South Nottinghamshire Academy

Mathematics Curriculum Overview

Subject Curriculum Intent Statement

Our intent is to enable students to embrace mathematics as a creative and highly interconnected discipline, providing a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of curiosity and enjoyment about the subject.

This will be achieved through;

- Delivering a carefully sequenced curriculum from Year 7 through to Year 13 that equips students for GCSEs and A-levels, and is ambitious for all,
- Ensuring that students are competent, fluent and efficient mathematicians, who are able to solve problems efficiently and accurately once prior learning is adequately secure,
- Ensuring that students secure steady progress of conceptual and procedural fluency, through regular low-stakes quizzes, regular review of previous topics, planned repetition, and retrieval through homework,
- Providing opportunities to children to think critically and communicate their understanding verbally and in writing, where well-presented work is modelled and then expected,
- Ensuring that all students, particularly the most disadvantaged, are supported adequately to thrive.
- Ensuring effective use of assessment as learning, for learning and of learning, to inform teacher planning,
- Enabling students to see the relevance of mathematics in the real world,
- Giving students opportunities to apply learnt mathematical skills in different contexts across the curriculum,
- Encouraging positive attitudes to mathematics by making it interesting, purposeful and fun, while recognising that motivation comes through self-efficacy and tests can be used to demonstrate how much they have learnt.

Our curriculum for mathematics aims to ensure that all students:

- 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 non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

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Mathematics Curriculum Offer @ SNA

- **Year 7 – 3 periods per week**
- **Year 8 – 4 periods per week**
- **Year 9 – 4 periods per week**
- **Year 10 – 4 periods per week**
- **Year 11 – 4 periods per week**

Students take the following qualifications:

Key Stage 4 – Years 10 - 11

- AQA GCSE Mathematics (8300) – all students
- AQA Level 2 Certificate Further Mathematics (8365) - a number of identified students
- Pearson Edexcel Entry Level Certificate in Mathematics (NMA0) - a small number of identified students

Key Stage 5 - Years 12 - 13

- AQA A-level Mathematics (7357)

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Mathematics Curriculum Map

Students follow one of four pathways in Key Stage 3, aligned to their targets and attainment. We believe that the end of year 9 is the best time to determine likely Tier of Entry at GCSE for the majority of students. With this in mind, in Years 10 and 11 students follow one of 2 main pathways, preparing for GCSE exams.

All pathways are broken down into a series of topics, which are carefully sequence to support learning over time. The Higher pathway is:

	Areas of Focus HT1	Areas of Focus HT2	Areas of Focus HT3	Areas of Focus HT4	Areas of Focus HT5	Areas of Focus HT6
Y7	First 300 Minutes	2. Number Skills	4. Fractions	5. Angles and Shapes	7. Equations	9. Perimeter, Area and Volume
	1. Analysing and Displaying Data	Assessment	5. Angles and Shapes	6. Decimals	8. Multiplicative Reasoning	Assessment
	2. Number Skills	3. Equations, Functions and Formulae		7. Equations	9. Perimeter, Area and Volume	10. Sequences and Graphs
Y8	11. Factors and Powers	13. 2D Shapes and 3D Solids	14. Real-life Graphs	16. Fractions, Decimals and Percentages	18. Probability	19. Scale Drawings and Measures
	12. Working with Powers	Assessment	15. Transformations	17. Constructions and Loci	19. Scale Drawings and Measures	Assessment
						20. Graphs
Y9	21. Powers and Roots	23. Inequalities, Equations and Formulae	25. Multiplicative Reasoning	27. Accuracy and Measures	29. Trigonometry	31. Number
	22. Quadratics	24. Collecting and Analysing Data	26. Non-linear Graphs	28. Graphical Solutions	30. Mathematical Reasoning	Assessment
	23. Inequalities, Equations and Formulae	Assessment		29. Trigonometry	31. Number	32. Algebra
Y10	33. Interpreting and Representing Data	25. Angles and Trigonometry	Assessment	39. Equations and Inequalities	41. Multiplicative Reasoning	43. More Trigonometry
	34. Fractions, Ratio and Percentages	36. Graphs	38. Transformations and Constructions	40. Probability	42. Similarity and Congruence	44. Further Statistics
	Assessment	37. Area and Volume	39. Equations and Inequalities	Assessment		45. Equations and Graphs
Y11	46. Circle Theorems	Assessment	49. Proportion and Graphs	Assessment	Revision Cycle	
	Assessment	48. Vectors and Geometric Proof	Revision Cycle	Revision Cycle	GCSE Exams	
	47. More Algebra					

Colour Coded Key for the 6 Mathematical Strands					
Number	Algebra	Ratio, Proportion and Rates of Change	Geometry and Measures	Probability	Statistics

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Assessment Approach

Within our curriculum, we look at a variety of methods to assess our students. Below is the assessment plan which gives an overview of our assessment approaches with each year group.

Assessment Approach	Description	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
BIG write	Extended writing based on the 300 minutes project at the start of the year.							
Diagnostic questions	Carefully designed multiple choice questions are used within lessons to identify misconceptions in understanding, to inform next steps.							
Low stakes quizzing	Fortnightly short answer questions based on current topic and recent or improvement focus topics.							
Homework	Online homework is typically set on the HegartyMaths or DrFrostMaths platform, providing students with instant support and feedback on strengths and weaknesses which is used to plan next steps. Homework may focus on a single topic, or a mix of topics to support interspacing and retrieval.							
Past Papers (full or extracts)	Exam students work through past papers or parts of exam questions to increase their exposure to the style and demands of examination papers, in particular to the problem-solving techniques needed.							
Topic Tests	Students are given short tests at the end of each topic, which are used to ascertain the readiness for moving on and to inform additional study and support needs. Topic tests typically comprise short questions.							
Trust Assessments	Students sit formal assessments which cover all topics from the current year, with some questions from previous years.							
Written methods	Classwork and homework is reviewed for effort, understanding, accuracy, quality of working, presentation standards and literacy.							

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Cross Curricular links

Within our mathematics curriculum, we offer a variety of opportunities for cross curricular links, that benefits students at all levels. Our cross curricular links are as follows;

- **Literacy** – Oracy is a key part of lessons, with activities designed to support students in articulating processes used and to compare different methods taken to solve problems. Students reflect regularly on their progress with emphasis on quality of written communication. Half-termly guided reading tasks provide opportunity to read and comprehend longer texts.
- **Numeracy** – Students use the core numeracy skills developed in Maths across the school curriculum. Conversely, numeracy from Science and Business is linked within Maths lessons, by, for example, manipulating Physics equations and calculating profits, losses or taxes. Students are guided to predict, estimate and check, and to use calculators with confidence.
- **PSHE** – Throughout all key stages, students are regularly exposed to mathematics linking to the real-world, which increases awareness ethical, cultural and environmental issues, allowing for wider discussion and debates. For example, half-termly mental maths starters link to international awareness events, such as International Women's Day. We run activities for all students in all key stages during Careers Week and Money Week.

Preparing for Life

At SNA, our Mathematics curriculum supports and further develops the following skills within students to prepare them for life beyond school and the world of work. These include:

- **Problem Solving** – Students learn to solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- **Creativity** – Students use their creativity skills to find different ways and forms to solve a problem, including using different representations.
- **Listening/Speaking** – Within lessons, students are prompted to self-explain (stop and think about a specific question) during a worked example to improve learning. They are guided to explain their logic and reasoning to partners, to listen to alternative approaches and to compare with their own.
- **Team work** – Collaboration is key within mathematics, with partner work taking place in most lessons.
- **Staying positive** – Within our curriculum, we focus on "aiming high", building skills to self-direct learning goals, order and prioritise tasks, identify and access appropriate resources, and self-motivate to work autonomously.

Extra-Curricular

At KS3, we run a chess Club, in which students explore Maths beyond the traditional curriculum. We run dedicated Maths Homework Clinics where students can access support in completing homework.

At KS4, we offer further maths GCSE for selected students, chess club and P6 intervention to support all students.

At KS5, we run weekly support clinics for students who want extra support or to prepare for university admissions tests.