

## 2<sup>nd</sup> Year Topics

### Number

- **Number properties;** including multiples, factors, primes, squares, cubes, roots, highest common factor and lowest common multiple.
- **Percentages,** including percentage of a quantity, percentage increase/decrease, percentage multipliers and reverse percentages.
- **Ratio and proportion;** including equivalent ratios, sharing in a ratio, the unitary method and solving proportionality problems.
- **Rounding and approximating;** including rounding to decimal places, rounding to significant figures and estimating.
- **Multiplication and Division;** including long multiplication and division, and understanding the effects of multiplying and dividing by numbers between 0 and 1.
- **Negative Numbers;** including adding, subtracting, multiplying and dividing negative numbers.
- **Fractions;** including adding, subtracting, multiplying and dividing fractions.
- **Decimals;** including, adding, subtracting, multiplying, dividing and converting between fractions, decimals and percentages.
- **Calculations;** including how to use a calculator to carry out complex calculations.

### Algebra

- **Algebraic expressions;** including collecting like terms and simplifying expressions, expanding single brackets, expanding double brackets and algebraic substitution.
- **Solving equations;** including solving linear equations with unknowns on one side, linear equations with unknowns on both sides, linear equations with brackets and forming linear equations.
- **Simultaneous equations;** including solving simultaneous equations by elimination.
- **Inequalities;** including understanding inequalities, representing inequalities on a number line and solving linear inequalities.
- **Changing the subject;** including being able to re-arrange simple formulae.
- **Sequences;** including being able to continue number sequences and pattern sequences, and identifying the  $n^{\text{th}}$  term of a linear sequence.
- **Graphs;** including drawing straight line graphs, simple quadratic and cubic graphs, identifying the gradient and intercept of straight line graphs, and interpreting real life graphs.

### Shape

- **Angles;** including using basic angle rules, angles on parallel lines, interior and exterior angles.
- **Transforming shapes;** including translations, reflections, rotations and enlargements.
- **Locus and constructions;** including being able to carry out standard compass and ruler constructions and being able to solve locus problems.
- **2D and 3D shapes;** including being able to name the parts of a circle, name the special quadrilaterals and know their properties, and name the key 3D solids. Understanding congruent and similar shapes.
- **Area and perimeter;** including calculating the perimeter of simple 2D shapes, calculating the area of rectangles, parallelograms, triangles and trapeziums, and calculating the perimeter and area of circles.
- **Volume;** including calculating the volume of cuboids.
- **Pythagoras Theorem;** including understanding and using Pythagoras Theorem.

### Handling Data

- **Collecting data;** including surveys, sampling and questionnaires.
- **Representing data;** including drawing bar charts, line graphs, frequency polygons, pie charts and scatter graphs.
- **Recording data;** including frequency tables
- **Calculating data;** including mean, mode, median and range, and estimating the mean, mode and median from a grouped frequency table.
- **Probability;** including the probability scale, the probability of equally likely outcomes, mutually exclusive events and expected probability.