Braunton Academy Maths Mastery KS3 Descriptors

	Number	Algebra	Ratio & proportion	Probability	Geometry	Data & Statistics
Emerging	Mentally recall number bonds of 10. Order numbers under 100. Solve number problems involving money & measures. Be able to use directed numbers in context.	Can recognise sequences including positive and negative numbers.	Simplify ratio.	List all the possible outcomes of one or two events. Calculate the probability for one event happening.	Know the mathematical names of 2D & 3D shapes and can describe their properties. Recognise angle as a measurement of turning. Know right angles.	Can sort objects and put into appropriate groups. Put data gathered into simple tables, diagrams and block graphs.
Developing	Understand place value under 1000 and can make approximations. Can work with decimals in measures & money. Can use column addition, subtraction, long multiplication and bus stop method division. Work out simple percentages. Perform calculations with negative numbers.	Can collect like terms to simplify an expression. Can solve an equation through substitution. Draw and interpret distance–time graphs.	Can solve simple problems with ratio. Can use non-standard units & standard metric units.	Can use tree diagrams to solve probability problems. Use experimental probabilities to predict outcomes.	Can find perimeters, capacity, mass & standard units of time in a range of context. Can reflect images. Calculate missing angles in triangles.	Can interpret bar & pie charts and simple graphs. Can construct charts & diagrams.
Securing	Calculate combinations of indices, fractions and brackets. Order numbers written in standard form. Solve problems using percentage change and rates of change using multipliers. Find the lower and upper bounds for a measurement. Prime factor decomposition.	Simplify expressions involving brackets, use rules for indices and factorise expressions. Change the subject of a formula. Construct and solve equations including brackets, powers and fractions. Solve linear equalities. Set up equations to show direct proportion. Find the nth term of a sequence.	Solve problems using ratio and scale factors. Understand that the scale factor is the ratio of the lengths of corresponding slides. Solve problems using constant rates and related formulae.	Can use experimental probabilities to predict outcomes. Be able to calculate the probability of two independent events. Use tree diagrams. Can list all the possible outcomes of one or two events in Venn diagrams, tables and sample space diagrams.	Enlarge 2D shapes using positive, negative & fractional scale factors. Make accurate constructions & nets using drawing equipment. Solve problems involving the area & circumference of a circle. Calculate the volume and surface area of a prism. Use sine, cosine and tangent ratios to find missing side lengths of right-angled triangles.	Choose a suitable sample size and what data to collect. Design and use data collection sheets and tables. Construct and use frequency polygons.
Extending	Calculate the lower and upper bound of areas and volumes. Use index laws with zero powers and fractional powers. Simplifying surds.	Solve linear equations and represent the solution on a number line. Change the subject of a formula with fractions. Solve more complex simultaneous equations. Understand and draw graphs of quadratic functions. Identify quadratic graphs and their features.	Set up & solve equations that show direct proportion.	Solve problems involving rates of change. Calculate density and pressure.	Work out the length of an arc. Work out the area of a sector. Use the interior angles of polygons to solve problems. Use sine, cosine and tangent ratios to find missing angles. Show that two triangles are congruent. Find missing lengths on similar shapes.	Understand how to reduce bias in sampling and questionnaires. Estimate the mean and range from a grouped frequency table. Draw and interpret stem and leaf diagrams and frequency polygons. Draw and interpret box plots. Draw & interpret cumulative frequency graphs for grouped data

Mastering	Use index laws with zero, negative and negative fractional powers and apply the laws in context. Use upper and lower bounds to solve complex problems.	Construct and solve complex equations. Solve problems with fractions in formulae. Solve simultaneous equations by drawing graphs. Solve inequalities that involve quadratic graphs. Use quadratic graphs to solve equations. Identify and draw graphs of reciprocal functions. Present a logical argument using algebra. Be able to find nth term in quadratics sequences.	Use algebra to solve problems involving direct & inverse proportion. Identify the difference between giving an example and proving a theory. Understand how to use mathematical proof.	Solve problems involving compound measures.	Solve problems involving arcs and sectors. Plot and sketch graphs of the trigonometric functions. Use the link between linear scale factor and area scale factor to solve problems.	Interpret statistics. Compare data using box plots. Construct and interpret histograms.