



CLOUGHWOOD ACADEMY

Maths Policy

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CONTENTS

| | |
|--|----|
| 1. Introduction | 3 |
| 2. Aims and Objectives | 4 |
| 3. Curriculum | 4 |
| 4. Mathematics across the Curriculum | 5 |
| 5. Spiritual, Moral, Social and Cultural development | 7 |
| 6. Roles and Responsibilities | 7 |
| 7. Teaching and Learning Styles | 7 |
| 8. Assessment, Recording and Reporting | 8 |
| 9. Equal Opportunities | 9 |
| 10. Health and Safety | 10 |
| 11. Use of Calculators | 10 |
| 12. Managing Resources | 10 |
| 13. Monitoring and Reviewing | 10 |
| 14. Interventions | 11 |

1. INTRODUCTION TO MATHEMATICS

Mathematics is the means of looking at the patterns that make up our world and the intricate and beautiful ways in which they are constructed and realised. Numeracy is the means of making that knowledge useful.

Mathematics contributes to the school curriculum by developing pupils' abilities to calculate; to reason logically, algebraically, and geometrically; to solve problems and to handle data. Mathematics is important for pupils in many other areas of study, particularly Science and Technology. It is also important in everyday living, in many forms of employment, and in public decision-making. As a subject in its own right, Mathematics presents frequent opportunities for creativity, and can stimulate moments of pleasure and wonder when a problem is solved for the first time; a more elegant solution to a problem is discovered; or when hidden connections suddenly manifest.

It enables pupils to build a secure framework of mathematical reasoning, which they can use and apply with confidence. The power of mathematical reasoning lies in its use of precise and concise forms of language, symbolism and representation to reveal and explore general relationships. These mathematical forms are widely used for modelling situations; a trend accelerated by computational technologies.

The subject transcends cultural boundaries and its importance is universally recognised. Mathematics helps us to understand and change the World.

2. AIMS and OBJECTIVES

We endorse the purpose and aims of the new Mathematics curriculum introduced by the government in 2015. The new framework, which is in line with Pearson Edexcel, introduces grading changes from A* - G to 9 - 1.

Our new assessments carefully explain each question, and build confidence with a gradual increase in difficulty beginning with short one mark questions rather than multiple choice, so your students understand, and not guess, the answers.

A high-quality mathematics education provides a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject.

The National Curriculum for mathematics aims to ensure that all pupils:

- Provide evidence of students' achievements against demanding and fulfilling content, to give students the confidence that the mathematical skills, knowledge and understanding that they will have acquired during the course of their study are as good as that of the highest performing jurisdictions in the world.
- Provide a strong foundation for further academic and vocational study and for employment, to give students the appropriate mathematical skills, knowledge and understanding to help them progress to a full range of courses in further and higher education. This includes Level 3 mathematics courses as well as Level 3 and

undergraduate courses in other disciplines such as biology, geography and psychology, where the understanding and application of mathematics is crucial

- Develop fluent knowledge, skills and understanding of mathematical methods and concepts.
- Acquire, select and apply mathematical techniques to solve problems
- Reason mathematically, make deductions and inferences, and draw conclusions using mathematical language and methods.
- Comprehend, interpret and communicate mathematical information in a variety of forms appropriate to the information and context.
- 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.

At Cloughwood our aims are to make a new positive start to mathematics and support for children who have had a varied but generally negative experience with education in general. They will have missed large areas of essential building blocks over their early years and more recent education will be patchy due to poor attendance.

- To set challenging targets with high expectations for all pupils.
- To offer a variety of approaches to teaching and learning to engage and motivate pupils and demand their active participation.
- To smooth the transition for pupils between Key Stages and ensure progression in teaching and learning throughout their time at Cloughwood Academy.
- To explore enrichment opportunities outside the curriculum to enhance pupils' enjoyment of mathematics.

At the end of his mathematical education in this school, it is our expectation that each pupil will be able:

- To perform basic numeracy skills
- To perform the basic mathematical skills needed in his chosen career or for entry to higher or further mathematical education
- To understand the mathematics likely to be encountered in daily adult life
- To reason clearly and logically, and to set out a rational argument
- to identify patterns encountered in diverse situations and to extrapolate from these
- to approach problems systematically, choosing appropriate techniques for their solution
- To follow logical instructions clearly expressed
- to experience satisfaction in and enjoyment of his mathematical achievements
- To obtain any formal mathematical qualifications needed for his chosen career

- To obtain his best possible results at KS2, KS3 & KS4,

In addition, we hope that pupils will acquire the logical abilities characteristic of a mathematician.

3. CURRICULUM

The National Curriculum gives a detailed outline of what is to be taught, whilst our yearly Schemes of Work provided by Edexcel and adapted to suit our pupils needs identify the key objectives in mathematics.

Medium-term plans at Cloughwood Academy, which are adopted from the schemes of work and give details of the main teaching objectives for each term, define more thoroughly what is taught. They ensure a differentiated and balanced distribution of work across each term. It is the class teacher who completes the weekly and daily plans for the teaching of mathematics. These plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught, including how the Maths TA and other TAs are to be deployed during each lesson.

Since 2015 maths has developed in within the academy. With the continuing growth of our Primary School we have been able to confront stigmas attached to maths at a much earlier age, ensuring each student can develop their knowledge and confidence within the subject. Primary structured Maths lessons in line with the national curriculum are delivered to students from Year 3 through to year 6 and predominantly enforce basic mathematical methods and techniques. This is to embed maths into the pupils learning to attempt to fill in all the gaps that the pupils arrive into Cloughwood with.

All pupils within the school will be assessed on a termly basis, assessments will include a variety of methods such as end of unit tests, end of term testing and BSquared for KS3. Once students enter into year 9 they will begin a pathway of achieving a number of qualifications suitable for their level of knowledge, including Entry Level Qualifications, Functional Maths qualifications and GCSE Qualifications.

Enrichment sessions will be used to concentrate on Functional skills, this includes assisting the student to access everyday activities that include basic maths and numeracy.

4. MATHEMATICS ACROSS THE CURRICULUM

Teachers should use every relevant subject to develop pupils' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum.

Teachers should develop pupils' numeracy and mathematical reasoning in all subjects so that they understand and appreciate the importance of mathematics. Pupils should be taught to apply arithmetic fluently to problems, understand and use measures, make estimates and sense check their work. Pupils should apply their geometric and algebraic understanding,

and relate their understanding of probability to the notions of risk and uncertainty. They should also understand the cycle of collecting, analysing and presenting data. They should be taught to apply their mathematics to both routine and non-routine problems, including breaking down more complex problems into a series of simpler steps.

English

Mathematics lessons can help to develop and support pupils' literacy skills: for example, by teaching mathematical vocabulary and technical terms, by asking children to read and interpret problems to identify the mathematical content, and by encouraging them to explain, argue and present their conclusions to others. Equally, English lessons can support your mathematics lesson. For example non-fiction texts can be chosen in which mathematical vocabulary, graphs, charts and tables have to be interpreted.

Science

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating, and recording in tables and graphs. In science pupils will, for example, order numbers, including decimals, calculate means and percentages, use negative numbers when taking temperatures, substitute into formulae, re-arrange equations, decide which graph is the most appropriate to represent data, and plot, interpret and predict from graphs.

ICT

Children will apply and use mathematics in a variety of ways when they solve problems using ICT. For example, they will collect and classify data, enter it into data handling software, produce graphs and tables, and interpret and explain their results. Their work in control includes the measurement of distance and angle, using uniform non- standard then standard measures. When they use computer models and simulations they will draw on their abilities to manipulate numbers and identify patterns and relationships.

Humanities

In history and geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. Historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know.

Art

Measurements are often needed in art and design and technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. Designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When food is prepared a great deal of measurement occurs, including working out times, adapting recipes, and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

PE

Athletic activities require measurement of height, distance, time and speed, while ideas of time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games. The key to making the most of these opportunities is to identify the mathematical possibilities across the curriculum at the planning stage. You should also draw children's attention to the links between subjects by talking frequently about them, both in Mathematics and in other lessons.

Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of personal, social and health education, and citizenship. The planned activities that the pupils undertake within the classroom encourage them to work together and respect each other's views as well as presenting them with real-life situations in their work on the earning and spending of money.

Teacher support

All teachers will undertake inset on how to deliver maths across the curriculum through in-school training and training from outside agencies. This will then be supported by the Maths department looking at maths in different aspects of the curriculum, and aiding the delivery of this through staff coaching and provision of resources.

5. SPIRITUAL, MORAL, SOCIAL AND CULTURAL DEVELOPMENT

The teaching of mathematics supports the social development of our pupils through the way we expect them to work with each other in lessons. They are placed in groups/pairs so that they have the opportunity to work together and to discuss their ideas and results. Much should be done to integrate classes into the community through LOTC, by using facilities available to enforce mathematics in a variety of ways, especially when delivering Functional Skills.

6. ROLES AND RESPONSIBILITIES

The following responsibilities are carried out by the Maths coordinator with, in some cases, assistance from the Maths TA:

- Ensuring the consistent implementation of policy
- Identifying any support required by individual staff
- Purchasing/organising Maths resources
- Monitoring schemes of work to ensure they are meeting the needs of the pupils.
- Ensuring continuity between year groups
- Ensuring Maths progression through the continued assessment of pupils
- Reviewing the Maths policy
- Curriculum development
- Examining new methods of the delivery of Maths in the curriculum area
- Ensuring the implementation of Maths within the curriculum areas

7. TEACHING AND LEARNING STYLES

Teaching staff are expected to employ a range of strategies and to use their professional judgement to decide on the most appropriate.

These will include:

- Using the computer or interactive whiteboard to demonstrate to a group of pupils or the whole class
- Leading a group or class discussion about the benefits and limitations of the use of Maths within the subject
- Individual or paired work using worksheets, help cards and other kinaesthetic resources
- Collaborative writing and design work in a group.
- Reference to maths terminology to be incorporated in all lessons to enable new words to be assimilated and learned.
- Tasks will be designed to ensure that all children are equally active and engaged in the learning process.
- Activities using Maths are planned in order to allow different levels of achievement by pupils or to incorporate possibilities for extension work.
- Learning outside the classroom. Each year group will take one curriculum trip per year related to Maths.

8. ASSESSMENT, RECORDING AND REPORTING

Assessment, recording and reporting are important elements of teaching but they need to be manageable if the information they yield is to be useful.

Cloughwood Academy is committed to the principle of 'assessment for learning' as well as acknowledging the need for assessment of learning for the purposes of grading and reporting. Assessment, which is explicitly designed to promote learning, is the single most powerful tool we have for both raising standards and empowering lifelong learners. The characteristics of assessment that promote learning include:

- It is embedded in a view of teaching and learning of which it is an essential part;
- It involves sharing learning goals with pupils;
- It aims to help pupils to know and to recognise the standards they are aiming for;
- It involves pupils in self-assessment;
- It provides feedback which leads to pupils recognising their next steps and how to take them;
- It is underpinned by confidence that every pupil can improve;
- It involves both teacher and pupils reviewing and reflecting on assessment data.

Pupils' involvement in the assessment process is vital. We encourage pupils to discuss and demonstrate their solutions, insisting that correct, precise, orderly mathematics is used at all times, both spoken and written.

Students' work is assessed from three aspects:-

Short-term assessments are used to help adjust daily plans. These short-term assessments are closely matched to the teaching objectives.

Medium-term assessments are used to measure progress against the key objectives, and to help plan the next unit of work.

Long-term assessments are made towards the end of the school year and used to assess progress against targets, which can be reset for the next academic year and make a summary of each child's progress. Long-term assessments are made using a combination of NC Levelled end-of-year tests and teacher assessments.

The pupils work primarily in exercise and work books and marked test papers are kept for reference and evidence of their achievement and progress.

As part of the assessment procedures we continually record and assess pupil's progress with the aid of BSquared.

Started and completed date. The completed date can be entered by the teacher or automatically by the computer

School name or logo

Subject and level

Pupil's name

Acorn School

Mathematics Number Level 1B

Name

Started Completed

Home Language

| Counting | Numbers | Addition and Subtraction |
|---|--|---|
| <input type="checkbox"/> Joins in counting stories and rhymes <input type="checkbox"/> Joins in rote counting to 100 <input type="checkbox"/> Joins in rote counting in 10's to 100 <input type="checkbox"/> Counts from 0 to 10 <input type="checkbox"/> Aware of the number 0 <input type="checkbox"/> Count in ordinal numbers <input type="checkbox"/> Uses ordinal numbers to 10 <input type="checkbox"/> Counts objects to 10 consistently <input type="checkbox"/> Recognise a small number of objects without counting <input type="checkbox"/> Realise if you know how many you don't need to count <input type="checkbox"/> Count objects that cannot be touched <input type="checkbox"/> Count objects that can be heard <input type="checkbox"/> Use counting to compare 2 groups <input type="checkbox"/> | Numbers to 10 - <input type="checkbox"/> read numbers <input type="checkbox"/> find numbers on number line <input type="checkbox"/> write numbers <input type="checkbox"/> orders numerals <input type="checkbox"/> order quantities <input type="checkbox"/> identify missing numbers on number line <input type="checkbox"/> identify the numbers between two given numbers <input type="checkbox"/> identify which number is more <input type="checkbox"/> identify which number is less <input type="checkbox"/> identify the position of an object using ordinal numbers to 5th <input type="checkbox"/> identify the position of an object using ordinal numbers to 10th <input type="checkbox"/> Use last for the final object <input type="checkbox"/> Realise the relationship between ordinal and cardinal numbers <input type="checkbox"/> | <input type="checkbox"/> Begin to do addition by counting on <input type="checkbox"/> Know addition means combining two or more groups <input type="checkbox"/> Separate sets of up to 10 objects into 2 groups (e.g. 4, 6) <input type="checkbox"/> Say how many are left when some are taken away <input type="checkbox"/> Solve subtraction by counting on <input type="checkbox"/> Understands the phrase How many more ... ? <input type="checkbox"/> Use objects to find the difference between two numbers <input type="checkbox"/> Answer simple addition problems related to life <input type="checkbox"/> Answer simple subtraction problems related to life <input type="checkbox"/> Find one more than <input type="checkbox"/> Find one less than <input type="checkbox"/> Read and write the signs <input type="checkbox"/> + <input type="checkbox"/> - <input type="checkbox"/> = |

Recording box

Level descriptor

Our breakdown of the level

Mathematics Number Level 1B - Pupils count read and order numbers (including using ordinal numbers) up to 10 in a range of settings. They write numerals up to 10 with increasing accuracy. Using numbers up to 10 they solve problems involving addition and subtraction, including comparing two sets to find a numerical difference.

The above picture is a paper copy example of the individual assessment page and shows how the curriculum is broken down. By working on individual targets rather than the level as a whole, we can show progression through the level. This is now completed electronically.

When discussing pupil progression with pupils or parents, the breakdown gives them a greater understanding of what has been achieved and where the pupil's next steps are. By discussing individual tasks, the parents can give more support to the pupil's learning.

9. EQUAL OPPORTUNITIES

Cloughwood Academy is fully committed to equal opportunities and recognises the importance of the promotion of open attitudes towards individuals and the differences between individuals. We work towards the removal of divisions, which arise from gender, race, poverty or disability and endeavour to provide pupils with appropriate opportunities.

We aim to take into account cultural background, gender and special needs, both in our teaching attitudes and in the published materials we use with our pupils. The underachievement of boys is a growing concern and strategies are needed to address this including the style of lesson, resources used and focusing their attention.

Different cultures have contributed to the development and application of Mathematics (indeed, we use Arabic Numerals every day). It is the only true international language and it is important that pupils are aware of this fact.

10. HEALTH AND SAFETY

See Cloughwood Academy's Health and Safety Policy for further details but in particular please monitor the condition of carpets, tables and chairs and inform Business Manager if you think that there is a problem.

11. USE OF CALCULATORS

Rationale

Whilst all pupils should be able to use a calculator correctly we aim to encourage the sensible use of it, and prefer pupils to initially consider some mental method or means of estimating the answer. The examinations include a specific non-calculator paper and as such we are committed to teaching them effective calculator skills.

We also recognise that the calculator can provide access to areas of the curriculum that might otherwise have been barred to pupils. It is a useful tool, for example, in the generation of lots of numerical or statistical data and can be used to speed up an analysis.

12. MANAGING RESOURCES

Cloughwood Academy's maths resources are monitored throughout the year and if any areas need to be improved or replenished orders are placed. The budget for Maths resources is determined annually on a monetary basis as school funds allow:

- Through negotiation with curriculum areas via the Development bids each year
- As part of a medium-term plan and the whole school development plan
- Long-term budgetary arrangements to meet new and emerging concerns

13. MONITORING AND REVIEW

The subject leader is responsible for keeping abreast of current developments in the subject, and providing a strategic lead and direction for the subject in the school. The aim is for this to be done through Mathematics Groups such as NCETM and the Mathematics Association as well as networking with subject teachers and co-ordinators from other schools.

14. INTERVENTIONS

At Cloughwood Academy we have identified Mathematics as an area which our pupils require further support. Because of this we have implemented methods of differentiation, firstly through curriculum levels which are Pi, Theta and Delta for those completing the GCSE framework; secondly, entry level qualifications ran along the GCSE framework with extra assistance from Teaching Assistants.

Such is the way the new Edexcel Framework is created, it allows all students regardless of their ability and confidence to complete work on the same topic, at the same time and in the same room. This in itself will provide students with a sense of belonging as it allows them to consistently remain within the same environment amongst their peers, creating opportunity for positive relationships to be formed.