Mathematics Department Overview for parents

School Curriculum Intent

Learning for Life

We want every student to enjoy their learning and feel valued for who they are.

We provide a broad curriculum and a creative approach to learning that inspires curiosity, builds collaboration, helps develop resilience and encourages flexibility of thought.'

Curriculum Intent: Maths

Our aim is for all students to **enjoy** and **engage** with mathematics to become **numerate, confident and flexible problem solvers**. We aim for students to understand the relevance and **utility of their maths in real world contexts** throughout the curriculum and the links to a vast number of careers to support **future economic well-being**.

At The Burgate School & Sixth Form we believe that it is our duty to inspire young people to achieve their full potential in mathematics to set them up effectively for the working world. We will do this through well planned interesting lessons that enthuse and inspire. Students will be pushed to challenge themselves to the full extent of their ability and to make sure they maximise the value of every lesson. Lessons should improve students' knowledge and ability in relation to the requirements of the examinations but also applied to the real world to bring theory to reality. They will be assessed at regular intervals and provided with effective feedback for them to develop.

How we sequence and teach maths - Year 7 to 11

Course offered at GCSE

We follow the **Edexcel GCSE Mathematics Specification A (Linear 1MA1)** at GCSE level.
The final grade awarded at the end of Year 11 is determined by the marks from three final exams taken at the end of Year 11. There are two tiers of entry: Foundation and Higher.

- For candidates entered for all Foundation units, grades 1-5 are available.
- For candidates entered for all Higher units, grades 3 - 9 are available.

Exam board & Specification: https://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

Students in **Set H1 (Set 1)** will also be offered the opportunity to take an **AQA Further Maths Level 2 qualification**. This will build on their GCSE and introduce several topics that will be taken further at A level mathematics. Exam board: https://www.aqa.org.uk/subjects/mathematics/aqa-certificate/further-mathematics-8365/specification-at-a-glance

Why this exam board
Staff feel the exam papers are fair and accessible for students to fulfil their potential. When comparing exam boards staff felt the literacy demands were more accessible for students with Edexcel avoiding potential barriers for students to answer the question. Edexcel have strong teacher support with past papers, examiners reports and mark schemes from many previous examination sessions e.g. Maths Emporium. There are a wide range of resources online to support in the study of this course and as it is the most popular GCSE websites, books etc. cater for this qualification.

Key Stage 3

In Years 7-8 students receive **6 lessons over two weeks** and may have either one teacher or a pairing depending on the timetable set.

Years 7

In Year 7 we follow our in-house scheme of work.

The work is organised so that students can work on a level suited to their ability. Students will also have regular numeracy and problem-solving lessons building upon the work done in Junior schools.

At the first half-term in Year 7 we set students based upon their end of Junior school results and baseline assessments. Each half year block will be set into 3/4 sets, enabling teaching to be directed more towards the needs of a group of similar ability.

Students will complete **half termly learning landmark assessments** to see if they have understood the work and to help us to make set movements. Students will also complete investigations, usually as a class or group. This work is designed to encourage students to use logic; observe patterns; discover relationships or rules; describe clearly what they have done and seen, so developing a deeper understanding of Mathematics. Homework is completed weekly using SPARX online.

We **regularly review our students' progress and suitability for the allocated set**. This is **done each term,** and students may be moved to another set if their ability and progress warrants a move.

In Year 7 and 8 students receive **6 lessons over two weeks** and may have either one teacher or a pairing depending on the timetable set.

Key Stage 3/4

In Years 9-11 students receive **8 lessons over two weeks** and may have either one teacher or a pairing depending on the timetable set.

From Year 8 onwards the **sequence of work** for Mathematics is based on a progression model. Staff follow the same topic areas but adapt their teaching to consolidate key content whilst also stretching students as much as possible in those areas.

Our scheme of work divides the required subject content for GCSE mathematics into 9 themes.

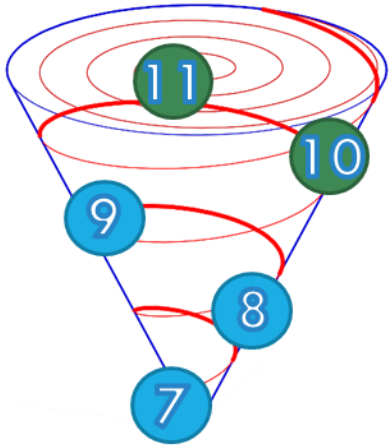
1. **Number & Calculations**
2. **Shapes & Angles**
3. **FDP - Fractions, Decimals & Percentages**

4. **Algebra**
5. **Ratio & Proportion**
6. **Sequences**
7. **Data & Probability**
8. **Geometry**
9. **Transformations and Graphs**

Each theme has stages of learning objectives which staff teach based on the group's general standard.

The work sequence ensures students in each class in each year group cover the same themes of content as their peers at broadly the same time. There will be some fluctuations in hours spent on each theme between years, but the learning journey is the same order each year. This will provide consistency whilst allowing smoother movement of students between sets, avoiding content required being missed. Each theme or topic area is covered again each academic year to a higher degree of complexity to ensure students enhance their knowledge and understanding in preparation for the final GCSE examinations at the end of their programme of study. Students will progress through maths in a spiral returning to the same themes each year interleaving and reinforcing topics whilst being pushed onto new content in those areas.

The order of these topics is outlined in the topic overview documents found on our website



Additional Support in mathematics at The Burgate
All staff provide additional support in class for those students or groups of students struggling to make progress. In addition to this the department offers several areas of additional support:

- Sparx provides an independent learning section with additional tasks for students to complete if they wish to be stretched or to practice previous topics.
- Maths clinic is provided once a week after school for students to access help with topics
- Core skills in the Hub supports with maths and numeracy for select students
- Homework club is available in the hub each week
- Sixth Form mentors provide support in chosen classes and in core skills
- One to one intervention is sometimes provided for students who may have had gaps in education
- Maths intervention is provided in Year 11 for students below target for both Higher and Foundation

KS5 - Sixth Form: A level

Mathematics is a rich and fascinating subject. However, it also provides an important background to the study of many other subject areas such as the Sciences, Technology, Economics, Geography and Psychology. Many university courses such as Computing, Physics, Engineering and Earth Sciences specify A Level Mathematics as an entrance requirement. The study of Mathematics helps students to view and make sense of the world. It will enable them to explore and analyse a variety of problems and use powerful mathematical and statistical techniques to solve them.

The Mathematics department offers two different courses both with the **Edexcel examination board**. Each course consists of a central core of Pure Mathematics, which can be thought of as a mathematician's toolbox - the techniques that are needed to go about solving real-life problems. This will involve improving students' knowledge of algebra and trigonometry beyond all recognition, as well as introducing new and very important ideas such as logarithms and calculus.

Both courses are taught in **9 hour lessons over two weeks**.

A level Mathematics (9MA0)

This course consists of two thirds Pure Mathematics and one third Applied. The applied work is equally split between Mechanics and Statistics. Mechanics is the study of forces and objects in motion, in which we look at the mathematics of projectiles, collisions, stability and much else besides. These elements are highly relevant to those also taking A Levels in Physics or Technology and is ideally suited for those wishing to study Physics, Engineering or Technology in Higher Education. Statistics involves gathering and analysing data and the study of probability theory. The Statistical content is most useful to those also taking A Levels with a strong data-handling element, such as Biology and Psychology.

Exam board & Specification: https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html

Further Mathematics (9FA0)

This course consists of a number of prescribed Pure Mathematics units which account for half of the content covered and then there are number of extra units from which the class will choose two. In discussion with their teachers, students will choose the extra units that will be studied and this changes from year to year. Classes may opt to take their Mechanics or Statistics knowledge to a much higher level than A-level Mathematics or could choose to study Decision Mathematics. This involves studying a selection of the techniques developed within the last century to solve problems the modern world has presented and is recommended to those interested in Computing, Economics and Business Studies, as well as those looking for a change from more traditional Mathematics. This course is strongly recommended for those who really enjoy their Maths and want to study each area in more detail.

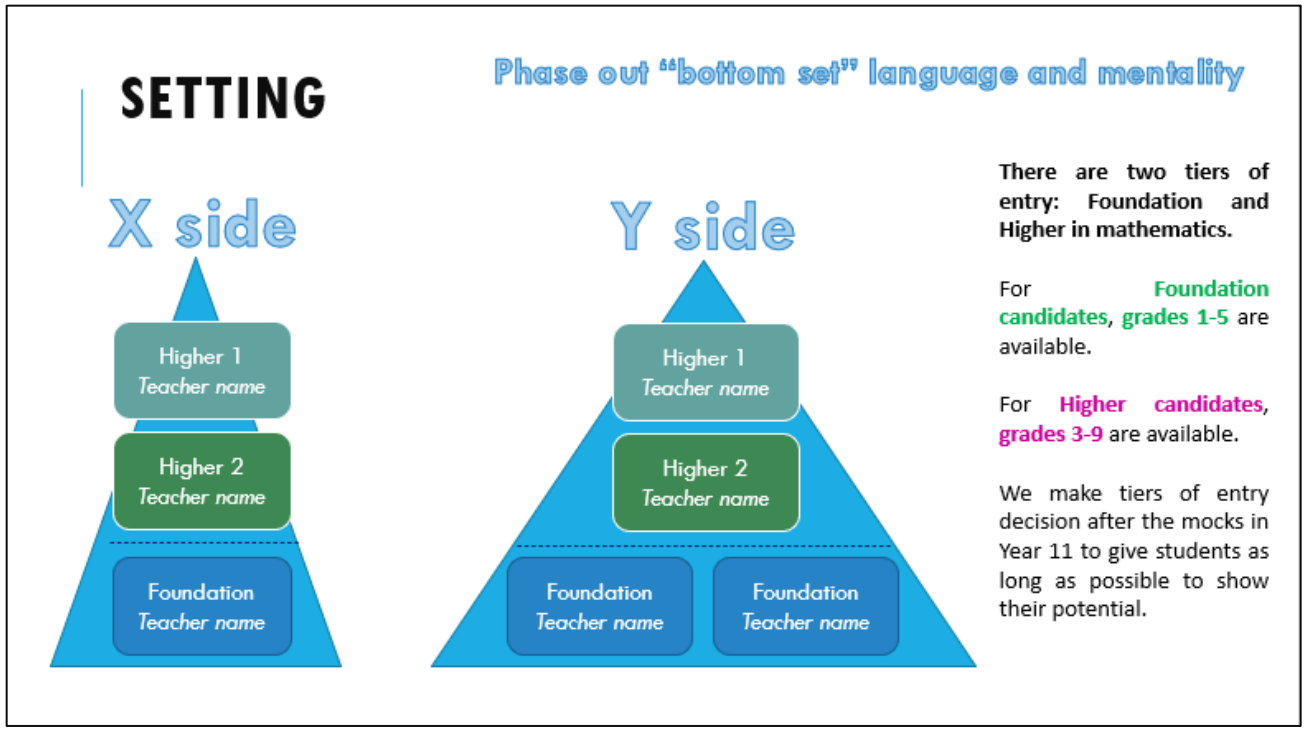
We also recommend this course to all those who want to study Mathematics in some form in Higher Education. It must be stressed that to be successful in this course, students need to be very able and enthusiastic mathematicians.

Exam board & Specification: https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html#tab-AlevelFurtherMathematics

Setting

Students are set after the first half-term of year 7 based on KS2 scores and baseline assessments. They are constantly reviewed after learning landmark assessments.

Set structure



We avoid the idea of a "bottom set" and do not use this terminology. Having two mixed groups at the bottom of the Y side of the year. The focus is on the tier of entry that most suits the students to achieve in the final GCSE rather than ranking students from top to bottom in sets.
The specific content delivered for all groups and students is broadly the same but those in higher sets will be stretched as much as possible in those areas exclusive to the Higher tier of GCSE entry dependent on how the group grasps content. This allows decision on GCSE tier of entry to occur as late as possible into Year 11. The progression scheme of work with stages allows staff to adapt their teaching and the learning objectives covered at all times to differentiate and stretch groups.

Homework

Homework is an important opportunity for students to practise what they have been taught to reinforce their understanding and build the independent studentship skills we need for their success. It should help make working at home a more natural and expected part of their life. The setting and marking will help to identify misconceptions and should raise student achievement showing progress and understanding.

Homework in year 7 to 10 is set each week using the Sparx website. Each week students are set an online one-hour homework in line with the sequence of work topics to support their learning. Students, particularly in Year 7, can complete this in two or more sessions over the week. Homeworks are personalised to each student by providing questions based on previous performance and areas of improvement. SPARX XP points are earned by students and used by staff to praise and reward. SPARX homework is adaptive to students' progress and ability. The number and difficulty of question given each week changes based on this. Homework is set automatically on Friday and marked by SPARX.

Data is provided on student's success, improvements, attempts and whether they accessed the support videos. Staff use to inform lesson planning. The homework includes consolidation questions in addition to question on the week's topics. This will prevent the decay of content theory over time to improve stickability and retrieval for students.

Year 7 to 10 complete a weekly green pen response to SPARX homeworks using the **INSIGHTS Response starters** in class.

In **Year 11** students are set past GCSE papers based on a consistent schedule. Sets H1 and H2 Higher papers and Mixed Foundation sets Foundation papers.

Year 11 Homework schedule of past papers:

Autumn term

- June 2017 paper 1, 2, 3
- Nov 2017 paper 1, 3 (2 used as LL for October Test)

(mock revision and reaction)

Spring term

- June 2018 paper 1, 2, 3
- Nov 2018 paper 1, 2

(mock revision and reaction)

Summer term a

- Nov 2018 paper 3

Missed homework action
We offer a **SPARX Catch-up session** after school on Tuesday for those who miss homework deadlines. Teachers will contact you if this occurs and you can log in and check students Sparx at home.

Sparx will automatically email parents when students fail to complete homeworks.

Sixth Form: A key homework is set each week as a minimum expectation. Directed study is also set as ongoing homework.

Assessments
Students are assessed each half-term with our **Learning Landmark assessments**. Past exam papers are used for this from half-way through Year 10 to give familiarity and practice. All other tests are designed in house to suit our assessment schedule and sequencing of work. They will have a balance of recent content and previous learning to encourage interleaving. They will be found/stored in the appropriate staff shared area.

The GCSE examination at the end of Year 11 consists of **three papers lasting 1 hour 30 minutes**. Two with a calculator and one without.

Each paper consists of questions from all parts of the syllabus and candidates can expect to see a reasonable balance of number, algebra, shape and data handling topics. There is now more emphasis placed on a students' ability to reason and solve problems which are practised throughout the course.

Year 11 Mocks
Mock papers will be sat in November and February to help inform GCSE tier of entry decisions.