

Medium Term Planning Document: Maths Year 8

Maths Curriculum Intent:

The Northampton Academy curriculum enables all of our students to thrive and to enjoy learning mathematics. When students start in year 7, we ensure they have the building blocks needed to successfully access and succeed in the secondary curriculum. We prioritise developing students' proficiency in number, geometry and algebra. Topics are regularly revisited and built upon throughout Key Stage 3, for example algebraic manipulation is taught in year 7 and then extended in years 8 and 9 through solving equations and further again when applied to angles problems which require students to create and solve equations.

Students develop an appreciation for the wider uses of mathematics. Not only are they exposed to concepts that they will apply in other subjects in school, but they will also develop the financial and literacy skills required to function successfully in the modern world. Students will be able to read and interpret statistics, they will consider the validity and reliability of the data and be able to question and form a logical argument based upon it. We also aim to show students the historical and cultural influences that maths has had on the world around them.

At Key Stage 4 we aim to add to the foundations that pupils have laid during KS3 by developing both their subject knowledge and the skills needed to solve complex, multi-faceted problems. For example, ratio is introduced in year 8 but revisited in year 10 where students are encouraged to apply this knowledge to increasingly difficult problems.

Students develop their confidence and resilience by being taught difficult concepts in depth, they experience a high volume of practise of these difficult concepts and embrace the fact that they will go wrong at times and will learn from their mistakes. At all points during their mathematics education, students are supported and encouraged to be resilient and independent learners who take responsibility for their education, for example through their revision and home learning. We aim to develop ambitious learners who want to study the subject at Key Stage 5 and beyond.

Students who choose to study Mathematics at a post 16 level have different options including Maths Studies, A Level Maths and A Level Further Maths. Whichever option is chosen, students will learn advanced skills and become increasingly independent mathematicians capable of applying their knowledge in increasingly complex and varied situations.

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The Medium Term Planning document below is designed to show the journey that every student takes through our curriculum. Some elements of the curriculum may be taught over several lessons, others in a single lesson.

Maths	Year 8 - Half Term 1		
Topic	Content	Formative Assessments?	
8.01 – Powers and Roots	Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5, 10 and distinguish between exact representations of roots and their decimal approximations	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117649 https://curriculum.unitedlearning.org.uk/Pupil?r=117650 https://curriculum.unitedlearning.org.uk/Pupil?r=117651 https://curriculum.unitedlearning.org.uk/Pupil?r=117652
	Key words: Index notation, square, square root, cube, cube root, indices,		
8.02 – Prime Factorisation	Use the concepts and vocabulary of prime numbers, factors (or divisors), common factors, prime factorisation, including using product notation and the unique factorisation property	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117653 https://curriculum.unitedlearning.org.uk/Pupil?r=117654 https://curriculum.unitedlearning.org.uk/Pupil?r=117655 https://curriculum.unitedlearning.org.uk/Pupil?r=117656
	Key words: multiple, factor, prime, LCM, HCF, prime factor decomposition		
8.04 – Fractions	Multiply and divide fractions and mixed numbers	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117660 https://curriculum.unitedlearning.org.uk/Pupil?r=117661 https://curriculum.unitedlearning.org.uk/Pupil?r=117662 https://curriculum.unitedlearning.org.uk/Pupil?r=117663 https://curriculum.unitedlearning.org.uk/Pupil?r=117664 https://curriculum.unitedlearning.org.uk/Pupil?r=117665
	Key words: numerator, denominator, proper fraction, mixed number, improper fraction, simplify, equivalent, integer,		
8.03 – Rounding to Significant Figures	Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117657 https://curriculum.unitedlearning.org.uk/Pupil?r=117658 https://curriculum.unitedlearning.org.uk/Pupil?r=117659
	Key words: round, decimal place, significant figure, estimate, underestimate, overestimate		

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Maths	Year 8 – Half Term 2		
Topic	Content	Formative Assessments?	Link(s) to an example lesson
8.05 – Solving Linear Equations	Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117670 https://curriculum.unitedlearning.org.uk/Pupil?r=117671 https://curriculum.unitedlearning.org.uk/Pupil?r=117672 https://curriculum.unitedlearning.org.uk/Pupil?r=117673 https://curriculum.unitedlearning.org.uk/Pupil?r=117674 https://curriculum.unitedlearning.org.uk/Pupil?r=117675 https://curriculum.unitedlearning.org.uk/Pupil?r=117676 https://curriculum.unitedlearning.org.uk/Pupil?r=117677
	Key words: Inverse operation, variable, coefficient, term, collect like terms, expression, equation, linear		
8.06 – Forming and Solving Equations	Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117678 https://curriculum.unitedlearning.org.uk/Pupil?r=117679 https://curriculum.unitedlearning.org.uk/Pupil?r=117680 https://curriculum.unitedlearning.org.uk/Pupil?r=117681 https://curriculum.unitedlearning.org.uk/Pupil?r=117682 https://curriculum.unitedlearning.org.uk/Pupil?r=117683 https://curriculum.unitedlearning.org.uk/Pupil?r=117684
	Key words: Inverse operation, variable, coefficient, term, collect like terms, expression, equation, linear		
8.07 – Coordinates and Basic Graphs	Coordinates and exploring algebraic relationships	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117685 https://curriculum.unitedlearning.org.uk/Pupil?r=117686 https://curriculum.unitedlearning.org.uk/Pupil?r=117687 https://curriculum.unitedlearning.org.uk/Pupil?r=117688 https://curriculum.unitedlearning.org.uk/Pupil?r=117689
	Key words: Coordinate, axis, plot, equation		

Summative Assessment:

Pupil Mid-Year Assessments will take place at the end of half term 2. These will cover all content taught in the first 2 half terms. This assessment will inform pupil Rank Order in the subject.

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Maths		Year 8 – Half Term 3	
Topic	Content	Formative Assessments?	Link(s) to an example lesson
8.08 – Units of Measure	Use standard units of mass, length, time, money and other measures, including with decimal quantities	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117690
			https://curriculum.unitedlearning.org.uk/Pupil?r=117691 https://curriculum.unitedlearning.org.uk/Pupil?r=117692 https://curriculum.unitedlearning.org.uk/Pupil?r=117693 https://curriculum.unitedlearning.org.uk/Pupil?r=117694 https://curriculum.unitedlearning.org.uk/Pupil?r=117695 https://curriculum.unitedlearning.org.uk/Pupil?r=117696
8.09 – Angles in Parallel Lines	Understand and use the relationship between parallel lines and alternate and corresponding angles	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117697
			https://curriculum.unitedlearning.org.uk/Pupil?r=117698 https://curriculum.unitedlearning.org.uk/Pupil?r=117699 https://curriculum.unitedlearning.org.uk/Pupil?r=117700 https://curriculum.unitedlearning.org.uk/Pupil?r=117701 https://curriculum.unitedlearning.org.uk/Pupil?r=117772
Key words: Parallel lines, vertically opposite angles, alternate angles, corresponding angles, co-interior angles			
8.10 – Interior and Exterior Angles	To calculate interior and exterior angles of (regular) polygons, find the total angle sum of a given polygon.	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117703
			https://curriculum.unitedlearning.org.uk/Pupil?r=117704 https://curriculum.unitedlearning.org.uk/Pupil?r=117705 https://curriculum.unitedlearning.org.uk/Pupil?r=117706
8.11 – Circumference	Calculate and solve problems involving perimeters of 2-D shapes (including circles) and composite shapes	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions Key words: diameter, radius, chord, tangent, arc, sector, segment, circumference, pi, revolution	https://curriculum.unitedlearning.org.uk/Pupil?r=117707
			https://curriculum.unitedlearning.org.uk/Pupil?r=117708 https://curriculum.unitedlearning.org.uk/Pupil?r=117709 https://curriculum.unitedlearning.org.uk/Pupil?r=117710 https://curriculum.unitedlearning.org.uk/Pupil?r=117711

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Maths	Year 8 – Half Term 4		
Topic	Content	Formative Assessments?	Link(s) to an example lesson
8.12 – Proportional Reasoning	Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117712 https://curriculum.unitedlearning.org.uk/Pupil?r=117713 https://curriculum.unitedlearning.org.uk/Pupil?r=117714 https://curriculum.unitedlearning.org.uk/Pupil?r=117715
8.13 – Fraction, Decimals and Percentages	Solve problems involving percentage change	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117716 https://curriculum.unitedlearning.org.uk/Pupil?r=117717 https://curriculum.unitedlearning.org.uk/Pupil?r=117718 https://curriculum.unitedlearning.org.uk/Pupil?r=117719 https://curriculum.unitedlearning.org.uk/Pupil?r=117720 https://curriculum.unitedlearning.org.uk/Pupil?r=117721 https://curriculum.unitedlearning.org.uk/Pupil?r=117722 https://curriculum.unitedlearning.org.uk/Pupil?r=117723 https://curriculum.unitedlearning.org.uk/Pupil?r=117724 https://curriculum.unitedlearning.org.uk/Pupil?r=117725
8.14 – Ratio	Divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117726 https://curriculum.unitedlearning.org.uk/Pupil?r=117727 https://curriculum.unitedlearning.org.uk/Pupil?r=117728 https://curriculum.unitedlearning.org.uk/Pupil?r=117729 https://curriculum.unitedlearning.org.uk/Pupil?r=117730 https://curriculum.unitedlearning.org.uk/Pupil?r=117731 https://curriculum.unitedlearning.org.uk/Pupil?r=117732 https://curriculum.unitedlearning.org.uk/Pupil?r=117733

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Maths		Year 8 – Half Term 5	
Topic	Content	Formative Assessments?	Link(s) to an example lesson
8.15 – Area of Circles and Trapezia	Derive and apply formulae to calculate and solve problems involving area of triangles, parallelograms, trapezia and (part)circles	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117734 https://curriculum.unitedlearning.org.uk/Pupil?r=117735 https://curriculum.unitedlearning.org.uk/Pupil?r=117736 https://curriculum.unitedlearning.org.uk/Pupil?r=117737 https://curriculum.unitedlearning.org.uk/Pupil?r=117738 https://curriculum.unitedlearning.org.uk/Pupil?r=117739 https://curriculum.unitedlearning.org.uk/Pupil?r=117740 https://curriculum.unitedlearning.org.uk/Pupil?r=117741
8.16 – Presenting and Interpreting Data	Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts and vertical line (or bar) charts for ungrouped and grouped numerical data	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117742 https://curriculum.unitedlearning.org.uk/Pupil?r=117743 https://curriculum.unitedlearning.org.uk/Pupil?r=117744 https://curriculum.unitedlearning.org.uk/Pupil?r=117745 https://curriculum.unitedlearning.org.uk/Pupil?r=117746 https://curriculum.unitedlearning.org.uk/Pupil?r=117747 https://curriculum.unitedlearning.org.uk/Pupil?r=117748 https://curriculum.unitedlearning.org.uk/Pupil?r=117749
8.17 – Averages	Describe, interpret and compare observed distributions of a single variable through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117748 https://curriculum.unitedlearning.org.uk/Pupil?r=117749 https://curriculum.unitedlearning.org.uk/Pupil?r=117750 https://curriculum.unitedlearning.org.uk/Pupil?r=117751 https://curriculum.unitedlearning.org.uk/Pupil?r=117752 https://curriculum.unitedlearning.org.uk/Pupil?r=117753

Summative Assessment:

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Pupil End of Year Assessments will take place at the start of half term 6. These will cover all content taught in the first 5 half terms. This assessment will inform pupil Rank Order in the subject. As well as the content listed below, there is an expectation that staff will work with pupils to improve knowledge in areas of weakness identified in the summative assessments. This may include in school and out of school intervention, and collaborative and independent study.

Maths	Year 8 – Half Term 6		
Topic	Content	Formative Assessments?	Link(s) to an example lesson
8.18 – 3D Visualisation	Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117754 https://curriculum.unitedlearning.org.uk/Pupil?r=117755
8.19 – Volume	Derive and apply formulae to calculate and solve problems involving volume of cuboids (including cubes) and other prisms (including cylinders), cones, spheres and pyramids	Mini WB formative assessment in lessons Bell Work (starter booklet) Exam style questions	https://curriculum.unitedlearning.org.uk/Pupil?r=117756 https://curriculum.unitedlearning.org.uk/Pupil?r=117757 https://curriculum.unitedlearning.org.uk/Pupil?r=117758 https://curriculum.unitedlearning.org.uk/Pupil?r=117759