

Mathematics

Overview

Mathematics is one of the best subjects to develop your analytical, research and problem-solving skills. Not only will studying mathematics help give you the knowledge to tackle scientific, mechanical, coding and abstract problems, it will also help you develop logic to tackle everyday issues like planning projects, managing budgets and even debating effectively.

- While it may seem like mathematics problems have no real use in life, this couldn't be further from the truth! Mathematics is incredibly important in our lives and without realising it, we use mathematical concepts, as well as the skills we learn from doing maths problems every day. The laws of mathematics govern everything around us, and without a good understanding of them, one can encounter significant difficulties in life.
- Mathematics is important as it helps us think analytically and have better reasoning abilities. Analytical thinking refers to the ability to think critically about the world around us. Analytical and reasoning skills are essential because they help us solve problems and look for solutions.
- Mathematics is a methodical application of matter. It is so said because the subject makes our life orderly and prevents chaos. Certain qualities that are nurtured by mathematics are power of reasoning, creativity, abstract or spatial thinking, critical thinking, problem-solving ability and even effective communication skills. Mathematics is the cradle of all creations, without which the world cannot move forward and progress. All careers will use some of mathematics or numeracy and here at SRG we strive for all pupils to achieve their best.



Mathematics

KS3 Overview of what is studied at KS3 Year 7

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Algebraic Thinking						Place Value and Proportion					
	Sequences		Understand and use algebraic notation		Equality and equivalence		Place value and ordering integers and decimals			Fraction, decimal and percentage equivalence		
Spring	Applications of Number						Directed Number		Fractional Thinking			
	Solving problems with addition & subtraction		Solving problems with multiplication and division		Fractions & percentages of amounts		Operations and equations with directed number			Addition and subtraction of fractions		
Summer	Lines and Angles						Reasoning with Number					
	Constructing, measuring and using geometric notation			Developing geometric reasoning			Developing number sense		Sets and probability		Prime numbers and proof	

Year 8

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Proportional Reasoning						Representations					
	Ratio and scale		Multiplicative change		Multiplying and dividing fractions		Working in the Cartesian plane			Representing data		Tables & Probability
Spring	Algebraic Techniques						Developing Number					
	Brackets, equations and inequalities			Sequences		Indices	Fractions and percentages			Standard Index form		Number sense
Summer	Developing Geometry						Reasoning with Data					
	Angles in parallel lines and polygons			Area of trapezia and circles		Line symmetry and reflection	The data handling cycle			Measures of location		



GCSE Mathematics & GCSE Mathematics - Numeracy

Aims and Objectives

GCSE Mathematics – Numeracy will build on and progress from the levels of numeracy expected at the end of Key Stage 3 through the Literacy and Numeracy Framework and will assess the mathematics that learners will need in their everyday lives, in the world of work, and in other general curriculum areas.

This specification will encourage learners to be inspired, moved and challenged by following a broad, coherent, satisfying and worthwhile course of study. It will help learners to develop confidence in, and a positive attitude towards, mathematics and to recognise the importance and relevance of mathematics to their everyday lives and to society. It will have an emphasis on those aspects of mathematics which are of most relevance to learners functioning as informed twenty-first century citizens. It will prepare learners to make decisions about further learning opportunities and career choices. Solving problems in the real world and the problem-solving cycle will feature within the specification as well as the more numerical aspects of mathematics. There will also be opportunities for learners to make informed decisions about the use of technology, the management of money and the use of statistics.

The GCSE specification in Mathematics – Numeracy will enable learners to:

- Develop knowledge, skills and understanding of mathematical and statistical methods, techniques and concepts required for everyday life, in the world of work, and in other general curriculum areas
- Select and apply appropriate mathematics and statistics in everyday situations and contexts from the real world
- Use mathematics to represent, analyse and interpret information
- Acquire and use strategies for problem solving and modelling in context
- Understand that models may need refining and that there may be more than one way to solve a problem
- Interpret mathematical results and draw and justify conclusions that are relevant to the context
- Communicate mathematical information in a variety of forms.



GCSE Mathematics

KS4 Overview of what is studied at KS4

There are three tiers of entry for this qualification.

Higher Tier:	Grades A* - C
Intermediate Tier:	Grades B – E
Foundation Tier:	Grades D – G

Unit 1 Non-Calculator

Written examination:

Higher: 1 hour 45 minutes (80 marks)

Intermediate: 1 hour 45 minutes (80 marks)

Foundation: 1 hour 30 minutes (65 marks)

50% of qualification

The written paper for each tier will comprise a number of short and longer, both structured and unstructured questions, which may be set on an part of the subject content of the specification. Candidates entered for GCSE Mathematics will be expected to be familiar with the knowledge, skills and understanding implicit in GCSE Mathematics – Numeracy.

Questions may be on topics that are explicitly listed in the content of GCSE Mathematics – Numeracy.

Some questions will use multiple-choice assessment.

A Calculator is **not** allowed in this paper.

Unit 2 Calculator

Written examination:

Higher: 1 hour 45 minutes (80 marks)

Intermediate: 1 hour 45 minutes (80 marks)

Foundation: 1 hour 30 minutes (65 marks)

50% of qualification

The written paper for each tier will comprise a number of short and longer, both structured and unstructured questions, which may be set on an part of the subject content of the specification. Candidates entered for GCSE Mathematics will be expected to be familiar with the knowledge, skills and understanding implicit in GCSE Mathematics – Numeracy.

Questions may be on topics that are explicitly listed in the content of GCSE Mathematics – Numeracy.

Some questions will use multiple-choice assessment.

A Calculator will be allowed in this paper.



Mathematics

AS-Level

KS5 Provide overview of what is studied at KS5

Why study A-Level Maths:

- *Stimulating and challenging courses;*
- *Increase knowledge and understanding of mathematical techniques and their applications;*
- *Support the study of other A levels;*
- *Develop key employability skills such as problem-solving, logical reasoning, communication and resilience;*
- *Excellent preparation for a wide range of university courses;*
- *Leads to versatile qualifications that are well-respected by employers and higher education.*

Overview of course:

AS-Level (2 units)

Unit 1 Pure Mathematics A

Written examination: 2 hours 30 minutes

25% of qualification

120 marks

The paper will comprise a number of short and longer, both structured and unstructured questions, which may be set on an part of the subject content of the unit.

A number of questions will assess learners' understanding of more than one topic from the subject content.

A calculator will be allowed in this examination.

Unit 2: Applied Mathematics A

Written examination: 1 hour 45 minutes

15% of qualification

75 marks

The paper will comprise two sections

Section A: Statistics (40 marks)

Section B: Mechanics (35 Marks)

The total assessment time of 1 hour 45 minutes can be split between Section A and Section B as learners deem appropriate.

The paper will comprise a number of short and longer, both structured and unstructured questions, which may be set on an part of the subject content of the unit.

A number of questions will assess learners' understanding of more than one topic from the subject content.

A calculator will be allowed in this examination.



Mathematics

A-Level

Overview of course:

A-Level

(2 units)

Unit 3 Pure Mathematics B

Written examination: 2 hours 30 minutes

35% of qualification

120 marks

The paper will comprise a number of short and longer, both structured and unstructured questions, which may be set on an part of the subject content of the unit.

A number of questions will assess learners' understanding of more than one topic from the subject content.

A calculator will be allowed in this examination.

Unit 4: Applied Mathematics B

Written examination: 1 hour 45 minutes

25% of qualification

80 marks

The paper will comprise two sections

Section A: Statistics (40 marks)

Section B: Differential Equations and Mechanics (40 Marks)

The total assessment time of 1 hour 45 minutes can be split between Section A and Section B as learners deem appropriate.

The paper will comprise a number of short and longer, both structured and unstructured questions, which may be set on an part of the subject content of the unit.

A number of questions will assess learners' understanding of more than one topic from the subject content.

A calculator will be allowed in this examination.

