

Welcome to the Mathematics Department

Subject Leader: Mr K Foley

Teachers: Mrs S Bagga, Mrs C McMahon, Mr T Spijkers, Miss J Martin, Miss N Creak, Mrs Y Philippou, Mrs J Manners, Mrs S Young.

Subject Overview

Key Stage 3 (Y7-8)

Students follow an objective led curriculum. The areas of mathematics to be studied are grouped into units. There are 11 units in Year 7 and another 11 units in Year 8. Our course covers the 6 main strands of Mathematics; Number, Algebra, Ratio, proportion and rates of change, Geometry and measures, Probability and Statistics. Throughout the course, students will have the opportunity to apply their knowledge, skills and understanding to relevant real-life situations.

Key Stage 4 (Y9-11)

We also teach Key Stage 4 in units and generally there are about 2 units per term. As in key stage 3, the units cover: Number, Algebra, Ratio, proportion and rates of change, Geometry and measures, Probability and Statistics.

Post 16

We teach A level Maths in modules to prepare students for the AS and A2 Examinations.

Teaching Aims and Objectives

The department aims to encourage students to take pleasure in Mathematics and to appreciate the importance of Mathematics, its relevance to other aspects of the curriculum and to life beyond school. We believe that it is essential that students have the highest Maths results that their potential allows, in order to be fully equipped for the work-place.

Course Information

Key Stage 3

Year 7: The units covered are:
Number: Number knowledge, Calculators & estimation, Negative numbers, Powers, Factors & multiples, Ratio, proportion, Logic & proof
Algebra: Expressions and BODMAS, Sequences, Functions and graphs, Equations and formulae
Ratio, proportion and rates of change: Ratio, Fractions, Percentages, Proportion and scale drawings
Geometry & measures: Angles, Constructions & properties of shape, Perimeter, Area & circles, Transformations, 3D shapes
Probability: Listing outcomes, Probability of single events
Statistics: Collecting and representing data, Averages & interpreting data

Year 8: The units covered are:
Number: Calculations, Rounding & calculators, Prime factorisation and types of number

Algebra: Formulae, Sequences and equations, Graphs, Expanding and factorising
Ratio, proportion and rates of change: Ratio, Fractions, Further work on percentages, Direct proportion
Geometry & measures: Constructions, Measures, Transformations, Areas & volumes
Probability: Listing outcomes, Probability of single events
Statistics: Dealing with data & correlation, Collecting data & representing data

Key Stage 4

Year 9: Students will be taught topics from the six strands:
Number: Calculating with decimals, Negative numbers, Rounding & calculators, Using approximations, Types of numbers, Fractions and Percentages.
Algebra: Solving equations, Inequalities, Formulae, Finding the nth term of a sequence, Graphs, Expanding and factorising
Ratio, Proportion and rates of change: Converting units, ratio, compound measures
Geometry and measures: Angles in shapes, Transformations, Areas & volumes, Pythagoras and trigonometry
Probability: Bias, relative frequency and listing outcomes
Statistics: Stem and leaf, scatter graphs, Types of charts, Collecting data & representing data

All GCSE students will also learn to apply the functional elements of Mathematics in everyday and real-life situations.

Year 10: As in year 9 students will be taught topics from the six strands;
Number: Surds, changing recurring decimals to fractions compound measures and upper and lower bounds
Algebra: Quadratics, Simultaneous equations, Graphs, Rearranging formulae
Ratio, Proportion and rates of change: Direct and inverse proportion, Compound interest and financial maths
Geometry and measures: Constructions, Transformations, Angles in polygons, Circle theorems, Volume, and vectors
Probability: Probability trees and Venn diagrams to solve probability problems
Statistics: Collecting and representing data, histograms, cumulative frequency and box plots. Stratified sampling

Year 11: Students consolidate the learning from Years 9 and 10 in preparation for the mock examinations in December. From January students follow a rigorous revision programme, particularly focusing on areas of development highlighted in the mock examinations in preparation for another mock examination in March. The March mock determines the level of entry for the GCSE exam.

All students in Year 11 will take the Linear Edexcel GCSE examination in June at the higher or foundation level. In addition to this, high achieving students in set 1 will have the opportunity to take Further Maths as an additional GCSE.

Students sit the GCSE Mathematics A 1MA0 with the edexcel board and for those students in set 1 who are doing the further maths GCSE, this is with the AQA examining group certificate level 2 further maths 8360

Post 16

Students who have not achieved a grade C or above in their GCSE exams, will be required to attend maths lessons in order to re-take the GCSE exams at the end of Year 12. Exams can be taken at both Higher and Foundation level and the appropriate level will be decided, following mock exams taken during the school year. Students not doing GCSE mathematics as a November re-take sit a functional skills paper

AS courses offered are Edexcel Advanced Subsidiary GCE Core Maths and Further Maths (Level 3 GCE; National classification codes 2210 and 2230, respectively).

A2 courses offered are Edexcel Advanced GCE Core Maths and Further Maths (Level 3 GCE; National classification codes 2210 and 2330, respectively). Both courses follow on from the Advanced Subsidiary courses in Year 12.

Edexcel

Core Maths

Specification:
10034122/Ma

GCE
Mathematics
(9371)

The A level mathematics course includes work on Pure Maths, Statistics and Mechanics and will encourage candidates to:

- a) develop their understanding of mathematics and mathematical processes in a way that promotes confidence and fosters enjoyment
- b) develop abilities to reason logically and recognise incorrect reasoning, to generalise and to construct mathematical proofs
- c) extend their range of mathematical skills and techniques and use them in more difficult, unstructured problems
- d) develop an understanding of coherence and progression in mathematics and of how different areas of mathematics can be connected
- e) recognise how a situation may be represented mathematically and understand the relationship between 'real-world' problems and standard and other mathematical models and how these can be refined and improved
- f) use mathematics as an effective means of communication
- g) acquire the skills needed to use technology such as calculators and computers effectively, recognise when such use may be inappropriate and be aware of limitations
- h) develop an awareness of the relevance of mathematics to other fields of study, to the world of work and to society in general
- i) take increasing responsibility for their own learning and the evaluation of their own mathematical development.

Edexcel

Further Maths

Specification:
10060145/Fm

GCE
Mathematics
(9372)

The A level further mathematics course includes work on Pure Maths, Statistics and Mechanics and will encourage candidates to:

- a) develop their understanding of mathematics and mathematical processes in a way that promotes confidence and fosters enjoyment
- b) develop abilities to reason logically and recognise incorrect reasoning, to generalise and to construct mathematical proofs
- c) extend their range of mathematical skills and techniques and use them in more difficult, unstructured problems
- d) develop an understanding of coherence and progression in mathematics and of how different areas of mathematics can be connected

- e) recognise how a situation may be represented mathematically and understand the relationship between 'real-world' problems and standard and other mathematical models and how these can be refined and improved
- f) use mathematics as an effective means of communication
- g) acquire the skills needed to use technology such as calculators and computers effectively, recognise when such use may be inappropriate and be aware of limitations
- h) develop an awareness of the relevance of mathematics to other fields of study, to the world of work and to society in general
- i) take increasing responsibility for their own learning and the evaluation of their own mathematical development.

Homework Expectations (Including ICT resources and websites)

Students in years 7, 8 and 9 are set homework twice a week and those in years 10 and 11 three times a week. In the Sixth Form, students should expect to be set homework every lesson. Homework can take the form of:

- Consolidation – which is to be completed for the next lesson
- Exam question practice
- Revision
- Investigations
- A mymaths homework
- A mathswatch task

At the beginning of the year, all students will be issued with a username and password for MyMaths (www.mymaths.co.uk). We also subscribe to 'mathswatch' which is available through the school web page. We also have our padlet walls which can be accessed via www.padlet.com/chenderit_maths/11 (or any other year). The maths staff will supply a password.

Supporting students learning

Parents can help by checking planners and homework and also practising tables and involving your son/daughter in everyday maths such as utility bills and DIY projects.

Students will have the opportunity to purchase the CGP Edexcel Mathematics revision guides and workbooks from the Maths Shop throughout the year at cost price.

Web Sites

www.mymaths.co.uk
www.mathsisfun.com
www.bbc.co.uk/skillswise/numbers
www.nrich.maths.org.uk
www.emaths.co.uk/learn.htm
www.bbc.co.uk/schools/gcsebitesize/maths/
www.mrbartonmaths.com

Extra-Curricular Opportunities

Students can participate in three national UKMT (United Kingdom Mathematics Trust) challenges each year: individual Maths Challenge competition and two Team Maths Challenge competitions.

The individual challenges are:

- Junior Maths Challenge for Years 7 and 8 (around April)
- Intermediate Maths Challenge for Years 9, 10 and 11 (around February)

- Senior Maths Challenge for Years 12 and 13 (around November)

Taking part in the maths challenge is voluntary; participants are selected on ability and tend to come from the top sets. Students can qualify for school based or national follow up rounds in each of the individual challenges.

Marking and Assessment

Students will complete a one hour assessment at the end of each term, and a 30 minute assessment midway through the term and be given detailed feedback on any areas of weakness they need further practice in. Students in years 7-10 will also complete an actual GCSE paper at end of term 3 and a further one at the end of the year. Year 11 students will have their mock examinations in addition to other assessments through-out the year.

Examinations

All students take GCSE Edexcel Linear examinations.

AS/A level Maths and Further Maths students also take Edexcel examinations.

Department Resources

A wide range of resources are used within mathematics lessons and these include text books, worksheets, multilink cubes, puzzles and games, laptops (with a variety of maths software), all of which are designed to support the student's understanding of the topic.

Department Policies

Exercise books

Students are issued with exercise books. They are expected to treat these with respect.

Students are expected to follow these guidelines:

- Writing should be in blue or black ink
- Work should have a date and be dated
- Titles and dates should be underlined using a ruler.
- Diagrams and charts should be drawn in pencil.
- Students should respond to staff questions or next steps in green pen.

Students are expected to bring the following equipment to every lesson: Blue or black pen, green pen, pencil, eraser, ruler, protractor, pair of compasses and a scientific calculator.

Students can purchase equipment from the Maths Shop, at cost price, which is open every break and lunchtime.