Broughton Hall Catholic High School — Key Stage 3 Descriptors

Maths - Year 9

	Emerging - a student whose understanding of the Y9 Maths skills is still emerging will be able to:	**Developing** - a student who is developing their Y9 Maths skills will be able to:	**Secure** - a student who is secure in the skills in the Y9 Maths curriculum will be able to:	**Exceeding** - a student who has exceeded the skills in the Y9 Maths curriculum will be able to:
Indices and standard form	Use powers of 10 Write small and large numbers using standard form	Use index laws to simplify expressions Understand zero and negative powers Enter and read standard form numbers on a calculator	Calculate combinations of indices, brackets, roots and fractions Estimate answers to calculations Understand numbers written in index form that are raised to a power Order numbers written in standard form	Exceeding in mathematics means pupils fully understand the topics taught. They can demonstrate full understanding in extensive practice. Work is checked to ensure it is of exemplary standard. They can choose the maths required to solve problems presented in a format they have never seen before. They find their own mistakes, and those of others, and devise strategies to minimise them in the future. Being able to verbalise using the correct mathematical language also displays a student who is exceeding in Maths.
Expressions and formula	Substitute values into expressions involving powers and roots	Write and solve equations with fractions Use BIDMAS when substituting into algebraic expressions Write formulae Simplify expressions involving brackets Factorise an expression by taking out an algebraic common factor	Write and solve equations with the unknown on both sides Use formulae Substitute into formulae and then solve equations to find unknown values Change the subject of the formula Multiply out double brackets and collect like terms	
Dealing with data	Identify sources of primary and secondary data Design and use data collection sheets and tables	Choose a suitable sample size and what data to collect Design a good questionnaire Estimate the mean from a	Identify factors that might affect data collection and plan to reduce bias Find the median from a	

		large set of grouped data Construct and use the line of best fit Draw line graphs to represent grouped data Draw back to back stem and leaf diagrams	frequency table Identify outliers and further lines of enquiry Write a report to show survey results	
Multiplicative reasoning	Enlarge 2D shapes using a positive whole number scale factor	Use a centre of enlargement Calculate percentage change Solve problems using compound measures Solve best buy problems	Find a centre of enlargement by drawing lines on a grid Understand scale factor as a ratio Use a negative and fractional scale factor Find the original value using inverse operations (percentage) Solve problems using constant rates Solve problems involving inverse proportion	Exceeding in mathematics means pupils fully understand the topics taught. They can demonstrate full understanding in extensive practice. Work is checked to ensure it is of exemplary standard. They can choose the maths required to solve problems presented in a format they have never seen before. They find their own mistakes, and those of others, and devise strategies to minimise them in the future. Being able to verbalise using the correct mathematical language also displays a student who is exceeding in Maths.
Constructions	Use scales on maps and diagrams	Construct and draw diagrams to scale	Make accurate constructions using drawing equipment including triangles and nets of solids Use scale diagrams to solve problems	
Sequences, inequalities, equations and proportion	Represent inequalities on a number line	Find and use the nth term of an arithmetic sequence Write formulae connecting variables in direct or inverse proportion	Recognise geometric and quadratic sequences Find integers that satisfy an inequality Construct and solve equations including fractions or powers Use algebra to solve problems involving direct or inverse	

			proportion	
Circles, Pythagoras and prisms	Calculate the circumference and area of a circle	Estimate calculations involving pi Find the length of an unknown side of a right angles triangle Calculate the volume and surface area of a right prism and a cylinder	Solve circumference and area of circle problems Solve problems involving right angled triangles Convert between m^3, cm^3 and mm^3 Find the lower and upper bounds for a measurement Calculate percentage error intervals	Exceeding in mathematics means pupils fully understand the topics taught. They can demonstrate full understanding in extensive practice. Work is checked to ensure it is of exemplary standard. They can choose the maths required to solve problems presented in a format they have never seen before. They find their own mistakes, and those of others, and devise strategies to minimise them in the future. Being able to verbalise using the correct mathematical language also displays a student who is exceeding in Maths.
Graphs		Draw a graph from its equation Solve simultaneous equations by drawing graphs Draw graphs with quadratic equations in the form $y = x^2$	Write the equation of a line parallel to another line Draw graphs with equations in the form $ax + by = c$ Be able to rearrange equations of graphs into the form $y = mx + c$ Solve simultaneous equation problems Interpret graphs of quadratic functions Draw and interpret graphs showing inverse proportion Draw and interpret non-linear graphs	
Probability	Identify mutually exclusive outcomes and events List outcomes in a sample space diagram Show possible outcomes in a two way table Draw Venn diagrams	Work out probabilities of mutually exclusive outcomes and events Calculate estimates of probability from experiments Calculate probabilities from a two way table	Decide whether a dice or spinner is biased Calculate probabilities from a Venn diagram	

Comparing shapes	Understand congruence Name the sides of a right angled triangle	Know if a shape is congruent or similar or neither245 Use trigonometrical ratios to calculate unknown sides and angles	Use congruent shapes to solve problems about triangles and other polygons Solve problems involving similar triangles Apply trigonometrical ratios to problems involving right angles	