

Year 1 objectives (taken from National Curriculum 2014)



- count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s
- given a number, identify 1 more and 1 less
- identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
- read and write numbers from 1 to 20 in numerals and words
- read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including 0
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? + 9$
- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher
- recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity
- recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity
- Compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]; mass or weight [for example, heavy/light, heavier than, lighter than]; capacity/volume [for example, full/empty, more than, less than, half, half full, quarter]; time [for example, quicker, slower, earlier, later];
- measure and begin to record the following: lengths and height; mass/weight; capacity and volume; time (hours, minutes, seconds)
- recognise and know the value of different denominations of coins and notes
- sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening)
- recognise and use language relating to dates, including days of the week, weeks, months and years
- tell the time to the hour and half past the hour and draw the hands on a clock face to show these times
- Recognise and name common 2-D and 3-D shapes, including: 2-D shapes (for example, rectangles (including squares), circles and triangles); 3-D shapes (for example, cuboids (including cubes), pyramids and spheres);
- describe position direction and movement including whole half quarter and three quarter turns

Year 2 objectives

- count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward
- recognise the place value of each digit in a two-digit number (10s, 1s)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up 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) and 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 to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and 1s; a two-digit number and 10s; 2 two-digit numbers; adding 3 one-digit numbers
- show that addition of two numbers can be done in any order (commutative) and subtraction 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 times tables
- recognise odd and even numbers
- calculate mathematical statements for multiplication and division within the times 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 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 (third/quarter/two quarters/three quarters) of a length, set of objects or quantity
- write simple fractions of quantities (eg. Half of 6 is 30)
- recognise the equivalence of half and two quarters
- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths / mass / volume/capacity and record the results using $>$ $<$ and $=$
- recognise and use the symbols for pounds (£) and pence (p); combine amounts to make a particular value
- find different combinations of coins that equal the same amounts of money
- solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change
- compare and sequence intervals of time
- tell and write the time to five minutes including quarter past/to the hour and draw the hands on a clock face to show these times
- know the number of minutes in an hour and the number of hours in a day
- identify and describe the properties of 2-D shapes including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes including the number of edges vertices and faces
- identify 2-D shapes on the surface of 3-D shapes [eg. a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects
- order and arrange combinations of mathematical objects in patterns and sequences
- use mathematical vocabulary to describe position direction and movement, including movement in a straight line, and distinguishing between rotation as a turn and in terms of right angles for quarter half and three-quarter turns (clockwise and anti-clockwise)
- interpret and construct simple pictograms, tally charts, block diagrams and tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask-and-answer questions about totalling and comparing categorical data



Year 3 objectives

- count from 0 in multiples of 4, 8, 50 and 100
- find 10 or 100 more or less than a given number
- recognise the place value of each digit in a 3-digit number (100s 10s 1s)
- 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 in words
- solve number problems and practical problems involving place value
- add and subtract numbers mentally including HTU and 1s / HTU and 10s / HTU and 100s
- add and subtract numbers with up to 3 digits using formal written methods of column 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 times tables
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know
- 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 (eg. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)
- compare and order unit fractions and fractions with the same denominators
- solve problems involving fractions for all year 3 objectives
- 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 am/pm 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 [eg.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 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 [eg.How many more? and How many fewer?] using information presented in scaled bar charts and pictograms and tables



Year 4 objectives


- count in multiples of 6 7 9 25 and 1000
- find 1000 more or less than a given number
- count backwards through 0 to include negative numbers
- recognise the place value of each digit in a four-digit number (ThHTU)
- 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 to 100 (I to C) and know that over time the numeral 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 to 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 12×12
- use place value known and derived facts to multiply and divide mentally including: multiplying by 0 and 1; dividing by 1; 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 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 100 and dividing tenths by 10
- 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 hundreds
- recognise and write decimal equivalents to half, quarter and three quarters
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- round decimals with 1 decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to 2 decimal places
- solve simple measure and money problems involving fractions and decimals to 2 decimal places
- convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures, including money in pounds and pence
- read, write and convert time between analogue and digital 12- and 24-hour clocks
- solve problems involving converting from hours to minutes, minutes to seconds, years to months, 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 coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon
- 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 5 objectives

- 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 forwards and backwards with positive and negative whole numbers, including through 0
- round any number up to 1,000,000 to the nearest 10, 100, 1,000, 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
- 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 1,000
- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)

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- 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
 - 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 [eg. $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$]
 - 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, $0.71 = 71/100$]
 - 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 $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ 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; centimetre and millimetre; 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^2) and square metres (m^2), and estimate the area of irregular shapes
 - estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water]
 - solve problems involving converting between 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
 - know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
 - draw given angles, and measure them in degrees
 - identify: angles at a point and 1 whole turn (total 360 degrees); angles at a point on a straight line and half a turn (total 180 degrees); and other multiples of 90 degrees
 - use the properties of rectangles to deduce related facts and find missing lengths and angles
 - distinguish between regular and irregular polygons based on reasoning about equal sides and angles
 - 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
 - solve comparison, sum and difference problems using information presented in a line graph
 - complete, read and interpret information in tables, including timetables
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Year 6 objectives

- 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 year 6 objectives
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

- 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 with 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 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, $1/4 \times 1/2 = 1/8$]
- divide proper fractions by whole numbers [for example, $1/3 \div 2 = 1/6$]
- associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $3/8$]
- identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
- multiply one-digit numbers with up to 2 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 2 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 satisfy an equation with 2 unknowns
- enumerate possibilities of combinations of 2 variables
- 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
- perform mental calculations, including with mixed operations and large numbers
- use their knowledge of the order of operations to carry out calculations involving the 4 operations
- solve problems involving addition, subtraction, multiplication and division

