National Curriculum Programme of Study

Key Stage 1

The principle focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole number, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources.

Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money

Lower Key Stage 2

The principle focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

Teaching should also ensure that the pupils can use measuring instruments with accuracy and make connections between measure and number.

Upper Key Stage 2

The principle focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers.

Pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of number and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in measures should consolidate and extend knowledge developed in number.

Time

 Year 1

* Measure and begin to record the following: time (hours, minutes, seconds)
* 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 use language relating to dates, including days of the week, weeks, months and years

Year 2

* 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 the clock face to show these times
* Know the number of minutes in a hour and the number of hours in a day

Year 3

* Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
* Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o’clock, a.m./p.m., morning, afternoon, noon and midnight
* Know the number of seconds in a minute and the number of days in each month, year and leap year
* Compare duration of events [for example to calculate the time taken by particular events or tasks]

Year 4

* Convert between different units of measure [for example, hour to minute]
* 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

Year 5

* Solve problems involving converting between units of time (pupils use all four operations in problems, including conversions e.g. days to weeks, expressing the answer as weeks and days)

Year 6

* Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
* Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places.

Length (height, area and perimeter)

Year 1

* Measure and begin to record the following: lengths and heights

Year 2

* Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) to the nearest appropriate units using rulers
* Compare and order lengths and record the results using >, < and =

Year 3

* Measure, compare, add and subtract: lengths (m, cm, mm)
* Measure the perimeter of simple 2-D shapes

Year 4

* Convert between different units of measure [for example kilometre to metre]
* Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
* Find the area of rectilinear shapes by counting squares
* Non- statutory guidance – relate area to arrays and multiplication, perimeter can be expressed algebraically as 2(a+b) where a and b are the dimensions in the same unit

Year 5

* Convert between different unit of metric measure (for example, kilometre and metre; centimetre and metre. centimetre and millimetre)
* Understand and use approximate equivalences between metric units and common imperial units such as inches
* 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 (cm²) and square metres (m²) and estimate the area of irregular shapes
* Use all four operations to solve problems involving measure [for example, length] using decimal notation, including scaling.

Year 6

* Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
* Use, read, write and convert between standard units, converting measurements of length from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places.
* Convert between miles and kilometres
* Recognise that shapes with the same areas can have different perimeters and vice versa
* Recognise when it is possible to use formulae for area
* Calculate the area of parallelograms and triangles.

Mass/weight

Year 1

* Measure and begin to record the following: mass/weight

Year 2

* Choose and use appropriate standard units to estimate and measure mass (kg/g) to the nearest appropriate units using scales and measuring vessels
* Compare and order mass and record the results using >, < and =

Year 3

* Measure, compare, add and subtract: mass (kg/g)

Year 4

* Convert between different units of measure [for example kilogram to grams]

Year 5

* Convert between different unit of metric measure (for example, gram and kilogram)
* Understand and use approximate equivalences between metric units and common imperial units such as pounds
* Use all four operations to solve problems involving measure [for example, mass] using decimal notation, including scaling.

Year 6

* Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
* Use, read, write and convert between standard units, converting measurements of mass from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places.

Capacity (volume)

Year 1

* Measure and begin to record the following: capacity and volume

Year 2

* Choose and use appropriate standard units to estimate and measure capacity (litres/ml) to the nearest appropriate units using scales and measuring vessels
* Compare and order volume/capacity and record the results using >, < and =

Year 3

* Measure, compare, add and subtract: volume/capacity (l/ml)

Year 4

* Convert between different units of measure

Year 5

* Convert between different unit of metric measure (for example, litre and millilitre)
* Understand and use approximate equivalences between metric units and common imperial units such as pints
* Estimate volume [for example, using 1cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]
* Use all four operations to solve problems involving measure [for example, volume] using decimal notation, including scaling.

Year 6

* Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
* Use, read, write and convert between standard units, converting measurements of volume from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places.
* Recognise when it is possible to use formulae for volume of shapes
* Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³.

Money

Year 1

* Recognise and know the value of different denominations of coins and notes

Year 2

* Recognise and use symbols for pounds (£) and pence (p); combine amounts to 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

Year 3

* Add and subtract amounts of money to give change, using both £ and p in practical contexts

Year 4

* Non-statutory – build on understanding of place value and decimal notation to record metric measures including money

Year 5

* Use all four operations to solve problems involving measure [for example, money] using decimal notation, including scaling

Year 6

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Temperature

Year 1

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Year 2

* Choose and use appropriate standard units to estimate and measure temperature °C to the nearest appropriate unit using thermometers

Year 3

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Year 4

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Year 5

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Year 6

* Non-statutory – using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature.

Statistics

Year 1

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Year 2

* Interpret and construct simple pictograms, tally charts, block diagrams and simple 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

* Interpret and present data using bar chart, pictograms and tables
* Solve one-step and two-step questions [for example, ‘how many more?’ and ‘how many fewer?’] using information presented in scaled bar charts and pictograms and tables

Year 4

* 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

* Solve comparison, sum and difference problems using information presented in a line graph
* Complete, read and interpret information in tables, including timetables

Year 6

* Interpret and construct pie charts and line graphs and use these to solve problems
* Calculate and interpret the mean as an average