

# Mathematics Policy

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LSSW website **INTRODUCTION**

This policy outlines the learning, teaching, organisation and management of mathematics at Cotswold Chine School.

The implementation of this policy is the responsibility of all teaching staff. The responsibility for monitoring and review rests with the mathematics coordinator.

## The aims of teaching Mathematics are

- To ensure students:
  - become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
  - **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
  - can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- To increase knowledge and understanding of social, moral, spiritual and cultural (SMSC) values.
- To increase knowledge and understanding of British Values, Britain and the world.
- To promote Personal, Social, Health and Economic (PSHE) Education.

## Progression in Mathematics

The Mathematics Scheme of Work for Cotswold Chine School for Stages 1 to 6 is taken from our Rising Stars Scheme. This scheme is used for students in KS2 and KS3 and allows students to acquire, build on and consolidate different numeracy skills and concepts throughout the scheme to ensure basic life skills and skills required for accreditations. Many of the students have experienced breaks in their education and consequently have missed some of the important concepts in Mathematics, especially the skills they will find useful in everyday life. Numeracy plays an important role in every student's life and will be used and taught practically wherever possible. Consequently, all the units have extra time built into them to allow teachers to cover the necessary prior learning. In addition to this, all teachers teaching the subject are expected to conduct planned and structured assessment sessions at the start and end of each new topic, to help give the teacher an insight into the students' knowledge. This forms teachers of any particular gaps, students may have in their knowledge and additional support can be given around these key concepts.

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KS4 follows the AQA scheme of work as this is the examining body of choice for Cotswold Chine. Exam years 1 and 2 follow the two year GCSE course, schemes have been written with the thought of our students potential and follow the syllabus of AQA/QCA. Students are also able to access suitable accreditations for their individual needs, these accreditations include Entry Level Certificates, Functional Skills Level 1 and 2 and Entry Level Functional Skills. The fundamental teaching of Mathematics within Cotswold Chine is for the pupils to leave the school with a grasp of the key concepts that they can use in everyday life as a valuable tool e.g. using the correct money to pay for goods; ensuring the right change has been given; telling the time in order to read a train / bus timetable etc.

Work with practical problems offers a rich fund of activities for the pupils and can even be formed into a life skill, which might open various avenues to the real world of work.

## Examinations Accreditation

At Cotswold Chine, students at present in Key Stage 4 students are given the opportunity to undertake the two year GCSE course in Mathematics using AQA as the examination board.

If GCSE is not appropriate for individual students an alternative is to offer Entry Level Certificate – where possible the units fit in with the GCSE syllabus. Or as another alternative Entry Level Functional Skills and Functional Skills Level 1 and 2.

## Assessment

Assessment in Mathematics takes the form of a sequence that link into each other. Students are constantly consolidating their skills within the lessons. Student exercise books all contain '*assessment of progress*' sheets. These sheets allow teachers to assess their knowledge before and after a topic. It highlights any gaps the students may have in their learning and extra time can be used to attempt to consolidate the skill. At the end of each topic, students are given a 'progress test' linked to their level and topic they have been working on to assess their new skills. Teachers are able to use the '*Bsquared – Connecting Steps*' software to be able to track students' progress within the four strands of Mathematics – Number, Geometry, Statistics and Measurement. Assessment also includes verbal feedback during the lessons, the marking of the students work and leaving written feedback, progress reports, leveling of students work and exam outcomes.

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## **Inclusion/Equal Opportunities**

The School aims to give every student the opportunity to experience success and achieve as high a standard as possible, regardless of gender, race, religion, disability or social background.

In order to do this, the School:

- teaches the knowledge, skills and understanding that suit students' abilities and needs in order to challenge them;
- is flexible in choosing lesson content from a suitable level and Key Stage;
- uses materials that are free from discrimination or stereotyping;
- sets high expectations and provides opportunities for all students to achieve, including boys; girls; students with SEN or disabilities; students from all social, cultural and linguistic backgrounds and more able students;
- uses a range of organisational approaches, such as grouping or individual 1 to 1 work to ensure learning needs are appropriately addressed;
- plans work that builds on previous learning interests and experiences of students.

## **Differentiation and Inclusion**

All students at the school have their own complex and individual needs which are tailored to within their individual objectives in the mathematics lesson and curriculum passport targets. This allows students to participate fully in each lesson which in turn will secure motivation and concentration. By giving the students their own objectives to work towards this allow all students to be involved in the lesson and keep them suitably challenged.

The accreditation options available including GCSE, Entry Level, Functional Skills and Entry Level Certificates enable all of the students at Cotswold Chine School to have their achievements formally recognised.

## **Opportunities for literacy, Computing and PSHE**

### Literacy

In mathematics there are many opportunities to promote literacy the most obvious one being interpreting questions posed orally or in writing, being able to clarify the precise meaning of words or mathematical terms.

Speaking and Listening are also important links within the two subjects this can be developed by asking students to explain, argue and present their findings/conclusions to others, and by drawing their attention to certain statement with a mathematical reasoning.

### Computing

Computing offers many links to mathematics especially within the Statistics strand. This will include students being able to collect and classify data and then enter their data onto Excel which can interpret it and produce graphs and tables. Excel can also be used to complete spreadsheets which will go on to make use of algebraic and graphical skills involved in constructing formulae and generating sequences.

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## PSHE

There are many links to PSHE in Mathematics. Mathematical thinking is important within a modern society for its uses within the workplace, business and finance and for personal decision making. Mathematics is essential in public decision-making and for participation in the knowledge economy.

Students who are functional in mathematics and financially capable are able to think independently in applied and abstract ways, and can resolve, solve problems and assess risk.

The language of mathematics is international. The subject transcends cultural boundaries and its importance is universally recognised.

## **Links with other areas of the curriculum**

### Science

The majority of science investigations are going to require some mathematical skill of counting, measuring, recording results in tables and graphs, interpreting graphs and results, making predictions which may require the use of estimation. During different experiments students will have to decide what type of graph is going to be useful to interpret the results would it be more beneficial to use a bar chart, line graph or pie chart. Science also deals with equations which can be used to find the speed, distance of different moving objects again using mathematical skills.

### Art and Design Technology

One of the most useful tools to use in art and in design technology is measurements. Some of the patterns within art and design technology are based on properties of shape, including symmetry and spatial awareness. Within Food Technology in preparing food it is required to measure out certain ingredients, working out how long you have to prepare food and how long it has to cook for. The cost of food is also another factor, will you have enough money to buy the ingredients, and you can look at budgeting.

### History and Geography

Within Geography and History there are many aspects to include maths as students will have to look at statistics for example analysing population data to explore and compare lifestyles. The study of maps includes the use of coordinates and ideas of angles, direction, position, scale and ratio.

### PE and Music

Different physical exercises require people to measure the height of the object, distance and time. This will have to be logged into a table for the students to explore and improve their performance. Within music the use of counting of beats within time is going to be used.

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## **Work Related Learning Opportunities**

There are many opportunities within Mathematics to use as a tool for work money being the most obvious one. This will enable students to work in shops, banks, public transport, post office, dentists etc. Students will be able to use the life skills they learnt in the lessons to help them within the jobs – reading and recording information and logging data.

## **Resources**

Currently the textbooks that are used for the GCSE course are the books recommended and written by AQA. Each unit has its own textbook and teacher guide. The textbooks cover each module in detail and are in line with syllabus giving old exam questions at the end of each chapter. For the new GCSE syllabus there is only one textbook for the coverage of the syllabus which students have access to, along with homework books.

For the teaching of Entry Level Certificate there are many worksheets resourced for the teaching of the internal units. The external units are from AQA. It is recommended to teachers they use the past papers and material shared by AQA for the remaining qualifications.