Subject: Mathematics

Year Group: 9

Curriculum Intent:
Students are encouraged to think deeply, challenge their understanding and ask questions. Our aim is to encourage and develop independent thinkers with the mathematical skills and confidence to take on the challenges of everyday life.

Our three key principles are to:
1. Develop fluency:
We recognise the importance of having a deep understanding, as many students will miss out on the opportunity to master mathematics if simply learning new procedures and processes. We enable students to develop their own understanding through consolidating key learning and developing that into a fluency of the subject. Students should be able to explain why as well as how something happens.

2. Reason mathematically:
It is essential that students get the opportunity to develop their mathematical reasoning both in and outside of the classroom to fully master the subject. We want students who think like mathematicians rather than people who simply do the maths. Students should have the opportunity to explore how and why maths works through the wide variety of mathematical topics through questioning, experimentation, exploring and creating their own theories to guide their own mathematical learning journey.

3. Solve problems:
We believe that students of all abilities should be able to problem solve in order to be successful in the wider world. Students should have the opportunity to develop their own problem solving skills to analyse, evaluate and structure answers to a wide range of problems. This should include using formal mathematical knowledge to interpret problems, model/predict solutions and select appropriate methods and techniques to apply to unfamiliar or non-routine problems.

College Values:
The Christ's College Mathematics department aims to ensure all students have the opportunity to make the best progress they are able to in Mathematics.

Students are encouraged to work cooperatively with each other to support the development of their understanding in lessons. Following the College behaviour policy, we encourage students to take responsibility for their learning through respecting others views and being tolerant of other viewpoints to further foster the community feeling.

When visiting our department you will see staff upholding and embracing the College values of love, cooperation, stewardship, respect and service as well as students being encouraged to do the same.

Knowledge and Skills:
All topics focus on our 3 key principles of fluency, reasoning and problem solving.

Autumn - Our students will start out by further developing their understanding of different types of numbers and calculations that can be done with them as well as calculating with decimals, manipulating and solving algebraic problems (including sequences), understanding how to represent data in different ways (including when its best to use each one) and calculating the areas/volumes of 2D/3D shapes. Some students will look at more advanced concepts such as surds, negative & fractional powers, calculating in standard form, quadratics, histograms, stratified sampling and area/volume of spheres/cones/pyramids and similar shapes.

Spring - Students then move on to calculating with fractions and solving percentage problems, solving equations and inequalities as well as changing the subject of an equation, calculating averages including cumulative frequency and box plots, working with compound measures such as speed, solving angle problems using exterior/interior angles, using Pythagoras and trigonometry. Some students will look at more advanced concepts such as reverse percentages, an introduction to algebraic fractions, the quadratic formula, density and circle theorems.

Summer - Students finish off the year looking at straight line graphs, probability, ratio and proportion and constructions and transformations. Some students will look at more advanced concepts such as quadratic/cubic/reciprocal graphs, conditional probability, proportion using the formula and loci.

Assessment:
Students will be assessed during lessons both verbally and with the work they complete. More formal assessments will take place in the form of end of topic and term assessments.

Assessments will incorporate a range of Assessment Objectives:
AO1 - using and applying standard mathematical techniques
AO2 - reasoning, interpreting and communicating mathematically
AO3 - solving problems in mathematics and in other contexts

Homework:
In mathematics all homework will be set via Hegarty Maths on a weekly basis. This will be set at least 1 month after the content was taught in class so as to support the departmental focus of improving students' retrieval practice.

Cultural Capital:
Students are encouraged to attend the Maths Clinic where they can see further advice and guidance about their learning. We also engage in the UK Junior Maths Challenge as well as attending competitions with other local schools in the county as well as having the opportunity to participate in the National Cipher Competition, in which we have had great success in previous years.

Students are able to use Hegarty Maths to further develop their mathematical understanding through the use of Memri and Fix Up 5 (FU5) tasks. These aim to support knowledge retention through focussing on questions that students have either gotten correct (Memri) or incorrect (FU5) previously and brings them back in mixed up tasks.