



# Being a mathematician in Year Six



## A year Six Mathematician

### Number:

- I can read, write, order and compare numbers up to 10,000,000 and know the value of each digit.
- I can round any whole number accurately.
- I can use negative numbers in different situations and calculate intervals across 0.
- I can solve number and practical problems that involve all of the above.
- I can perform mental calculations, including mixed operations and large numbers.
- I can identify common factors, common multiples and prime numbers.
- I can identify the value of each digit in numbers up to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places.

### Calculations:

- I can solve addition and subtraction multi-step problems, deciding which operations and methods to use and why.
- I can multiply multi-digit numbers up to 4 digits by a two-digit whole numbers using the formal written method of long multiplication.
- I can divide numbers up to 4 digits by a two-digit whole numbers using the formal written method of long division, giving remainders as fractions or by rounding as appropriate.
- I can divide numbers up to 4 digits by a two-digit number using the formal written method of short division
- I can multiply one-digit numbers with up to 2 decimal places by whole numbers.
- I can use written division methods in cases where the answer has up to 2 decimal places.
- I can solve problems which require answers to be rounded to specified degrees of accuracy.
- I can solve problems involving missing numbers where whole number multiplication and division facts can be used.
- I can solve problems involving addition, subtraction, multiplication and division.
- I can use my knowledge of the order of operations to carry out calculations involving the 4 operations (BODMAS).
- I can use estimation to check answers to calculations.

### Fractions:

- I can use common factors to simplify fractions and use common multiples to express fractions in the same denomination.
- I can compare and order fractions, including fractions greater than 1.
- I can add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
- I can multiply simple pairs of proper fractions, writing the answer in its simplest form.
- I can divide proper fractions by whole numbers.
- I can associate a fraction with division and calculate decimal fraction equivalents.
- I can recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
- I can solve problems involving the calculation of percentages and the use of percentages for comparison.
- I can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

### Measure:

- I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places.
- I can 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 up to 3 decimal places.
- I can convert between miles and kilometres.

### Shape:

- I can solve problems involving similar shapes where the scale factor is known or can be found.
- I can recognise that shapes with the same areas can have different perimeters and vice versa.
- I can recognise when it is possible to use formulae for area and volume of shapes.
- I can calculate the area of parallelograms and triangles.
- I can calculate, estimate and compare volume of cubes and cuboids using standard units.
- I can draw 2-D shapes using given dimensions and angles.
- I can recognise, describe and build simple 3-D shapes, including making nets.
- I can compare and classify shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.
- I can illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.
- I can recognise angles where the meet at a point, are on straight line or are vertically opposite, and find missing angles.
- I can describe positions on the full coordinate grid (all 4 quadrants).
- I can draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

### Statistics:

- I can interpret and construct pie charts and line graphs and use these to solve problems.
- I can calculate and interpret the mean as an average.

### Algebra:

- I can use simple formulae.
- I can generate and describe linear number sequences.
- I can express missing number problems algebraically.
- I can find pairs of numbers that satisfy an equation with 2 unknowns.
- I can use trial and error to find missing values.