

## **MATHEMATICS - CURRICULUM INTENT**

### **ASPIRE – CHALLENGE - ACHIEVE**

The vision of the Mathematics department at Giles Academy is underpinned by the whole school ethos of “Aspire, Challenge, Achieve”. Students follow an aspirational flight path which prepares them effectively for their next stage of study, allowing them to be successful whatever their level of ability. Students are supported to develop a mind-set such that they can face Mathematical challenges with confidence. We aim for this confidence to be a lasting legacy in their use of Mathematics throughout their lives.

Opportunities for regular recap, assessment and review form a significant part of our curriculum intervention. This ensures mastery of key objectives. The key objectives in Maths have been selected in order to ensure progression from one stage to the next. Mastery of the key objectives ensures that students are well prepared to tackle the demands of the next stage. Our curriculum is well balanced across the four main areas of Mathematics which enables students to make connections between different mathematical ideas. Lessons are sequenced appropriately such that students build upon their knowledge and skills systematically over time.

Throughout all key stages regular curriculum intervention ensures that students make at least their expected progress with many students exceeding expected progress. Our intervention weeks are mapped into the scheme of work and are based on the outcomes of assessments. This strategy is highly valued by both staff and students and there is evidence that it has a positive impact on progress.

Students are encouraged to become independent learners and are provided with extensive opportunities to embed their skills outside of the classroom. Weekly extra-curricular support is offered to all students irrespective of their ability but aspiring to be successful in Mathematics.

The number of Mathematics lessons students receive per week varies in order to meet the differing needs of students. Extra lessons allow time to consolidate the concepts taught and prepare students for the demands of our curriculum. Students are prepared to be Mathematically articulate using subject vocabulary in a range of contexts. Our varied and structured approach to teaching and learning develops resilience, reasoning and recall. This is achieved through starters, problem solving, key assessed work and formal assessments.

Aspirational targets combined with an appropriate level of challenge ensure that every student is provided with the skills they need in order to achieve success in their study of Mathematics at Giles Academy.

## MATHEMATICS – CURRICULUM MAP

### Key Stage 3

Year 7	2 - 4	4 - 6	6 - 7	7 - 9
Year 8	2 - 4	4 - 6	6 - 7	7 - 9

### Key Stage 4

Year 9	Foundation B	Foundation A	Higher B	Higher A
Year 10	Foundation B	Foundation A	Higher B	Higher A
Year 11	Foundation B	Foundation A	Higher B	Higher A

### Key Stage 5

Year 12	Pure	Mechanics	Statistics
Year 13	Pure	Mechanics	Statistics

# MATHEMATICS: SKILLS / KNOWLEDGE PROGRESSION BY THEMES

Key = Matching colours denote links between topics either in content or skills across Key Stage 3 and 4

	Number		Geometry and Measure
	Ratio and Proportion		Statistics
	Algebra		Probability

<b>Year 7</b>		
<b>Year 7 Flightpath 2-4</b>	<b>Year 7 Flightpath 4-6</b>	<b>Year 7 Flightpath 6-7 and 7-9</b>
Angles	Angles	Angles
Numbers and the Number System	Numbers and the Number System	Numbers and the Number System
Transformations	Transformations	Transformations
Sequences	Presenting Data	Constructions
Addition and Subtraction	Ratio and Proportion	Negative Numbers
Multiplication and Division	Multiplication and Division	Algebraic Proficiency
Data	Rounding	Presenting Data
Metric Units	Averages	Units of Measure
Fractions	Algebraic Proficiency	Fractions/Decimals/Percentages
Fractions, Decimals and Percentages	Negative Numbers	Calculating
Negative Numbers	Transformations	Averages
Exploring Time	Fractions/Decimals/Percentages	Solving Equations
Rounding	Calculating Fractions and Percentages	Ratio and Proportion
Transformations	Units of Measure	Angles
Angles	Shape	Arithmetic with Fractions
3D Shapes	Equations	Properties of Shape
Calculating Space	Arithmetic with Fractions	Percentages
	Sequences	Estimation
	Calculating Space	Calculating Space

## Year 8

Year 8 Flightpath 2 - 4	Year 8 Flightpath 4 - 6	Year 8 Flightpath 6 - 7 and 7 - 9
Addition and Subtraction	Properties of Shape	Measuring Data
Multiplication and Division	Negative Numbers	Algebraic Proficiency
2D and 3D Shapes	Decimal Arithmetic	Circles
Algebraic Proficiency	Sequences	Negative Numbers
Angles	Fractions/Decimals/Percentages	Presenting Data
Data	Presenting Data	Angles
Sequences	Units of Measure	Equations
Negative Numbers	Algebraic Proficiency	Estimation
Factors and Multiples	Averages	Fractions/Decimals/Percentages
Powers of Ten	Equations	Formulae
Equations	Rounding	Ratio and Proportion
Properties of Shapes	Constructions	Probability
Fractions/Decimals/Percentages	Ratio and Proportion	Transformations
Units of Measure	Area and Volume	Bearings
Averages	Arithmetic with Fractions	Graphs
Calculating Space	Powers and Roots	Standard Form
Fractions	Angles	Sequences
Transformations	Calculating FDP	Number Recap
Ratio and Proportion	Transformations	Algebra Recap
Rounding		

*By the end of KS3, students will become fluent in the fundamentals of Mathematics. Pupils will have developed a conceptual understanding and the ability to recall and apply knowledge. Students will be able to reason Mathematically, and develop an argument, justification or proof using Mathematical language. Students will begin to make connections across the six areas of Mathematics, as well as being able to apply their knowledge across other areas of the curriculum.*

# Year 9

Year 9 Foundation B	Year 9 Foundation A	Year 9 Higher B	Year 9 Higher A
Basic Number	Basic Number	Basic Algebra	Basic Algebra
Factors and Multiples	Angles	Angles	Basic Number
Basic Algebra	Basic Algebra	Basic Number	Decimals and Fractions
Basic Decimals	Decimals and Fractions	Decimals and Fractions	Angles
Rounding	Equations	Coordinates & Linear Graphs	Coordinates & Linear Graphs
Angles	Rounding	Percentages	Sequences
Scale Drawings and Bearings	Coordinates & Linear Graphs	Equations	Percentages
Coordinates & Linear Graphs	Percentages	Properties of Polygons.	Collecting and Representing Data
Basic Fractions	Ratio and Proportion	Scatter Graphs	Equations
Perimeter and Area	Perimeter and Area	Perimeter and Area	Perimeter and Area
Percentages	Standard Form	Rounding	Scatter Graphs
Circumference and Area	Scatter Graphs	Real Life Graphs	Rounding
Equations	Circumference and Area	Circumference and Area	Circumference & Area
Scatter Graphs	Construction and Loci	Standard Form	Transformations
Probability	Probability	Collecting and Representing Data	Ratio and Proportion
2D Representation of 3D Solids	Properties of Polygons	Scale Drawings and Bearings	Standard Form
Ratio and Proportion	Real Life graphs	Constructions and Loci	Scale Drawings and Bearings
Properties of Polygons	Scale Drawings and Bearings	Ratio and Proportion	Real Life Graphs
	2D representation of 3D Shapes	Indices	Constructions and Loci
	Sequences	Measures	Measures
			Indices

# Year 10

Year 10 Foundation B	Year 10 Foundation A	Year 10 Higher B	Year 10 Higher A
Calculating with Percentages	Sequences	Sequences	Calculating with Percentages
Measures	Pythagoras Theorem	Indices	Measures
Indices	Calculating with Percentages	Calculating with Percentages	Surds
Collecting and Representing Data	Measures	Surds	Statistical Measures
Statistical Measures	Indices	Algebra Recap and Review	Pythagoras Theorem and Basic Trigonometry
Algebra Recap and Extension	Collecting and Representing Data	Collecting and Representing Data	Indices
Transformations	Review of Basic Probability	Pythagoras Theorem and Basic Trigonometry	Congruence and Similarity
Review of Basic Probability	Further Perimeter and Area	Number Recap and Review	Number Recap and Review
Further Perimeter and Area	Algebra Recap and Extension	Perimeter and Area	Properties of Polygons
Further Area and Circumference	Statistical Measures	Circumference and Area	Algebra Recap and Review
Graphs Recap and Extension	Graphs Recap and Extension	Growth and Decay	Algebra- Introduction to Quadratics and Rearranging Formulae
Constructions and Loci	Further Area and Circumference	Algebra- Introduction to Quadratics and Rearranging Formulae	Probability
Real Life Graphs	Probability	Measures	Statistics Recap and Review
Review of Ratio and Proportion	Introduction to Trigonometry	Simultaneous Equations	Sketching Graphs
	Simultaneous Equations	Transformations	Volume
	Transformations	Statistical Measures	Simultaneous Equations
	Review of Ratio & Proportion	Inequalities	Geometry & Measures Recap and Review
	Algebra- Quadratics, Rearranging Formulae and Identities	Volume	Linear and Quadratic Equations and their Graphs

# Year 11

Year 11 Foundation B	Year 11 Foundation A	Year 11 Higher B	Year 11 Higher A
Volume	Volume	Algebra-Further Quadratics, Rearranging Formulae and Identities	Algebra-Further Quadratics, Rearranging Formulae and Identities
Sequences	Algebra and Graphs	Further Equations and Graphs	Trigonometry Recap and Review
Inequalities	Congruence and Similarity	Geometry and Measures Recap and Review	Growth and Decay
Pythagoras Theorem	Sketching Graphs	Trigonometry Recap and Review	Vectors
Algebra and Graphs	Direct and Inverse Proportion	Equation of a Circle	Further Equations and Graphs
Quadratic Graphs	Inequalities	Linear and Quadratic Equations and their Graphs	Direct and Inverse Proportion
Sketching Graphs	Trigonometry	Probability	Equation of a Circle
Standard Form	Growth and Decay	Stats Recap and Review	Inequalities
	Solving Quadratic Equations	Vectors	Further Sketching Graphs
	Quadratic Graphs	Further Sketching Graphs	Algebraic Fractions
	Vectors	Sine and Cosine Rules	Sine and Cosine Rules
		Transforming Functions	Transforming Functions
		Circle Theorems	Circle Theorems
		Direct and Inverse Proportion	Gradients and Rates of Change
			Pre-Calculus and Area under a Curve
		Numerical Methods	

*By the end of KS4, students will have developed fluent knowledge, skills and understanding of Mathematical methods and concepts. They will have acquired problem solving skills, enabling them to select the correct Mathematical techniques required. They will be able to interpret and communicate Mathematical information in a variety of forms, and be able to use and evaluate Mathematical models. Students will be fluent in the selection and application of a variety of Mathematical formulae, and will be well prepared for further Mathematical study.*

## MATHEMATICS: WIDER CURRICULUM

KS3	KS4	KS5
Junior Maths Challenge STEM week	Intermediate Maths Challenge	Senior Maths Challenge
Discussion of current Mathematical advances/news articles Lunch & after school intervention / Easter & May holiday revision sessions <i>See separate Curriculum Intervention &amp; SMSC Audits for contributions from Maths- too detailed to list here</i>		