

Long Term Plan & Curriculum Intent Maths 2021 2022

SUBJECT: Maths – North Durham Academy



Subject Mission Statement

For students to enjoy maths and to gain transferable skills such as problem solving and logic. We want our learners to be fluent in the fundamentals of mathematics, be able to reason mathematically and apply problem solving to contexts where mathematical concepts are linked together in unseen ways. We want our students to understand the fundamental elements of maths that they will need in their adult life when they leave the academy. Maths is needed for all students to move onto their next stage of life once they leave year 11. There are a number of jobs that rely on mathematical knowledge and skills such as game designers, nutritionists, hair dressers, accountants and sports coaches.

Key Stage 3

Related Documents

- [National Curriculum KS3](#)
- MTP's:
 - o Year 7 : [U:\Learning Directorates\Maths\SOW 2020 2021\years 7 8 and 9\year 7](#)
 - o Year 8 : [U:\Learning Directorates\Maths\SOW 2020 2021\years 7 8 and 9\year 8](#)

Curriculum Intent – Key Stage 3		Aims – National Curriculum				
<ul style="list-style-type: none"> • For students to be fluent in the skills of mathematics • For students to be able to apply mathematical reasoning to develop understanding • For students to be able to apply problem solving to mathematical concepts that are connected together in new ways 		<ul style="list-style-type: none"> • become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. • reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language • can solve problems by applying their mathematics to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. 				
Year 7	Autumn 1:	Autumn 2:	Spring 1:	Spring 2:	Summer 1:	Summer 2:
	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Place value Operations Understanding number sequences</p> <p>Skills: Reasoning e.g. why is 103 not a term in the sequence $5n + 1$</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Perimeter, area and volume decimals</p> <p>Skills: Reasoning e.g. explain why 8.92 is smaller than 8.95</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Working with number algebra</p> <p>Skills: Reasoning e.g. are $3x - 4$ and $-4 + 3x$ equivalent? Explain why</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Fractions Angles probability</p> <p>Skills: Reasoning e.g. why is $\frac{3}{4}$ larger than $\frac{1}{2}$? Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Statistics ratio</p> <p>Skills: Reasoning e.g.</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Percentages Coordinates and graphs Interpreting data</p> <p>Skills: Reasoning e.g. What is the same and what is different between these two methods for calculating a percentage of an amount:</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>
	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Understanding number Surface and volume percentages</p> <p>Skills: Reasoning e.g. does division always make the answer smaller? Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Geometry algebra</p> <p>Skills: Reasoning e.g. Brian says that enlarging a shape creates congruent shapes. Explain why Brian is wrong.</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Standard form and significant figures Interpreting data fractions</p> <p>Skills: Reasoning e.g. what is the same and what is different about the mode and the median?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Proportion Direct and inverse proportion</p> <p>Skills: Reasoning e.g. what is the same and what is different between sharing into a given ratio and finding fractions of amounts?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Circles Equations and formulae</p> <p>Skills: Reasoning e.g. what is the same and what is different between a diameter and a radius?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit test (can be found in MTP)</p> <p>Knowledge: Probability Comparing data</p> <p>Skills: Reasoning e.g. if a coin is flipped 50 times and lands on heads 39 times, is the coin biased? Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>

Key Stage 4

Related Documents

- [National Curriculum KS4](#)
- MTP's:
 - o Year 9 : [U:\Learning Directorates\Maths\SOW 2020 2021\years 7 8 and 9\Year 9](#)
 - o Year 10 : [U:\Learning Directorates\Maths\SOW 2020 2021\Year 10 SOW](#)
 - o Year 11 : [U:\Learning Directorates\Maths\SOW 2020 2021\Year 11 SOW](#)

Curriculum Intent – Key Stage 4		Aims – National Curriculum				
<ul style="list-style-type: none"> • For students to be fluent in the skills of mathematics • For students to be able to apply mathematical reasoning to develop understanding • For students to be able to apply problem solving to mathematical concepts that are connected together in new ways 		<ul style="list-style-type: none"> • become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. • reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language • can solve problems by applying their mathematics to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. 				
Year 9	Autumn 1:	Autumn 2:	Spring 1:	Spring 2:	Summer 1:	Summer 2:
	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Percentages Equations and formulae polygons</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Linear and real life graphs Pythagoras probability</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Using data Applications of graphs</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Manipulating quadratics fractions</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Standard form and bounds Trigonometry</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Linear, quadratics and cubic graphs</p>

	<p>Skills: Reasoning e.g. what is the same and what is different about expanding brackets and factorising an expression?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Skills: Reasoning e.g. is a triangle with sides 3cm, 4cm and 5cm right angled? Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Compound measures</p> <p>Skills: Reasoning e.g. What is the same and what is different between using the formula for compound units or using the unitary method?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Skills: Reasoning e.g. is $(x+1)(x-3)$ equivalent to $(x-3)(x+1)$? Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Skills: Reasoning e.g. How can you determine when you can use Pythagoras' theorem on right angled triangles and when you have to use trigonometry?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Skills: Reasoning e.g. will $x^2 + 5x + 6$ create the same graph as $x^2 + x - 6$? Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>
Year 10	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Using number Fractions and percentages Statistical diagrams and averages Sequences</p> <p>Skills: Reasoning e.g. explain how you know that a fraction has been fully simplified.</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Ratio and proportion Angles</p> <p>Skills: Reasoning e.g. are the following ratios the same? 3:1 and 1:3. Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Transformations, constructions and loci Algebraic manipulation</p> <p>Skills: Reasoning e.g. what is the same and what is different between congruent shapes and similar shapes?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Length, area and volume Circles and sectors</p> <p>Skills: Reasoning e.g. what is the same and what is different about area and volume?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Linear graphs Right angled triangles</p> <p>Skills: Reasoning e.g. Are the lines $y = 2x + 1$ and $y = 2x - 3$ parallel? Explain your answer</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Similarity Exploring and applying probability</p> <p>Skills: Reasoning e.g. what is the same and what is different about sample space diagrams and tree diagrams?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>
Year 11 HIGHER PATHWAY ONLY FOUNDATION PATHWAY REVIEW	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Foundation Powers and standard form Equations and inequalities</p> <p>HIGHER Higher students will complete all of the foundation chapters by summer of year 10 Statistics: sampling and more complex diagrams Probability: combined events Properties of circles</p> <p>Skills: Reasoning e.g. What are the advantages and disadvantages to using stratified sampling?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: Foundation Counting, accuracy, powers and surds Quadratic equations</p> <p>HIGHER Ratio, proportion and rates of change Further trigonometry</p> <p>Skills: Reasoning e.g. what is the same and what is different between direct and inverse proportion?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: HIGHER Graphs Transformation of graphs Algebraic fractions and functions</p> <p>Skills: Reasoning e.g. does it matter in which order you transform a graph? E.g. does it matter if I stretch it before I translate it?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task: End of unit tests (can be found in MTPS)</p> <p>Knowledge: HIGHER vectors</p> <p>Skills: Reasoning e.g. what is the same and what is different between these vectors and the vectors used to translate shapes?</p> <p>Problem solving</p> <p>Exam skills – BUG the question</p>	<p>Assessment Task:</p> <p>Knowledge:</p> <p>Skills:</p>	<p>Assessment Task:</p> <p>Knowledge:</p> <p>Skills:</p>