

Mathematics

| Outcomes | Algebra, Using Formulae Solving Equation and Inequalities | Data and Probability | Number, Numeracy skills Fractions, Decimals and Percentages | Shape Angles Area, Perimeter, Volume | On course for GCSE Grade |
|-----------|--|---|--|--|--------------------------|
| Basic | <ul style="list-style-type: none"> Use and interpret algebraic notation, including: a^2b in place of $a \times a \times b$ and $2a$ instead of $a + a$ | <ul style="list-style-type: none"> Know that probability is measured on a 0-1 scale Know that the sum of all probabilities for a single event is 1 Calculate mean, mode, median and range for a simple data set | <ul style="list-style-type: none"> Know how to enter negative numbers into a calculator Know percentage and decimal equivalents for fractions with a denominator of 3, 5, 8 and 10 | <ul style="list-style-type: none"> Measure line segments and angles in geometric figures Know how to measure and write bearings | 1-3 |
| Adequate | <ul style="list-style-type: none"> Simplifying expressions Simplify and manipulate algebraic expressions by taking out common factors and involving sums, products and powers, including the laws of indices Substitute numerical values into scientific formulae Generate terms of a sequence from a term-to-term rule Describe the term-to-term rule for a sequence | <ul style="list-style-type: none"> Record describe and analyse the frequency of outcomes of probability experiments using tables Construct theoretical possibility spaces for single experiments with equally likely outcomes and use these to calculate theoretical probabilities Know that the probabilities of an exhaustive set of outcomes sum to one Apply systematic listing strategies Use two way-tables and Venn diagrams | <ul style="list-style-type: none"> Know that $a^0 = 1$ Understands and uses language of prime numbers, HCF, LCM, prime factors Round numbers and measures to an appropriate degree of accuracy as decimal place Apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative Know the order of operations including powers Identify and work with fractions in ratio problems Understand and use proportion as equality of ratios | <ul style="list-style-type: none"> Know how to identify alternate angles Know how to identify corresponding angles Know that circumference = $2\pi r = \pi d$ Interpret maps and scale drawings and use bearings Interpret plans and elevations of 3D shapes | 3-5 |
| Secure | <ul style="list-style-type: none"> Rearrange formulae to change the subject Plot graphs of equations that correspond to straight-line Identify and interpret gradients and intercepts of linear functions graphically Recognise, sketch and interpret graphs of linear functions and simple quadratic functions Using graphs to solve simple problems involving distance and speed Generate terms of a sequence from a position-to-term rule Describe the position-to-term rule for a linear sequence | <ul style="list-style-type: none"> Record describe and analyse the frequency of outcomes of probability experiments using frequency trees Construct probability tables for combined experiments with equally likely outcomes and use these to calculate theoretical probabilities Use and interpret scatter graphs and recognise correlation Apply ideas of randomness, fairness and equally likely events Know to use the midpoints of groups to estimate the mean of a set of grouped data | <ul style="list-style-type: none"> Know how to write a number as a product of its prime factors Rounds to significant figures Convert between terminating decimals and fractions (such as 3.5 and $7/2$ or 0.375 or $3/8$) Interpret standard form $A \times 10^n$, where $1 \leq A < 10$ and n is an integer Apply ratio skills when working with contextual problems Express a relationship between two quantities as a ratio or a fraction Use compound units (such as speed, or rates of pay) | <ul style="list-style-type: none"> Know that volume of prism = area of cross-section \times length Know that area of a circle = πr^2 Identify, describe and construct similar shapes, including on coordinate axes, by considering enlargement Understand and use alternate and corresponding angles on parallel lines Know how to find the angle sum of any polygon | 4-6 |
| Advanced | <ul style="list-style-type: none"> Solve linear equations with the unknown on both sides of the equation Find approximate solutions to linear equations using a graph Deduce expressions to calculate the nth term of linear sequences Know the characteristic shape of a graph of a quadratic function | <ul style="list-style-type: none"> Interpret, analyse and compare the distributions of data sets involving discrete, continuous and grouped data Interpret, analyse and compare the distributions of data sets through appropriate averages (median, mean, mode and modal class) and spread (range, including consideration of outliers) | <ul style="list-style-type: none"> Change freely between compound units (e.g. speed, rates of pay, prices) in numerical contexts Relate ratios to fractions and to linear functions Interpret fractions and percentages as operators Work with percentages greater than 100% | <ul style="list-style-type: none"> Derive and use the sum of angles in a triangle (e.g. to deduce and use the angle sum in any polygon, and to derive properties of regular polygons) | 6-8 |
| Excelling | <ul style="list-style-type: none"> Solve linear equations with multiple steps | <ul style="list-style-type: none"> Apply statistics to describe a population | <ul style="list-style-type: none"> Solve problems involving percentage change, including original value problems and simple interest | | 7-9 |