

Stage 5 - Mathematics

Number, place value, approximation and estimation/rounding

- Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.
- Read, write, order and compare numbers to at least 1,000,000.
- Determine the value of each digit in numbers up to 1,000,000.
- Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.
- Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 and 100000.
- Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.
- Solve number problems and practical problems with the above.

Calculations

- Add and subtract numbers mentally with increasingly large numbers.
- Add and subtract whole numbers with more than 4 digits, including using formal written methods.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Identify multiples and factors, including finding all factor pairs or a number and common factor pairs of two numbers.
- Use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
- Establish whether a number up to 100 is prime and recall prime numbers up to 19.
- Recognise and use square numbers and cube numbers, and the notation for squared and cubed.
- Multiply and divide numbers mentally drawing on known facts.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Multiply numbers up to 4 digits by a 1-digit or 2-digit number using a formal written method, including long multiplication for 2-digit numbers.
- Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.
- Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes.
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
- Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates.

Fractions, decimals and percentages

- Recognise mixed numbers and improper fractions and convert from one form to the other.
- Write mathematical statements >1 as a mixed number.
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.
- Compare and order fractions whose denominators are multiples of the same number.
- Add and subtract fractions with the same denominator and denominators that are multiples of the same number.
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
- Read and write decimal numbers as fractions.
- Recognise and can use thousandths and relate them to tenths, hundredths and decimal equivalents.
- Round decimals with 2 decimal places to the nearest whole number and 1 decimal place.
- Read, write, order and compare numbers with up to 3 decimal places.
- Solve problems involving numbers up to 3 decimal places.
- Recognise the percent symbol and understand that percent relates to 'number parts per hundred'.
- Write percentages as a fraction with denominator hundred, and as a decimal.
- 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 fractions with a denominator or a multiple of 10 or 25.

Measurement

- Solve problems involving converting between units of time.
- Convert between different units of metric measure.
- Understand and use approximate equivalences between metric units and common imperial units, such as inches, pounds and pints.
- Measure and calculate the perimeter of composite rectilinear shapes in cm and m.
- Calculate and compare the area of rectangles (incl. squares), and including using standard units (cm^2 and cm^3) to estimate the area of irregular shapes.
- Estimate volume and capacity.
- Use all four operations to solve problems involving money using decimal notation, including scaling.

Geometry –properties of shapes

- Use the properties of rectangles to deduce related facts and find missing lengths and angles.
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
- Identify 3D shapes, including cubes and other cuboids, from 2D representations.
- Know angles are measured in degrees.
- Estimate and compare acute, obtuse and reflex angles.
- Identify angles at a point and one whole turn.
- Identify angles at a point on a straight line and $\frac{1}{2}$ a turn.
- Identify other multiples of 90° .
- Draw given angles and measure them in degrees.

Geometry –position and direction

- 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

- Complete, read and interpret information in tables, including timetables.
- Solve comparison, sum and difference problems using information presented in a line graph.