KS3 Progress Map

Yr 7	Yr 8	Yr 9	Fluency of Number	Manipulation of Algebra	Calculating in Ratio	Geometrical reasoning	Analysing Data & Probability	Problem Solving
			I can…					
		9	• evaluate any numbers using negative and fractional powers • express a recurring decimal as a faction	• solve a pair of simultaneous equations with different coefficients • use the formula to solve a quadratic equation • solve a series of linear inequalities on a graph	• find the missing lengths in similar shapes • perform calculations involving growth and decay such as calculating compound interest	• use trigonometry to find missing angles and lengths in right angled triangles • apply Pythagoras' Theorem in a 3D scenario • confidently describe any transformation including with negative and fractional values	• correctly draw a histogram with unequal groups • construct a box plot from a list of data and consider outliers	• examine generalisations or solutions reached in an activity • convey mathematical meaning through precise and consistent use of symbols • reflect on lines of enquiry when exploring a task
	9	8	• calculate the upper and lower bounds of a rounded answer • evaluate numbers or expressions using fractional powers • add and subtract with surds	• expand any pair of double brackets • factorise and solve quadratic expressions • solve simple simultaneous equations both algebraically and graphically	• find reverse percentages • calculate the pressure of a force on an area	• calculate the length of an arc and the area of a sector • enlarge a shape using a negative scale factor • confidently work with vectors around a shape	• find the quartiles from a list of data. • draw a tree diagram without replacement and calculate probabilities from it	• examine critically, improve and justify the choice of mathematical presentation • solve increasingly demanding problems and evaluate solutions
9	8	7	• simplify surds • apply the laws of indices to simplify expressions with negative powers	• able to plot a quadratic graphs • state the equation of a line given two points • recognise cubic and reciprocal graphs and use these to approximate solutions graphically. • find the nth term of a quadratic sequence	• change between compound units such as speed and density • calculate percentage profit and loss • solve indirect proportion problems using the unitary method	• use Pythagoras' Theorem to find the missing side of a triangle • find the area and volume of a prism • enlarge a shape using a fractional scale factor	• interpolate and extrapolate using a line of best fit • calculate the mean from a frequency table	• represent problems using algebraic notation • progressively refine the problem to generate better solutions
8	7	6	• estimate powers and roots of any positive integer • perform arithmetic with mixed numbers and improper fractions	• solve a linear inequality • state difference between an expression, equation, identity • solve a linear equation with one or two negative unknowns • change the subject of a formula where the unknown appears on one side	• work confidently with percentage greater than 100% • calculate density, mass or volume of an object • solve direct proportion problems using the unitary method	• find the interior and exterior angles of a polygon • find the area and perimeter of any compound shape • calculate with column vectors. • produce a construction using a pair of compasses	• draw a time series graph • display and interpret probability outcomes in a venn diagram	• present a concise, reasoned argument, using diagrams and words • Interpret, discuss and synthesise information presented in a variety of mathematical forms
7	6	5	• apply the laws of indices to simplify expressions for multiplied and divided terms, including the zero power • write large and small numbers in standard form • find the reciprocal of a number • perform arithmetic with proper fractions	• solve a linear equation with positive unknowns on both sides • expand a combination of linear brackets • state the equation of a parallel line	• share into a given ratio • calculate the simple interest of money • draw and interpret a time-distance graph • use a multiplier on a calculator to calculate percentage change	• find the area and circumference of a circle • enlarge a shape given a positive scale factor • find missing angles in parallel lines	• draw a scatter diagram and interpret the correlation • draw a tree diagram with replacement and calculate probabilities from it	• use logical argument to establish the truth of a statement • choose and correctly use appropriate symbols, diagrams and graphs.

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			I can…					
6	5	4	• use estimation within calculations • write a number as a product of its prime factors and use this to find HCF and LCM • round to any number of significant figures	• solve an equation including single brackets, negatives and fractions • plot a straight line graph of the form ax + by = c • state the gradient and y-intercept of any straight line graph • factorise a linear expression	• calculate speed, distance or time of an object • order fractions, decimal and percentages by converting.	• draw the net, plan and side elevation of a 3D shape • find the area of triangles, parallelograms and trapeziums • use bearings to describe the direction	• create a sample space diagram based on two events • use a stem and leaf diagram to order numbers and find averages using it	• draw simple conclusions and explain reasoning • check results and consider whether they are sensible
5	4	3	• calculate with negative numbers • apply the order of operations correctly • round to any number of decimal places	• draw and interpret a conversion graph • plot a straight line graph of the form y = ax + b • find the nth term of a linear sequence • substitute a negative number into an expression or formula	• convert between fractions, decimals, and percentages • write one number as a percentage of the other	• convert between different measures such as cm and m • translate any shape • find the missing angle in any triangle • reflect a shape in a line and rotate a shape around a point	• draw a pie chart from a set of data • find the mean from a list of data	• present and interpret solutions in the context of the problem • develop correct use of notation, symbols and diagrams
4	3	2	• perform arithmetic with decimals • identify square and cube numbers • calculate square roots • list multiples, factors and primes	• simplify multiplied expressions • expand a single bracket • create and use a formula • continue a Fibonacci or geometric sequence	• calculate percentage increase and decrease • create a scale drawing	• state the different properties of quadrilaterals • construct a triangle • reflect a shape in a line and rotate a shape around a point. • convert between different measures such as cm and m	• calculate the probability of an equally likely event, knowing that probability outcomes sum to 1. • construct and complete a two-way table	• make a general statements based on evidence produced • present information and results in a clear and organised way
3	2	1	• identify equivalent fractions • find a fraction of an amount • perform multiplication and division with integers	• substitute a positive number into an expression or formula • draw a straight line graph of the form y=k and x=k • form and solve a linear two-step equation	• find a percentage of an amount • use a scale on a map	• identify parallel and perpendicular lines • label key features of a circle • find missing angles on straight lines, at points and vertically opposite	• find the median from a list of data. • place events on a probability scale	• find a pattern or solution • use a range of strategies when solving problems
2	1		• round a number to the nearest 10, 100 or 1000. • multiply and divide integers and decimals by 10, 100, or 1000 • add and subtract decimals • simplify a fraction	• collect like terms • generate a sequence given the rule • solve a linear one-step equation • plot and read co-ordinates in all four quadrants	• find equivalent ratios • simplify a ratio	• draw the lines of symmetry in a 2D shape • measure an angle • find the area and perimeter of a rectangle	• calculate the range from a list of data. • draw and interpret a pictogram • use the language of probability.	• organise my work and check results • try different approaches and find ways of overcoming difficulties that arise
1			• add and subtract integers • read values off a scale • state the place value of a number	• recognise the rule of a sequence • I plot co-ordinates in the first quadrant	• write a ratio from words or pictures	• count the number of faces, vertices and edges in 3D shapes • state the different types of angle • identify congruent shapes	• find the mode from a list of data • draw an interpret a bar chart	• explain why an answer is correct • predict what comes next in a simple number, shape or spatial pattern or sequence