

# MATHEMATICS

at SCGSG

**Acting Head of Department:**

Mrs M. Appleton

**Edexcel - Specification 1MA1**

## A Universal Language

Mathematics is a universal language used throughout the world. As well as a fascinating subject in its own right, a sound understanding of mathematics opens the door to future opportunities. We encourage all students to enjoy mathematics, enabling them to select appropriate techniques in order to answer a wide variety of questions with confidence.

To enhance the course, we regularly provide problem solving challenges that apply newly learnt skills in a variety of contexts.

Mathematics is a popular subject, with many going on to study the subject at A-Level in the Sixth Form. The work done in Years 10 and 11 builds on the firm foundations laid down in previous years, preparing students thoroughly for GCSE and beyond.

## How am I assessed?

The examination consists of **3 written papers**, each **1 hour 30 minutes**.

The papers are equally weighted towards the overall grade.

**Paper 1 is non-calculator.** For **papers 2 and 3**, students are allowed to use a **scientific calculator**.



$$\frac{\partial}{\partial a} \ln f_{a,\sigma^2}(\xi_1) = \frac{(\xi_1 - a)}{\sigma^2} f_{a,\sigma^2}(\xi_1) = \frac{1}{\sqrt{2\pi}\sigma} \exp\left(-\frac{(\xi_1 - a)^2}{2\sigma^2}\right)$$
$$\int T(x) \cdot \frac{\partial}{\partial \theta} f(x, \theta) dx = M\left(T(\xi) \cdot \frac{\partial}{\partial \theta} \ln L(\xi, \theta)\right) \int \frac{\partial}{\partial \theta} L(x, \theta) dx$$

**The specification consists of six main topics:**

<b>Number</b>	Upper and lower bounds of rounded or truncated numbers; Calculations with numbers in standard form; Recurring decimals
<b>Algebra</b>	Quadratic equations and inequalities; Surds; Graphs of quadratic functions; Algebraic Fractions; Rearranging formulae; Equations with indices; Parallel and Perpendicular graphs; Tangents to curved graphs; Approximate areas under curved graphs; Equations of circles; Simultaneous equations where one is a quadratic or a circle; Types of sequences; Iteration; Proofs
<b>Ratio, Proportion and Rates of Change</b>	Repeated percentage changes and reverse percentages; Graphs of variables that are in proportion; Compound measures
<b>Geometry and Measures</b>	Pythagoras and trigonometry in 3 dimensions; Graphs of the trigonometrical functions; Sine, cosine and tangent of $30^\circ$ , $60^\circ$ , $45^\circ$ ; Circle theorems; Sine rule, cosine rule, area of a non right-angled triangle; Sectors and segments; Volumes and surface areas of spheres, cones, pyramids; Areas and volumes of similar shapes
<b>Statistics</b>	Display of data, including cumulative frequency, box and whisker diagrams, histograms, scatter diagrams; Calculating averages and measures of spread for grouped data; Comparison of two sets of data using average and spread; Methods of sampling, questionnaires and biased samples
<b>Probability</b>	Use of tree diagrams and Venn diagrams to calculate probabilities; Conditional probability