

National Curriculum Mathematics Coverage

Year 5 Programme of Study

<p>Number – number and place value</p> <p>Pupils should be taught to:</p> <p>read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</p> <p>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p> <p>interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero</p> <p>round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</p> <p>solve number problems and practical problems that involve all elements of the place value domain</p> <p>read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p>
<p>Number – addition and subtraction</p> <p>Pupils should be taught to:</p> <p>add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction)</p> <p>add and subtract numbers mentally with increasingly large numbers</p> <p>use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</p> <p>solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why.</p>
<p>Number – multiplication and division</p> <p>Pupils should be taught to:</p> <p>identify multiples and factors, including finding all factor pairs</p> <p>solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors</p> <p>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>establish whether a number up to 100 is prime and recall prime numbers up to 19</p> <p>multiply numbers up to 4 digits by a one- or two- digit number using an efficient written method, including long multiplication for two-digit numbers</p> <p>multiply and divide numbers mentally drawing upon known facts</p> <p>the efficient written method of short division and interpret remainders appropriately for the context</p> <p>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p> <p>recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</p> <p>solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</p> <p>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</p>
<p>Number – fractions (including decimals)</p> <p>Pupils should be taught to:</p> <p>compare and order fractions whose denominators are all multiples of the same number</p> <p>recognise mixed numbers and improper fractions and convert from one form to the other</p> <p>add and subtract fractions with the same denominator and related fractions; write mathematical statements >1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 11/5$)</p> <p>multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</p>
<p>Decimals and Fractions</p> <p>Pupils should be taught to:</p> <p>read and write decimal numbers as fractions (e.g. $0.71 = 71/100$)</p> <p>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>round decimals with two decimal places to the nearest whole number and to one decimal place</p> <p>read, write, order and compare numbers with up to three decimal places</p> <p>solve problems involving number up to three decimal places.</p>

Percentages, decimals and fractions

Pupils should be taught to:

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 hundred, and as a decimal fraction

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 with a denominator of a multiple of 10 or 25.

Measures

Pupils should be taught to:

convert between different units of measure (e.g. kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre)

understand and use basic equivalences between metric and common imperial units and express them in approximate terms

measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes

recognise and estimate volume (e.g. using 1 cm³ blocks to build cubes and cuboids) and capacity (e.g. using water)

solve problems involving converting between units of time

solve problems involving addition and subtraction of units of measure (e.g. length, mass, volume, money) using decimal notation

Geometry

Pupils should be taught to:

identify 3-D shapes, including cubes and cuboids, from 2-D representations

know angles are measured in degrees; estimate and measure them and draw a given angle, writing its size in degrees (°)

identify:

- multiples of 90°
- angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)
- angles at a point and one whole turn (total 360°)
- reflex angles
- and compare angles

draw shapes using given dimensions and angles

state and use the properties of a rectangle (including squares) to deduce related facts

distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Geometry: position, direction, motion

Pupils should be taught to:

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.

Statistics

Pupils should be taught to:

solve comparison, sum and difference problems using information presented in line graphs

complete, read and interpret information in tables, including timetables.