Thomas More Catholic Academy
FAITH | EXCELLENCE | RESPECT

Maths Curriculum Sequence – Key Stage 3

Year 7 & 8

	KS2 National Curriculum prior learning	**By the end of the term, students can:**	Year 7 Term 1A - algebra	Year 7 Term 2A - Number	Year 7 Term 3A - Shape, Space Measures	Y8 - Term 1A - Multiplicative relationships	Y8 - Term 2A - Equations and Inequalities	Y8 - Term 3A - Shape, space and measures
What we want our students to know and remember	Skills that have taught at KS2 such as addition, subtraction, multiplication and division are typically unsecure on arrival to the academy by the students following this scheme. Time is spent securing these skills, and then developing other skills such as understanding of algebra to ensure students are making effective progress.	Define the key tier 3 **vocabulary**:	Sequence, Term, Position, Rule, Linear, Difference, Function, Operation, Inverse, Commutative, Substitute, Expression, Equality, Equation, Solution, Solve, Like	Multiple, Factor, Quotient, Dividend, Divisor, order of operations, Fraction, equivalent, percentage, commutative, associative, equation	Milli, centi, kilo, formula, area, perimeter, polygon, rotation, protractor, compass, scalene triangle, Isosceles triangle, vertically opposite, interior angles, right-angled triangle, quadrilateral, concave, sum	Ratio, Equal Parts, proportion, equivalent, factors, scale, variable, approximation, scale factor, currency, conversion, numerator, denominator, commutative, unit fraction, non-unit fraction, reciprocal	Simplify, substitute, equivalent, equation, coefficient, inequality, solution, solution set, sequence, term, linear, difference, base, power, exponent, indices	parallel, angle, transversal, isosceles, polygon, regular, irregular, area, perimeter, pi, formula, sector, reflect, rotate, symmetry, vertex
			Year 7 Term 1B - Number	Year 7 Term 2B - Number	Year 7 Term 2B - Number	Y8 - Term 1B - Graphical Representations and Measures	Y8 - Term 2B - Sequence, Fractions and Percentages, Standard Form	Y8 - Term 3B - Data Handling
			Approximate, Integer, Place holder, Place Value, significant figure, fraction, decimal, tenth, percentage, hundredth, recurring, commutative, associative, inverse, Balance, Credit, Debit	subtract, negative, product, square root, square, inverse, numerator, denominator, equivalent, mixed number, improper fraction, integer, factor, prime, conjecture, counterexample, Highest Common Factor (HCF), Lowest Common Multiple (LCM)	subtract, negative, product, square root, square, inverse, numerator, denominator, equivalent, mixed number, improper fraction, integer, factor, prime, conjecture, counterexample, Highest Common Factor (HCF), Lowest Common Multiple (LCM)	Quadrant, coordinate, origin, parallel, gradient, intercept, correlation, line of best fit, outlier, continuous, discrete, frequency, significant, round, over-estimate, under-estimate, metric, balance	percent, decimal, fraction, multiplier, reduce, grow, interest, equivalent, standard form, commutative, base, power, exponent, indices, negative	sampling, population, discrete, continuous, primary, secondary, mean, median, mode, range, frequency, outlier
What we want our students to know and remember		Recall the **knowledge**:	Year 7 Term 1A - algebra	Year 7 Term 2A - Number	Year 7 Term 3A - Shape, Space Measures	Y8 - Term 1A - Multiplicative relationships	Y8 - Term 2A - Equations and Inequalities	Y8 - Term 3A - Shape, space and measures
			In the start of their secondary maths journey we will begin with a fairly new topic. Algebra is taught in a limited capacity and this gives an opportunity for students to engage in a new topic, ironing out any misconceptions that may occur	We will continue to revisit familiar topics in the first half of the spring term. Initially looking at written methods of multiplication, and then applying these methods to fractions, percentages and properties of number. As before ensuring understanding of topics that underpin a number of further topics	We start this half term looking at measures. Ideas the students will have met in KS2 will be developed and some formal formulas introduced. During this unit they will look at areas of different 2D shapes. This will then progress into working with angles and construction. Formal notation will be introduced here, so that pupils work with this throughout KS3 and KS4. These	To start the term students will look into ratio. They will develop understanding of the notation and practical applications, drawing on their skills from prior units. This will then move onto proportion, strengthening the links between the two. This will include looking at similar shapes and scale drawings. We finish the term by looking at calculating with fractions - especially multiplication and division.	At this point, year 8 will revisit the work on equations that was completed in year 7. Initially this work will be consolidated before extending into more complicated equations. The connections to inequalities will also be explored - highlighting the similarities and differences.	At the start of this half term students take the knowledge they have on angles and apply it to different situations. This allows them to develop their understanding and appreciate a greater set of properties that can be used. Pupils progress onto a topic on area where they use prior understanding to develop the rules for more complex shapes. Students will finish this term by looking at different

					units will build on the prior learning from KS2.			transformations and how they affect shape properties
			Year 7 Term 1B - Number	Year 7 Term 2B - Number	Year 7 Term 2B - Number	Y8 - Term 1B - Graphical Representations and Measures	Y8 - Term 2B - Sequence, Fractions and Percentages, Standard Form	Y8 - Term 3B - Data Handling
			In the second half of the first term, we will revisit familiar topics. Here we will look at place value, ordering, fractions, decimals and percentages, addition and subtraction. This revisit of key primary topics will embed the students understanding and ensure a secure understanding of topics that underpin mathematics	In this half term, we start by introducing negative numbers and calculations with them. Whilst pupils will have met this in primary school, it will have been solely in contexts such as temperature and not as abstract numbers - which will be developed during this time. Work will then both onto calculations with fractions to ensure that there is a secure understanding of these methods. To finish this half term pupils will look at number properties. These topics will also provide an opportunity to revisit prior topics to continue to develop understanding across units.	In the final half term, we look at Handling data and probability. Pupils will be used to seeing some graphical representations from KS2, these will be revisited to ensure understanding is secure before being extended into representations that are not present in KS2. Different averages will be looked at discusses, and used to compare data. Following this we will look at probability, which pupils will have an idea about, and this will be used to formulise the processes involved.	At the start of this half term, year 8 will revisit algebra. They will be using skills that have been taught in year 7 to explore graphical relationships. This skill will be linked to the skills explored in ratio and proportion. The focus will then move onto move practical representations of graphical data such as scatter graphs, whilst emphasising the links to the algebraic graphs. We finish the term with a unit on measures, time and accuracy - allowing for a clear understanding in the practical world.	Having developed a greater understanding of algebra - sequence rules will be explored at much greater depth. The index laws will also be explored and developed using this developed skill. Year 8 will revisit the equivalence between fractions, decimals and percentages, before using this to develop more efficient methods of calculating percentages. An important skill that needs developing before exploring such ideas as compound interest. Finally, the work on place value that was completed in year 7 will be used to develop an understanding of standard index form	In the final term of year 8 topics of data handling and averages are revisited. The understanding is consolidated before extending further. This allows students to have a greater understanding and be able to apply this in a greater range of circumstances.
What we want our	Students will be secure with their understanding	Demonstrate excellence in these **skills**:	Year 7 Term 1A - algebra	Year 7 Term 2A - Number	Year 7 Term 3A - Shape, Space Measures	Y8 - Term 1A - Multiplicative relationships	Y8 - Term 2A - Equations and Inequalities	Y8 - Term 3A - Shape, space and measures

students to do	of basic number, and are able to practically apply their arithmetic skills to a variety of mathematical topics such as LCM, HCF, FDP, Algebra, Shape, Data, Statistics, Probability, Graphs and Angles.		Extend sequences and make predictions Understand function machines and the link to algebra Use formal algebraic notation Substitute into expressions Understand and solve equations	Understand the properties of multiplication Use Factors and multiples Use mental methods of calculation Use formal written methods of multiplication and divisions Use order of operations Find fractions of quantities Find percentages of quantities	Calculate with time Convert metric measures Understand and use perimeter Calculate area of a range of 2D shapes Use correct angle notation Use protractors for measuring and drawing angles Construct 2D shapes Use angle properties to calculate missing angles Understand and use the properties of parallel lines	Understand ratio notation Manipulate ratios Calculate with ratios Solve proportion problems Understand and use similarity Calculate with fractions	Understand algebraic notation Solve equations Understand inequalities Represent inequalities Solve inequalities	What properties do you know? What can you find out? How can you use this to find the next step? What rules can you develop? Are there alternate ways to solve this? What do you know about area? How can you develop this skill?
			Year 7 Term 1B - Number	Year 7 Term 2B - Number	Year 7 Term 2B - Number	Y8 - Term 1B - Graphical Representations and Measures	Y8 - Term 2B - Sequence, Fractions and Percentages, Standard Form	Y8 - Term 3B - Data Handling
			Order numbers, and decimals Round and estimate Begin to use standard form Convert between fractions, decimals and percentages Identify equivalent fractions Work with fractions decimals and percentages greater than 1. Use formal methods of addition and subtraction	Understand negative numbers Calculate with negative number Apply understanding of negative numbers Understand fractions Add and subtract with fractions Apply understanding to mixed numbers and improper fractions Identify prime factor decompositions Use prime factor decompositions Begin to make conjectures and use counter examples	Calculate and use the range Calculate averages compare using averages Understand bar-charts, pictograms, line graphs Use pie charts Understand probability language Calculate probabilities Use suitable listing strategies	Understand algebraic notation Use coordinates Identify patterns Draw conclusions Resent data Convert between different measures Calculate with different measure Understand accuracy of rounding	What pattern do you notice? How could you explain that algebraically? Can you use this form to solve problems? What is equivalent to...? How can you use this to solve...? Which method is easier without a calculator? Which method is quicker with a calculator? What does... represent? When might we use standard form	What does this represent? What conclusions can you draw? How confident are you with your conclusions? How do you calculate? What complications can you see? How can you error check your average?
Key assessment questions:			Year 7 Term 1A - algebra	Year 7 Term 2A - Number	Year 7 Term 3A - Shape, Space Measures	Y8 - Term 1A - Multiplicative relationships	Y8 - Term 2A - Equations and Inequalities	Y8 - Term 3A - Shape, space and measures
			How can you explain what comes next? Is there more than one possible answer? Can you justify your reasoning? What mistake has been made? Explain the formal process.	Which has the most factors? Which has the most multiples? is it possible to answer this question? What methods would you use? What is your estimate? Can you use estimates to spot mistakes? Explain to someone else the process used? How can you reverse this process?	How would you calculate...? What does the prefix... mean? What is the formula to find the area of...? What strategy did you use and is there an alternate? How do you know which scale to use? What angle property is relevant? What angle can you find?	How would you represent? Which are equivalent? How can you model the process? What method do you use? Can you identify errors? Explain the process to a friend	What method do I use? Can I use alternative strategies? Is there a different way to represent? How can we check your answer?	In this block of work prior understanding is used to demonstrate where new properties come from. This allows students to understand the interconnectedness of the mathematics discipline
			Year 7 Term 1B - Number	Year 7 Term 2B - Number	Year 7 Term 2B - Number	Y8 - Term 1B - Graphical Representations and Measures	Y8 - Term 2B - Sequence, Fractions and Percentages, Standard Form	Y8 - Term 3B - Data Handling

			What is equivalent to…? Justify why you think… Which is bigger, why? What mistake has been made?	What patterns do you notice? What strategies can you use to solve these problems? Are there alternate methods? Explain the process to a friend. Can you identify the mistake? Can you apply what you have learnt to...?	What does... represent? Which is better...? Why? Which representation is better to understand? Compare using... Which event is more likely? Which event would you choose?	What does... mean? How can ... be represented? What patterns can you observe How can you apply this understanding What concolusions can you draw? What strategies can you use? What clues are in the words?	At the start of this block of work we use the algebraic rigour developed previously to explain and identify patterns. We then look at refining prior number skills and ensuring that these can be used to make calculations more efficient. We also look at how place value is used in the science community.	This block of work has great importance. The use of graphs and data can be wide ranging across a number of subjects. This is also an important aspect of pupil's numerical literacy, and being able to participate in the world around us.
Disciplinary Rigour		What makes your subject different to other subjects? What are the expectations for students in your subject area in the KS3 National Curriculum?	Year 7 Term 1A - algebra	Year 7 Term 2A - Number	Year 7 Term 3A - Shape, Space Measures	Y8 - Term 1A - Multiplicative relationships	Y8 - Term 2A - Equations and Inequalities	Y8 - Term 3A - Shape, space and measures
			The understanding of algebraic notation and expressions is an important concept that will feed into other areas of maths and other subjects. Having these foundations is vital for future success.	This block of work continues the theme of being numerically literate. They need to be secure with both mental and written methods of calculation. They need to be confident with the principles of estimation so they can spot errors both in their calculations and with calculators.	This block of work looks at shape and angles - these are distinct areas of maths which infrequently cross into other areas. The development of these skills however is important to access more complex geometric properties. The unit on measures, however, offers a very real cross over into real life.	This unit focuses on an area of maths (ratio and proportion) that is one of the most common 'real' world maths areas. This unit seeks to mix the practical and abstract representations of ratio and proportion so students are confident with calculating	In this unit algebraic rigour will be developed. It is important to have this method secure as without this understanding further work on equations and solutions will be undermined.	This unit explores the abstract nature of shape and allows pupils explore different problems. There will be an opportunity to explore the beauty of shape and patterns. They will also look at practical measurements, which will be needed in a wide range of careers.
			Year 7 Term 1B - Number	Year 7 Term 2B - Number	Year 7 Term 2B - Number	Y8 - Term 1B - Graphical Representations and Measures	Y8 - Term 2B - Sequence, Fractions and Percentages, Standard Form	Y8 - Term 3B - Data Handling
			This unit is a key part of being numerically literate. By understanding equivalences and place value - this will allow students to access numerical content to a greater degree	In this block of work, we look at the more abstract ideas such as calculating with negative numbers. This will allow pupils to access the work in further years without barriers forming from not understanding these concepts.	In the block on data, students are taught the skills that they will be using across different subjects when looking at graphs. Pupils will begin to make judgements using averages and graphs. Probability is unique for maths in that we formulise the language of probability.	This unit looks at both very abstract and real-world representations and draws the connections between them. Pupils should therefore gain a greater understanding of the relevance of the abstract form, which should fuel further curiosity. Understanding different measures is a key (but often overlooked) skill that can impact on many different areas	In this block of learning students are taught how to use prior skills to simplify and explain calculations. This will improve student's efficiency with different mathematically understanding	In the block on data, students are taught the skills that they will be using across different subjects when looking at graphs. They will develop an understanding that is leaned on, across the curriculum, and outside of the classroom. Pupils will begin to make judgements using averages and graphs which will have a real-world impact.