

Stage 6 - Mathematics

Number, place value, approximation and estimation/rounding

- Read, write, order and compare numbers up to 10,000,000.
- Determine the value of each digit in numbers up to 10,000,000.
- 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 with the above.

Calculations

- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Identify common factors, common multiples and prime numbers.
- Perform mental calculations, including with mixed operations and large numbers.
- Multiply multi-digit numbers up to 4 digits by a 2 digit whole number using the formal written method of long multiplication.
- Divide numbers up to 4 digits by a 2 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 2 digit number using the formal written method of short division where appropriate.
- Solve problems involving addition, subtraction, multiplication and division.
- Use my knowledge of the order of operations to carry out calculations involving the four operations.

Fractions, decimals and percentages

- Use common factors to simplify fractions and 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 the simplest form.
- Divide proper fractions by whole numbers.
- Associate a fraction with division to calculate decimal fractions equivalents for a simple fraction.
- Identify the value of each digit to 3 decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places.
- Multiply 1-digit numbers with up to 2 decimal places by whole numbers.
- Use written division methods in cases where the answer has up to 2 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 proportion

- Solve problems involving the relative sizes of two quantities, where missing values can be found using integer multiplication and division facts.
- Solve problems involving the calculation of percentages and the use of percentage comparisons.
- 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.

Measurement

- 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 of up to 3 decimal places.
- Convert between miles and kilometres.
- Recognise that shapes with the same areas can have different perimeters and vice versa.
- Calculate the area of parallelograms and triangles.
- Recognise when it is possible to use the formulae for the area of shapes.
- Calculate, estimate and compare volume of cubes and cuboids, using standard units.
- Recognise when it is possible to use the formulae for the volume of shapes.
- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate.

Geometry –properties of shapes

- Compare and classify geometric shapes based on the properties and sizes.
- Describe simple 3D shapes.
- Draw 2D shapes given dimensions and angles.
- Recognise and build simple 3D shapes, including making nets.
- Find unknown angles in any triangles, quadrilaterals and regular polygons.
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
- Illustrate and name parts of circles, including radius, diameter and circumference.
- Know the diameter is twice the radius.

Geometry –position and direction

- Draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes.
- Describe positions on the full co-ordinate grid (all four quadrants).

Statistics

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

Algebra

- Express missing number problems algebraically.
- Use simple formulae.
- Generate and describe linear number sequences.
- Find pairs of numbers that satisfy an equation with two unknowns.
- Enumerate possibilities of combinations of two variables.