

**MATHEMATICS** SUBJECT LEARNING EXPECTATIONS



**Programme of Study** Henry Fawcett follows the Mathematics guidelines set out by the National Curriculum.

**Year 1 Key Objectives**

Pupils should be taught to:

- Count, read and write numbers to 100 in numerals
- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs
- Given a number, identify one more and one less
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract one-digit and two-digit numbers to 20, including zero
- Recognise, find and name a half as one of two equal parts of an object, shape or quantity
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.
- Measure and begin to record length/height, weight/mass, capacity/volume & time
- Recognise and know the value of different denominations of coins and notes
- Sequence events in chronological order using language
- 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 shapes (e.g. Square, circle, triangle)
- Recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres)

**Year 2 Key Objectives**

Pupils should be taught to:

- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- Recognise the place value of each digit in a two-digit number
- Compare and order numbers from 0 up to 100; use <, > and = signs
- Use place value and number facts to solve problems; recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs
- Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity
- Write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2
- Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- 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
- 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
- Interpret and construct simple pictograms, tally charts, block diagrams and simple tables

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Year 3 Key Objectives

Pupils should be taught to:

- Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.
- Compare and order numbers up to 1000
- Add and subtract numbers mentally, including: HTU+U, HTU+T and HTU+H
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- Estimate the answer to a calculation and use inverse operations to check answers
- Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- 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
- Compare and order unit fractions, and fractions with the same denominators
- Recognise and show, using diagrams, equivalent fractions with small denominators
- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
- Add and subtract fractions with the same denominator within one whole [for example,  $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$  ]
- 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
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines
- Identify whether angles are greater or less than a right angle
- Interpret and present data using bar charts, pictograms and tables

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**Year 4 Key Objectives**

**Pupils should be taught to:**

- Count backwards through zero to include negative numbers
- Recognise the place value of each digit in a four-digit number
- Round any number to the nearest 10, 100 or 1000
- Recall multiplication and division facts for multiplication tables up to  $12 \times 12$
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three 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
- Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- Recognise and write decimal equivalents to  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- Round decimals with one decimal place to the nearest whole number
- Compare numbers with the same number of decimal places up to two decimal places
- Convert between different units of measure; estimate, compare and calculate different measures, including money in pounds and pence
- Find the area of rectilinear shapes by counting squares
- 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 properties and sizes
- 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
- Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs

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**Year 5 Key Objectives**

**Pupils should be taught to:**

- 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
- 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
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements  $> 1$  as a mixed number
- 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
- 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
- Round decimals with two decimal places to the nearest whole number and to one decimal place
- Read, write, order and compare numbers with up to three decimal places
- Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
- 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), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes
- Use the properties of rectangles to deduce related facts and find missing lengths and angles

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**Year 6 Key Objectives**

**Pupils should be taught to:**

- Use negative numbers in context, and calculate intervals across zero
- 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
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- Use common factors to simplify fractions
- 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
- Divide proper fractions by whole numbers
- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction
- Multiply one-digit number with up to two decimal places by whole numbers
- Use written division methods in cases where the answer has up to two decimal places
- Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- Solve problems involving 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
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- Convert between miles and kilometres
- Calculate the area of parallelograms and triangles
- Calculate, estimate and compare volume of cubes and cuboids using standard units
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- Find unknown angles in any triangles, quadrilaterals, and regular polygons
- 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)
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
- Interpret and construct pie charts and line graphs
- Calculate and interpret the mean as an average