

KS3 Mathematics Progression Grid

Step	STRAND 1 – Number	STRAND 2 – Algebra	STRAND 3 – Ratio & Proportion	STRAND 4 – Geometry & Measures	STRAND 5 – Probability & Statistics
9	All the steps below, and I can also... a) interpret and use algebraic reasoning to justify numerical results. b) recognise the infinite nature of integer, rational and real number sets. c) calculate and simplify surds and express roots in simplest radical form. d) solve problems involving rationalising denominators. e) apply the laws of indices to negative and fractional powers.	All the steps below, and I can also... a) interpret linear and quadratic graphs to estimate approximate solutions. b) rearrange complex formulae including powers and fractional terms. c) expand and simplify expressions involving three or more brackets. d) factorise quadratic expressions where $a = 1$. e) solve quadratic equations by factorisation ($a = 1$).	All the steps below, and I can also... a) calculate density = mass $\div$ volume and pressure = force $\div$ area. b) interpret gradient as rate of change. c) express direct and inverse proportion (as one value increases, the other decreases) algebraically. d) apply area and volume scale factors for similar shapes.	All the steps below, and I can also... a) apply trigonometric ratios to calculate missing sides and angles. b) solve real-life right-angled triangle problems. c) solve three-dimensional problems using Pythagoras and trigonometry.	All the steps below, and I can also... a) interpret bias and reliability in data collection. b) draw, interpret and compare box plots. c) compare distributions using measures of centre and spread. d) construct tree diagrams and calculate probabilities (to include dependent events (where one event affects another)).
8	All the steps below, and I can also... a) write rounded values as an error interval. b) Recognise the difference between terminating and recurring decimals, when expressed in fraction or surd form.	All the steps below, and I can also... a) solve linear inequalities and represent solutions graphically and algebraically. b) recognise and generate geometric sequences. c) recognise quadratic sequences from term-to-term and position-to-term rules.	All the steps below, and I can also... a) calculate percentage change including repeated change. b) use and interpret simple interest formulae. model inverse proportion (as one value increases, the other decreases) using tables, graphs and equations.	All the steps below, and I can also... a) identify congruent and similar shapes using formal criteria. enlarge shapes by integer and fractional scale factors. b) calculate missing sides using Pythagoras. c) justify geometric proofs using angle facts and congruence.	All the steps below, and I can also... a) interpret scatter graphs to describe correlation and causation. b) draw and use lines of best fit. c) identify outliers and anomalies. d) construct tree diagrams and calculate probabilities.
7	All the steps below, and I can also... a) calculate compound percentage change (growth and decay) with different values from one year to the next. b) apply laws of indices (multiply, divide, power of power), including zero and unit powers.	All the steps below, and I can also... a) expand and simplify double brackets. b) represent quadratic relationships graphically. c) interpret graphs to find approximate solutions of equations.	All the steps below, and I can also... a) solve multi-step problems involving direct and inverse proportion (as one value increases, the other decreases). b) combine ratios involving three or more quantities.	All the steps below, and I can also... a) construct triangles using SSS, SAS and ASA. b) interpret and use scale drawings and map scales. c) interpret and calculate bearings, including three-figure bearings. d) recognise perpendicularity and gradient relationships. e) form and justify equations from angle facts.	All the steps below, and I can also... a) calculate probabilities of combined events. b) distinguish between dependent and independent events (where one event affects another). c) compare experimental and theoretical probability. d) construct scatter graphs
6	All the steps below, and I can also... a) calculate compound percentage change (growth and decay). b) recognise and calculate with square and cube numbers and roots. c) calculate the highest common factor (HCF) and lowest common multiple (LCM) from Prime Factor Form (include Venn Diagram). d) apply the laws of indices for positive integer powers.	All the steps below, and I can also... a) solve linear equations with brackets and variables on both sides. b) form and solve equations from worded and geometric contexts. c) draw, interpret and use linear graphs with positive and negative gradients.	All the steps below, and I can also... a) calculate using scale factors in maps and diagrams. b) convert between metric units, including area and volume. c) calculate compound units such as speed and density. d) solve reverse percentage problems.	All the steps below, and I can also... a) use corresponding, alternate and vertically opposite angles. b) calculate volume and surface area of simple 3-D solids. c) calculate interior angles of polygons. d) construct perpendicular and angle bisectors.	All the steps below, and I can also... a) calculate averages and range from a frequency table (grouped data). b) use of set notation

	e) calculate with standard form.				
5	All the steps below, and I can also... a) convert fluently between fractions, decimals and percentages. b) calculate any percentage increase and decrease. c) calculate percentage profit and loss. d) express numbers in prime factor form using index notation. e) carry out four operations with fractions, including mixed numbers. f) convert between standard form and ordinary numbers.	All the steps below, and I can also... a) substitute values into formulae. b) rearrange simple formulae to change the subject. c) construct and interpret straight-line graphs ($y = mx + c$). d) factorise expressions by taking out common factors. e) interpret gradient and intercept from graphs.	All the steps below, and I can also... a) interpret sharing ratio problems, e.g. when a difference is known. b) solve direct proportion (values increase or decrease at the same rate) problems using tables and graphs. c) solve unit pricing and scaling problems. d) convert between fractions, decimals, percentages and ratios.	All the steps below, and I can also... a) calculate surface area and volume of cubes and cuboids. b) convert between units of area and volume. c) calculate the area of trapezia. d) find area/perimeter of shapes involving semi and quarter-circles. e) calculate missing angles using known angle facts. f) carry out enlargement by a simple scale factor from a given centre.	All the steps below, and I can also... a) list outcomes systematically for one- and two-stage events. b) represent sample spaces using diagrams and tables. c) calculate averages and range from a frequency table (discrete data). d) calculate probabilities of mutually exclusive events (events that cannot happen together). e) calculate probability from Venn Diagrams, Frequency Trees and Two-way tables. f) draw frequency polygons. g) identify the relationship between variables of a scatter graph.
4	All the steps below, and I can also... a) apply order of operations (BIDMAS). b) recognise reciprocals. c) add and subtract fractions with different denominators. d) calculate simple percentage increase and decrease. e) express a quantity as one percentage of another. f) calculate simple interest. g) recognise simple recurring decimals as exact fractions (third, sixth, eighth) h) round to significant figures. i) use a calculator efficiently. j) carry out four operations with fractions, without mixed numbers.	All the steps below, and I can also... a) expand and simplify expressions with a single bracket. b) form and solve two-step linear equations. c) recognise and describe arithmetic sequences. d) find the mid-point of a line segment from 2 given coordinates on a given diagram. e) recognise and draw lines parallel to the axis ($y=a$, $x=a$). f) plot diagonal straight-line graphs from a table of values.	All the steps below, and I can also... a) interpret sharing ratio problems, e.g. when one part is known. b) calculate percentages to compare quantities. c) interpret values from a conversion graph that are not represented on the graph. d) simplify ratios with different units and decimals. e) represent a ratio in the form 1:n, or n:1.	All the steps below, and I can also... a) calculate the circumference of circles. b) calculate area of circles. c) calculate area and perimeter of composite shapes. d) classify 3-D shapes as prisms, or not. e) interpret nets of 3-D shapes. f) convert between units of time. g) carry out translation given a vector. h) carry out enlargement by a simple integer scale factor. i) carry out a rotation given angle, direction and centre.	All the steps below, and I can also... a) plan and carry out data collection. b) construct and interpret pie charts. c) compare distributions using averages and range (list of numbers) d) represent combined events using two-way tables, frequency trees and Venn diagrams. e) construct Stem and Leaf Diagrams. f) plot scatter graphs from a table of values. g) draw a line of best fit on a scatter graph. h) identify the correlation of a scatter graph.
3	All the steps below, and I can also... a) add and subtract decimals. b) multiply a decimal by an integer or decimal. c) divide a decimal by an integer. d) convert between mixed numbers and improper fractions. e) use estimation. f) round values to a given number of significant figures. g) compare and order decimals to 3 decimal places. h) use division to divide by more than single digit numbers. i) order fractions that have a different denominator.	All the steps below, and I can also... a) simplify expressions by collecting like terms with coefficients. multiplying terms with coefficients e.g. $2y \times 3y$ (same variable and different). b) expand single brackets $3(2x+5)$ and $3x(2x+5)$. c) solve one-step equations. d) solve one-step inequalities. drawing and interpreting number lines with an inequality. listing integers from a double inequality. e) find the mid-point of a line segment from 2 given coordinates on a given diagram.	All the steps below, and I can also... a) convert between fractions and ratios. b) use the unitary method to solve problems; e.g. 3 apples = 90p, how much are 5? sharing a total quantity into a given ratio. c) read from a given conversion graph.	All the steps below, and I can also... a) calculate area and perimeter of triangles and parallelograms, given all lengths. b) convert between metric units. c) identify 3D shapes from nets. d) recognise properties of 3-D shapes; vertices, edges, faces. e) recognise translation as a movement. f) recognise enlargement by a simple scale factor. g) find order of rotational symmetry.	All the steps below, and I can also... a) construct frequency tables (discrete and continuous) b) construct and interpret all types of bar chart and pictograms. c) compare data sets and Identify trends in data (including line graphs). d) select and draw appropriate graphs. e) complete two-way tables, frequency trees and Venn diagrams, when they are already given and started.

	j) find simple HCF and LCM from a list. k) use negative numbers in all four operations. l) find any percentage of an amount m) Recognise/identify cube roots.				
2	All the steps below, and I can also... a) use long multiplication. b) understand decimal place value, including money. c) round values to a given number of decimal places. d) add and subtract decimals (to 2 dp) e) recognise factors, multiples and prime numbers (up to 20). f) recognise square numbers, cube numbers and square roots. g) use division to divide by a single digit number. h) multiply and divide decimals by 10, 100, 1000. i) order, add and subtract negative numbers, includes in context. j) understand equivalent fractions. k) simplify and order fractions that have the same denominator. l) calculate fractions of a quantity. m) Add and subtract fractions with common denominators. m) Convert between simple fractions, decimals and percentages. n) Calculate simple percentages of amounts (50%, 25%, 10%, 5% and 1%). p) Use order of operations without indices (BIDMAS).	All the steps below, and I can also... a) describe patterns. b) write expressions from context. c) identify terms, coefficients and variables. d) plot and interpret coordinates in four quadrants. e) substitute positive values into simple expressions and formulae (can be using function machines). f) understand algebraic notation $ab = a \times b$ $3y = y+y+y = 3 \times y$ $a^2 = a \times a$; a^2b; a^3, etc. $a/b = a \div b$ brackets g) Listing integers from a single inequality.	All the steps below, and I can also... a) recognise and represent ratios using the : symbol. b) simplify ratios, integer only. c) express one quantity as a fraction of another. simple calculations involving the unitary method; e.g. 3 apples = 90p, how much is 1, or how much is a multiple of 3 apples?	All the steps below, and I can also... a) classify triangles and quadrilaterals. b) calculate area and perimeter of rectangles given all lengths. c) recognise parallel and perpendicular lines. d) recognise when rotational symmetry occurs. e) measure with standard units of length. f) measure and draw angles accurately. g) use correct notation for ‘naming’ angles – Angle BCD for example. tell the time.	All the steps below, and I can also... a) construct and interpret simple bar charts and pictograms. b) calculate averages and range from a small list of data. c) recognise that total probability adds up to 1. d) use the probability 0-1 scale. e) use simple fractions to describe probabilities.
1	I can... a) read, write, order and compare integers. b) use inequalities to compare two values. c) use place value for whole numbers and decimals. d) recall multiplication and division facts to 12×12. e) round whole numbers to the nearest 10, 100, 1000 f) carry out mental and short written $+$ $-$ $\times$ $\div$. g) round whole numbers to nearest 10, 100, 1000 h) multiply and divide whole numbers by 10, 100, 1000.	I can... a) recognise and continue simple patterns. b) use letters to represent unknowns. c) plot and interpret coordinates in the first quadrant.	I can... a) use multiplicative language such as double and half. b) describe simple ratios in words. c) recognise ratio and proportion (fraction) from a diagram.	I can... a) recognise and name 2-D and 3-D shapes. b) identify lines of symmetry. c) measure and draw lengths accurately. d) understand that an angle is a measure of turn. e) recognise acute, obtuse, right and reflex. f) read scales on measuring instruments. g) recognise standard units of length, mass, capacity and time. h) estimate everyday measures. i) find perimeter and area by counting squares.	I can... a) collect and organise data (tally). b) interpret simple charts: bar and pictogram. c) use probability language.

	i) add and subtract integers. j) recognise fractions in a diagram.				
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