Maths

Steps to Success ↑

Number	Algebra	Geometry	Probability	Ratio & Proportion	Statistics
Simplify surd expressions involving squares (e.g. $\sqrt{12} = \sqrt{(4 \times 3)} = 2\sqrt{3}$)	Use function notation Know that a line perpendicular to the line $y = mx + c$, will have a gradient of $-1/m$	Understand, recall and use Pythagoras' theorem in 3-D problems Know and apply the sine rule $a/\sin A = b/\sin B = c/\sin C$ to find unknown lengths and angles know and apply the cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$ to find unknown lengths Calculate the resultant of two vectors			
Recall that $n0 = 1$ and $n-1 = 1/n$ for positive integers n as well as $n1/2 = \sqrt{n}$ and $n1/3 = \sqrt[3]{n}$ for any positive number n	Expand double brackets $(ax \pm b)(cx \pm d)$	Find angles of elevation and angles of depression	Use tree diagrams and veen diagrams to calculate conditional probability		Construct and interpret histograms
	Solve quadratic equations algebraically by factorising Identify the line of symmetry of a quadratic graph Identify and interpret roots, intercepts and turning points of a quadratic graph	Solve problems involving angles, triangles and circles Use and apply Pythagoras' theorem to solve problems Use the sine, cosine and tangent ratios to find the lengths of unknown sides in a right-angled triangle, using straight-forward algebraic manipulation, e.g. calculate the adjacent (using cosine), or the opposite (using sine or tangent Understand the language of planes, and recognise the diagonals of a cuboid Add and Subtract vectors	Use tree diagrams to calculate the probability of two dependent events Use tree diagrams to calculate the probability of two dependent events	Understand that the ratio of any two sides is constant in similar right-angled triangles	Construct cumulative frequency diagrams Find and use quartiles and inter-quartile range Compare data sets
Find the reciprocal of simple numbers/fractions mentally, e.g. 10 and 1/10, 1/3 and 3 etc. Use prime factorisation to represent a number as a product of its primes using index notation	Use systematic trial and improvement to find the approximate solution to one decimal place of equations such as $x^3 = 29$ Multiply out brackets involving positive terms such as $(a + b)(c + d)$ and collect like terms Rearrange simple equations Know that the gradient of a line is the change in y over change in x. Generate points and plot graphs of simple quadratic functions, then more general functions	Draw the locus equidistant between 2 points or from a point Produce shapes and paths by using descriptions of loci Know that the perpendicular distance from a point to a line is the shortest distance to the line Recognise whether a reflection is correct Understand and use vector notation	Understand set notation and interpret Venn diagrams	Use compound interest Express a multiplicative relationship between two quantities as a ratio or a fraction Know that enlargements of 2D shapes produce similar shapes	Intepret scatter graphs in terms of the relationship between two variables
Extend the patterns by using the index law for division established for positive power answers, to show that any number to the power of zero is 1	Plot the graphs of simple linear functions in the form $y = mx + c$ in four quadrants	Use the sum of the exterior angles of any polygon is 360° Know the formulae for the circumference and area of a circle Identify congruent shapes		Set up equations to show direct proportion Use expressions of the form $y \propto x$	Identify possible sources of bias and plan to minimise it Understand what is meant by a sample and a population
Add and subtract simple fractions with denominators of any size Use division to convert a fraction to a decimal Know all the squares of numbers less than 16 and be able to know the square root given the square number	Solve simple two-step linear equations with integer coefficients, of the form $ax \pm b = c$, e.g. $3x + 7 = 25$ Generate four quadrant coordinate pairs of simple linear functions	Use straight edge and compasses to construct the mid point and perpendicular bisector of a line segment	Identify all mutually exclusive outcomes for two successive events with two outcomes in each event Write probabilities in words, fractions, decimals and percentages	Convert one metric unit to another, including decimals (e.g. 3250 grams to 3.25 kilograms, or 3.25kg to 3250g) Use a multiplier to increase or decrease by a percentage	Construct a simple (no boundary data) frequency table with given equal class intervals for continuous data.
Know and use the order of operations Round numbers to decimal places Recognise and use multiples and factors (divisors) and use simple tests of divisibility Simplify fractions by cancelling all common factors Order fractions, decimals and percentages Check a result by considering if it is of the right order of magnitude	Read values from straight-line graphs for real-life situations Draw, label and scale axes Generate and describe simple integer sequences – square and triangle numbers Construct expressions from worded descriptions, using addition and subtraction (a+3, 50-c) E.g. add 7 to a number (answer n+7) simplify algebraic expressions by collecting like terms	Distinguish between acute, obtuse and reflex angles Use the formula for the area of a rectangle/square Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)	Mark events and/or probabilities on a probability scale of 0 to 1 Apply the property that the probabilities of an exhaustive set of outcomes sum to 1 Identify all possible mutually exclusive outcomes of a single event Use the vocabulary of probability Find and justify probabilities based on equally likely outcomes in simple contexts	Find a percentage of a quantity using a multiplier Use ratio notation	Construct on paper, and using ICT simple bar graphs to represent discrete data Calculate all averages of a small discrete data set Interpret simple diagrams and charts Interpret simple pie charts Group data, where appropriate in equal class intervals Use information provided to complete a two-way table
Use standard column procedures to add and subtract whole numbers Add, subtract multiply and divide integers - positive and negative	Read x and y coordinate in the first quadrant	Identify and name common solids: cube, cuboid, cylinder, prism, pyramid, sphere and cone Know the terms face, edge and vertex Record readings from scales to a suitable degree of accuracy Understand and use the language associated with translations Scale a shape on a grid (without a centre specified)			