GCSE Mathematics at Avanti Fields

AVANTI FIELDS SCHOOL

CURRICULUM INTENT

We aim to develop the Mathematical thinking and reasoning to allow our students to strategically solve problems and apply their Mathematical knowledge in the real world.

The Mathematics curriculum at Avanti Fields aims to develop the love and curiosity for the subject. Our students are ambitious and ready to learn. Students are encouraged to analyse and reason mathematically and present logical arguments to allow them to apply their knowledge of the subject to solve problems. Throughout their time at Avanti Fields, students will deepen their understanding of Mathematics and value its contribution to everyday life.

Students will appreciate that studying Mathematics will give them the knowledge to approach scientific problems. It will also help to build the skills to manage everyday situations such as planning projects, managing budgets and finances.

THE AVANTI WAY

EDUCATIONAL EXCELLENCE	CHARACTER FORMATION	SPIRITUAL INSIGHT
In Maths we aim to develop the intellectual curiosity and explore ideas around the subject. Students are encouraged to become independent learners and critical thinkers. We guide students to see that the content of Mathematics is interlinked and not seen as arbitrary objects.	The Mathematics curriculum is taught so that students can recognise the importance of the subject to everyday life. During the assessment cycle, students take ownership of their own learning experience to further develop their understanding which requires self-discipline and integrity.	The Mathematics curriculum allows students to appreciate the importance of how all things are connected. Mathematics is defined by rues, laws, relationships and patterns. Our students solve problems and build their resilience by persevering.

PROGRAMME OF STUDY

In Year 9, students get to experience some of the demands of the GCSE curriculum. The programme of study for Year 9 builds on their KS3 knowledge but becomes the stepping stones for the GCSE curriculum which begins in Year 10.

Students start their GCSE course in Year 10, following the AQA GCSE Mathematics course, specification 8300.

The content of the course is broken down into the following areas

- Number
- Algebra
- Ratio, proportion and rates of change
- Geometry and measures
- Probability
- Statistics

All content can be assessed on any if the three question papers. As such, some questions will draw together elements of maths from different topic areas.

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The weighting of the topic areas has been prescribed by Ofqual and is common to all exam boards. The table below shows the approximate weightings of the topic areas for the overall tier of assessment, **not** for each individual question paper.

Topic Area	Foundation Tier (%)	Higher Tier (%)
Number	**25**	**15**
Algebra	**20**	**30**
Ratio	**25**	**20**
Geometry	**15**	**20**
Probability and statistics (combined)	**15**	**15**

GCSE Mathematics has a Foundation tier (grades 1-5) and a Higher tier (grades 4-9). Both tiers have three 1.5 hour papers, the first of which is a non-calculator paper followed by two calculator papers. Each paper has a maximum of 80 marks and makes up one third of the final GCSE grade.

TOPICS

Below is a broad list of topics covered in the AQA Mathematics (8300) course.

Year 10	
Foundation tier	**Higher tier**
Number	Number
Number properties	Fractions, ratio, percentages
Decimals and fractions	Algebraic manipulation
Approximations	Equations and inequalities
Expressions and formulae	Angles
Linear equations	Ratio and proportion
Angles	Length area and volume
Percentages and compound measures	Number and sequences
Ratio, speed and proportion	Linear graphs
Area and perimeter	Similarity
Number and sequences	Right angled triangles (Pythagoras and Trigonometry)
Linear graphs	Powers and standard form
Charts, tables and averages	Statistical diagrams and averages
Powers and standard form	Surds
Volume and surface area	Probability
Probability	Transformations and constructions
Transformations	

GCSE Mathematics at Avanti Fields

Year 11	
Foundation tier	**Higher tier**
Percentages and variation	Counting, accuracy and surds
Simultaneous equations and linear inequalities	Quadratics
Congruence and similarity	Properties of circles
Right angled triangles (Pythagoras and Trigonometry)	Variation
Non-linear graphs	Algebraic fractions and functions
Combined events (Probability)	Triangles
Representation and interpretation	Vectors
Scale drawing	Combined events
Constructions and loci	Sampling and more complex diagrams
	Graphs

ASSESSMENT AND FEEDBACK

Students are assessed regularly in Maths through a combination of formative and summative assessments. Students receive timely written and verbal feedback after each assessment, following the whole school 'Strengths, Improvements, and Actions' (SIA) policy. Following on from assessments, students reflect and act upon feedback and complete improvement tasks to make further progress in their knowledge and understanding.

Dedicated Improvement and Reflection Time (DIRT) is built into lessons, post assessments to allow students to reflect and act upon the feedback given by their teachers.

FORMATIVE ASSESSMENT: Key mathematical skills and application are assessed regularly through low stakes testing in lessons which have a focus on both current content and recalling previous knowledge and skills. Students will sit end of topic assessments which will be recorded as a percentage.

SUMMATIVE ASSEMENT: There are several summative assessment tests per year. These are cumulative in nature and the purpose is to confirm the track point of the student and to promote longer term recall by testing earlier topics and to meet the demands of a linear course.

EXAM BOARD AND AQA USEFUL WEBSITES

EXAM BOARD: AQA
SPECIFICATION: GCSE Mathematics 8300

The AQA website has past papers, mark schemes and the specification all free to download.

https://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300/specification-at-a-glance
https://www.aqa.org.uk/find-past-papers-and-mark-schemes

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SUPPORT AND GUIDANCE

1) Use the online platform **Mathswatch** to watch video tutorials**.**
Log onto www. https://vle.mathswatch.co.uk/vle/

Username: Same as their google classroom login
Password: See your maths teacher

Maths

2) Use the online platform **Dr Frost Maths** to watch video tutorials and practice exam questions. There is a vast array of resources available on this platform.

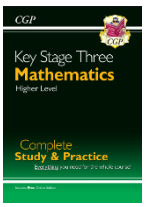
Username: same as google classroom login

3) Use **BBC Bitesize**: https://www.bbc.com/bitesize to learn the key concepts, try quizzes and watch video clips.

4) Use www.onmaths.com to watch practice exam style questions.

5) Use www.mathsgenie.co.uk to watch video tutorials, practice questions and see modelled solutions for most topics.

6) Use www.mathedup.co.uk to watch video tutorials, practice questions and see modelled solutions for most topics.



7) Use a **Revision Guide and Workbook** to aid with explanations and further practise.

8) Attend the **Study club** if you need some further support outside of your lessons with your classwork or homework. (Due to covid19 restrictions – the study club has been postponed, students are encouraged to see their maths teacher prior to homework deadlines for support, alternatively they can send a message through google classroom).

9) Regularly **review** classwork and **revise** in small chunks as this is much more effective rather than leaving it to the last minute before assessments and exams. Use of Dr Frost Maths and/or Corbett Maths for independent study.

EXTRA-CURRICULAR / SUPER-CURRICULAR OPPORTUNITIES

Maths drop-in surgery: Last 30 minutes of Tuesday lunch A and last 30 minutes of Thursday lunch B.

Maths challenge club: Every Tuesday afterschool, 3.30-4.15pm. Students are required to sign up at the start of a half-term. Students work through fun and engaging problems and challenges.

Throughout the year, students will have the opportunity to engage in events and competitions.