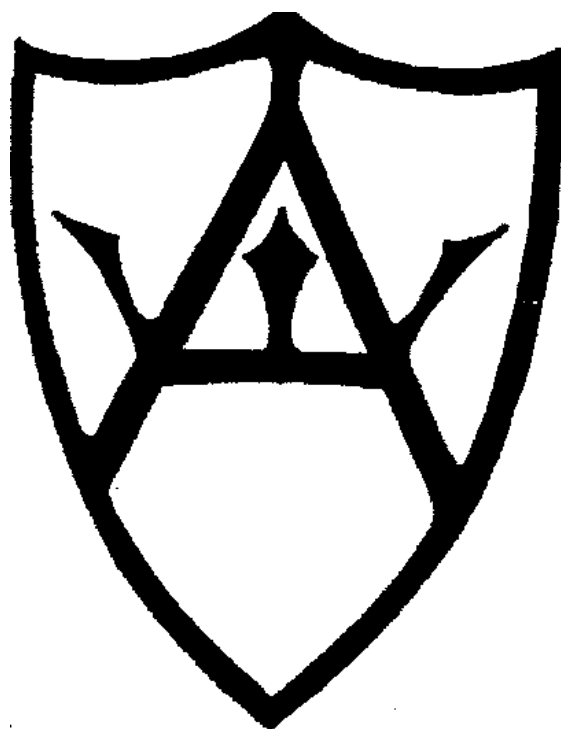


Alfriston School



Mathematics Policy

Reviewed: Oct 2019

Introduction

At Alfriston Primary School we value every pupil and the contribution they have to make. As a result we aim to ensure that every child achieves success and that all are enabled to become confident and skilled mathematicians. The school embraces a growth mind-set ethos and places great importance on our five agreed 'Life Values– collaboration, curiosity, determination, creativity and independence.

Mathematics is both a *key skill* within school, and a *life skill* to be utilised throughout every person's day to day experiences.

Rationale

Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a positive and enthusiastic attitude towards Mathematics that will stay with them.

The National Curriculum for Mathematics describes in detail what pupils must learn in each year group. Combined with our Calculations Policy, this ensures continuity, progression and high expectations for attainment in Mathematics.

It is vital that a positive attitude towards Mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. At Alfriston we use the National Curriculum for Mathematics as the basis of our Mathematics programme. We are committed to ensuring that all pupils achieve mastery in the key concepts of Mathematics, appropriate for their age group, in order that they make genuine progress and avoid gaps in their understanding that provide barriers to learning as they move through education.

Aims

- To foster a positive attitude to Mathematics.
- To develop the ability to think clearly and logically, with confidence, flexibility and independence of thought.
- To develop a deeper understanding of Mathematics through a process of enquiry and investigation.
- To develop an understanding of the connectivity of patterns and relationships within Mathematics.
- To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the uses of Mathematics in the wider world.
- To develop the ability to use Mathematics as a means of communicating ideas.
- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems.
- To develop personal qualities such as perseverance, independent thinking, cooperation and self-confidence through a sense of achievement and success.
- To develop an appreciation of the creative aspects of Mathematics and an awareness of its aesthetic appeal.

Principles of Teaching and Learning

At Alfriston Primary School, we have developed a mastery approach to the teaching of Mathematics. At the centre of this approach is the belief that all pupils have the potential to succeed. All children have access to the same curriculum content and, rather than being extended with new content from other year groups, they deepen their conceptual understanding by reasoning and problem solving.

The school uses a variety of teaching and learning styles to support maths mastery

Teaching for mastery principles:

- ✓ Teaching is underpinned by a belief in the importance of Mathematics and that the vast majority of children can succeed in learning Mathematics in line with national expectations for the end of each key stage.
- ✓ Activities are carefully planned to employ conceptual variation. This is where the same concept is explored through a variety of different representations. These opportunities provide intelligent practice that develops and embeds fluency and conceptual knowledge.
- ✓ Factual knowledge (e.g. number bonds and times tables), procedural knowledge (e.g. formal written methods) and conceptual knowledge (e.g. of place value) are taught in a fully integrated way and are all seen as important elements in the learning of Mathematics.
- ✓ Mathematical reasoning is emphasised. Children are encouraged to explain their mathematical thinking and describe their understanding.
- ✓ Precise mathematical language is always used consistently by teachers. This means that mathematical ideas are conveyed with clarity and precision. Children are taught to use the same language when describing their maths.
- ✓ Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on.

Our staff strive to:

- ✓ Build children's confidence and self-esteem;
- ✓ Develop children's independence;
- ✓ Allow all children to experience regular success;
- ✓ Contextualise Mathematics;
- ✓ Use practical approaches to Mathematics (models and images);
- ✓ Encourage children to select independently resources to help them;
- ✓ Challenge children of all abilities;
- ✓ Encourage children to enjoy Mathematics;
- ✓ Develop a child's understanding of mathematical language;
- ✓ Enable children to learn from teachers, peers and their own mistakes;
- ✓ Allow children to ask questions as well as answer them.

Our pupils should:

- ✓ Have a well-developed understanding of place value;
- ✓ Be able to instantly recall age appropriate number facts such as number bonds, multiplication tables, doubles and halves;
- ✓ Use number facts to solve problems mentally;
- ✓ Calculate accurately and efficiently, both mentally and on paper, drawing on a range of calculation strategies;
- ✓ Make sense of number problems, including non-routine/'real' problems and identify the operations needed to solve them;
- ✓ Explain their methods and reasoning, using correct mathematical terms;
- ✓ Judge whether their answers are reasonable and have strategies for checking them where necessary;
- ✓ Suggest suitable units for measuring and make sensible estimates of measurements;
- ✓ Explain and make predictions from the numbers in graphs, diagrams, charts and tables;
- ✓ Develop spatial awareness and an understanding of the properties of 2D and 3D shapes.

What you will typically see:

- The large majority of our pupils progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through targeted support
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts in tandem.
- Teachers use precise questioning (influenced by Bloom's Taxonomy) in class to test conceptual and procedural knowledge, and assess pupils regularly to identify those requiring support so that all pupils keep up.
- Teachers will use the concrete, pictorial and abstract approach (CPA) to ensure that procedural and conceptual understanding are developed simultaneously.

Mathematics Curriculum Planning and Lesson Design

To provide adequate time for developing Mathematics, maths is taught daily and discretely. However, application of skills are regularly developed and applied across the curriculum. Mathematics is a core subject in the National Curriculum and we use the objectives from this to support planning and to assess children's progress.

Developing a secure foundation of understanding in Mathematics is essential. For this reason, children are provided with a substantial amount of time to master each new concept. Those children who grasp the concepts more quickly are given opportunities to deepen their knowledge and improve their reasoning and problem solving skills rather than accelerating on to new curriculum content. Differentiation will be seen by children working on differing complexities of problems within the same objective. 'Rapid graspers' will have challenging problems to solve to ensure that they continue to make progress.

Mathematics Learning Environment

We aim to create a rich and stimulating Mathematics environment that promotes learning and independence through Maths Working Walls in each classroom. Maths Working Walls and resource areas in the classroom will:

- Support the children with their Maths;
- Contain information relevant to current teaching (key vocabulary, models/images, success ladder, targets);
- Include Maths resources clearly labelled and accessible for the children;
- Be clear/large enough for children to read;
- Be changed regularly so it doesn't become just 'wallpaper'.

Assessment

Assessment is an integral and continuous part of the teaching and learning process at Alfriston and much of it is done informally as part of each teacher's day to day work. Teachers and support staff integrate the use of formative assessment strategies such as: effective questioning, clear learning objectives, the use of success criteria, effective feedback and response in their teaching and marking and observing children participating in activities. Findings from these types of assessment are used to inform future planning.

We make judgements of each child's achievement every two terms (at the end of Terms 2, 4 and 6). This is done against the National Curriculum objectives for each year group. Children in years two are also assessed against the End of Key Stage Teacher Assessment Frameworks. Children in year six are assessed through the Key Stage Two National Curriculum Tests. In year four, children will participate in a multiplication tables check.

Some of the evidence base for these assessments may come from day-to-day class work, but evidence can also come from specific tasks and tests used to assess the degree of retention, independence and breadth of application shown. We use these judgements to assess progress and achievement against individual and school targets, and national expectations. We identify and target those children not making expected progress and intervene accordingly.

Assessment is tracked at the end of Terms 2, 4 and 6 using the school's tracking system on SIMS and pupils' progress is discussed in termly Pupil Progress Meetings. Children who haven't made progress are a focus in teacher's planning. We pass all assessment and tracking information on to the next teacher at the end of the year, so that s/he can plan for the new school year.

We give parents a formal opportunity to discuss their child's progress and next steps three times a year in a teacher/parent consultation meeting. A mid-year summary report and a full end of year report is also shared with parents.

Early Years Foundation Stage (EYFS)

In the Early Years Foundation Stage (EYFS), we relate the mathematical aspects of the children's work to the Development Matters statements and the Early Learning Goals (ELG), as set out in the EYFS profile document.

Through planned and spontaneous play opportunities children will have the opportunity to:

- Count and develop numeracy skills;
- Recognise and write numbers;
- Develop mathematical strategies and problem solve;
- Develop an understanding of shape and space;
- Explore time, weight, size and capacity and develop early understanding of the ways in which these can be measured;
- Develop an understanding of and use mathematical language;
- Gain an understanding of early algebra and pattern in Maths through patterning and creating repeating sequences.

Key features of our EYFS Mathematics teaching:

- There are opportunities for children to “bump” into Maths (both inside and outside) – through both planned activities and the self-selection of easily accessible quality maths resources;
- Children are just as likely to access the Mathematics curriculum through cooking activities, building activities or in the garden;
- Whenever possible children’s interests are used as a vehicle for delivering the curriculum, for instance an interest in dinosaurs may give rise to sorting, counting and recording the number of dinosaurs in small world play;
- Staff support children’s learning through planned activities but also value and support self-initiated mathematical learning;
- Appropriate scaffolding and challenge is provided by all staff to support and extend children’s learning;
- Staff model a rich mathematical vocabulary and use practical situations as they arise as problem solving exercises;
- Differentiated activities meet the needs of children of different abilities and learning styles – for example number action songs to meet the needs of more physical or kinaesthetic learners;
- Careful observation and tracking enables staff to monitor children’s progress, and that of groups of children, and plan for the next stage in their learning;
- We encourage children to take appropriate risks in their learning, however adults are vigilant and ready to intervene to ensure children’s safety. Health and Safety policies and risk assessments support us in maintaining a safe learning environment for our children.

The profile for Mathematics areas of learning are Number (ELG 11) and shape, space and measures (ELG 12). We continually observe and assess children against these areas using their age-related objectives, and plan the next steps in their mathematical development through a topic-based curriculum.

Resources

A bank of essential Mathematics resources are kept in each classroom. Further resources relating to specific Mathematics areas are kept centrally. Using the school and local environment can also be an excellent outdoor resource for Mathematics learning.

Information and Communication Technology

Teachers should use their judgement about when ICT tools should be used to enhance learning.

Home/school links

We aim to raise the profile and understanding of our approach to Maths with parents, and they are encouraged to be actively involved in supporting children's learning. Parent Workshops are organised with relation to the curriculum, assessment and supporting children's mathematical learning. Our school website also provides updated information for parents. Please also see our Home Learning Policy.

Role of the Subject Leader

- ✓ Ensures teachers understand the requirements of the National Curriculum and helps them to plan lessons.
- ✓ Leads by example by setting high standards in their own teaching;
- ✓ Prepares, organises and leads CPD and joint professional development;
- ✓ Works with the SENCO and Senior Leadership Team;
- ✓ Observes colleagues with a view to identifying the support they need;
- ✓ Discusses regularly with the Headteacher and the governing board the progress of implementing the National Curriculum for Mathematics in school;
- ✓ Monitors and evaluates Mathematics provision in the school by conducting regular planning and work scrutiny, lesson observations, learning walks and assessment data analysis.