D grid as coordinates in the first quadrant | 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. | Describe positions on the full coordinate grid (all four quadrants) |
| | | | | Describe movements between positions as translations of a given unit to the left/right and up/down | | Draw and translate simple shapes on the coordinate plane and reflect them in the axes. |
| | | | | Plot specified points and draw sides to complete a given polygon. | | |
| **Pattern** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Make ABAB patterns, ABCABC and ABBABB using concrete objects | | Order and arrange combinations of mathematical objects in patterns and sequences | | | | |

| Statistics | | | | | | |
|---|---|---|---|---|---|---|
| Interpreting, Constructing and Presenting Data | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Interpret and construct simple pictograms, tally charts, block diagrams *(where the scale is divided into 2s and 5s)* and simple tables *and more complex tables* | Interpret and present data using bar charts, pictograms and tables | Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. - *using a greater range of scales* | Complete, read and interpret information in tables, including timetables. | Interpret and construct pie charts and line graphs and use these to solve problems |
| | | Questions by counting the number of objects in each category and sorting the categories by quantity | | | | |
| | | Ask and answer questions about totalling and comparing categorical data | | | | |
| **Solving Problems** | | | | | | |
| **Reception** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| | | | 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. | Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. | Solve comparison, sum and difference problems using information presented in a line graph | Clculate and interpret the mean as an average |