National Curriculum Mathematics Coverage

Year 6 Programme of Study

Number, place value, approximation and estimation Pupils should be taught to:
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 zero
solve number problems and practical problems that involve all elements of place value

Addition, subtraction, multiplication and division Pupils should be taught to:
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 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 four 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 estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Fractions (including decimals and percentages) Pupils should be taught to:
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 (e.g. 1/4 × 1/2 = 1/8)
divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6).
associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)
identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
multiply one digit numbers with up to two decimal places by whole numbers

Number – fractions (including decimals) Pupils should be taught to:
compare and order fractions whose denominators are all multiples of the same number
recognise mixed numbers and improper fractions and convert from one form to the other
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)
multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
use written division methods in cases where the answer has up to two 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

Ratio and proportions Pupils should be taught to:
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 calculations of percentages (e.g. of measures) 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

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

Algebra Pupils should be taught to:
express missing number problems algebraically
use simple formulae expressed in words generate
and describe linear number sequences
find pairs of numbers that satisfy number sentences involving two unknowns
enumerate all possibilities of combinations of two variables

Measures Pupils should be taught to:
solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate
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
recognise that shapes with the same areas can have different perimeters and vice versa
recognise that shapes with the same areas can have different perimeters and vice versa
calculate the area of parallelograms and triangles
calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm3) and cubic metres (m3) and extending to other units, such as mm3 and km3.

Geometry: Properties of shape Pupils should be taught to:
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

Geometry: position and direction Pupils should be taught to:
describe positions on the full coordinates grid (all four quadrants)
draw and translate simple shapes on the coordinates plane, and reflect them in the axes

Statistics Pupils should be taught to:
interpret and construct pie charts and line graphs and use these to solve problems
calculate and interpret the mean as an average