

## Mathematics National Curriculum for Year 6

### Statutory requirements – YEAR 6 (number and place value)

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 and practical problems that involve all of the above.

### Statutory requirements – YEAR 6 (addition, subtraction, multiplication & 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 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 four operations
  - solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
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- 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.

### Statutory requirements – YEAR 6 (fractions including decimals)

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 [for example,  $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ]
  - divide proper fractions by whole numbers [for example,  $\frac{1}{3} \div 2 = \frac{1}{6}$ ]
  - associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example,  $\frac{3}{8}$ ]
  - identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
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- multiply one-digit numbers 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 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.

### Statutory requirements – YEAR 6 (measurement)

Pupils should be taught to:

- 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, 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 when it is possible to use formulae for area and volume of shapes
- calculate the area of parallelograms and triangles

### **Statutory requirements – YEAR 6 (measurement)**

- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ( $\text{cm}^3$ ) and cubic metres ( $\text{m}^3$ ), and extending to other units [for example,  $\text{mm}^3$  and  $\text{km}^3$ ].

### **Statutory requirements – YEAR 6 (geometry – properties of shapes)**

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.

### **Statutory requirements – YEAR 6 (geometry – position and direction)**

Pupils should be taught to:

- 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.

### **Statutory requirements – YEAR 6 (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.

### **Statutory requirements – YEAR 6 (ratio and proportion)**

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 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.

### **Statutory requirements YEAR 6 (algebra)**

Pupils should be taught to:

- use simple formulae
- generate and describe linear number sequences
- express missing number problems algebraically
- find pairs of numbers that satisfy an equation with two unknowns
- enumerate possibilities of combinations of two variables.