

Shoreham Beach Primary School



Mathematics Policy

Revised: October 2019
Next revision: October 2021

Introduction:

This policy statement outlines the purpose, nature and management of the mathematics taught and learnt in the school. The implementation of this policy is the responsibility of all teaching staff and should be overseen and monitored by the Maths subject leaders and head teacher.

Subject Definition:

Mathematics is a way of communicating. It is a language through which ideas can be explained, explored and developed, and one through which relationships can be expressed, hypotheses made and tested and patterns identified.

There are 4 key areas of mathematics:

- Number
- Measurement
- Geometry
- Statistics

Aims:

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- 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.

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It enables children to understand relationships and patterns in both number and space in their everyday lives.

Mathematics offers a way of analysing and synthesising our experiences through acts of describing, organising, explaining and predicting in order to make sense of the real world.

The aims of teaching mathematics are:

- to promote a fascination and enjoyment of learning through practical activity, exploration and discussion;
- to promote confidence and competence with numbers and the number system;
- to develop the children's ability to recall number facts quickly and accurately and use appropriate mental and/or written calculation strategies;
- to develop the ability to solve problems through decision-making and reasoning in a range of contexts;
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, and develop measuring skills in a range of contexts;
- to challenge and inspire pupils to the highest possible standards.
- to develop the children's ability to communicate their ideas both orally and in written form;
- to develop independent, as well as co-operative, ways of working, encouraging children to explore ideas and activities in a variety of group settings;
- to develop the children's abilities to use and apply mathematics effectively in everyday situations, using specific mathematical vocabulary;

Teaching time

From the end of Year 1, to provide adequate time for developing mathematics skills each class teacher will provide at least 4 mathematics lessons per week. This may vary in length but will usually last for approximately 45 to 60 minutes. Within these lessons there will be a good balance between whole-class work, group teaching and individual practice. Additional mathematics may be taught within other subject lessons when appropriate.

Teachers of the Reception children base their teaching on objectives in the Framework for Mathematics; this ensures that they are working towards the 'Early Learning Goals for Mathematical Development'.

A Typical Lesson

A typical maths lesson in year 1 to 6 will be structured as a combination of whole class teaching, paired collaboration and independent learning. Children are introduced to the learning intention for the lesson and move through the learning together, led by the teacher with regular input from the children to clarify their understanding. Children support each other in 'buddy pairs' as the learning progresses towards a common goal by the end.

Some children will understand more quickly than others and their experience is enriched by reasoning problems using the key objective of the lesson.

Those who take longer to learn the key objective are given ‘same-day intervention’ by either the teacher or teaching assistant to enable them to move on with the rest of the class the following day.

In addition to the maths lessons, regular fluency sessions are run 3 times a week to build confidence in basic mathematical skills such as multiplication tables, number bonds and place value.

Links between mathematics and other subjects

Mathematics contributes to many subjects within the primary curriculum and opportunities will be sought to draw mathematical experience out of a wide range of activities. This will allow children to begin to use and apply mathematics in real contexts.

Teaching and learning style

At this school we recommended that mathematics is based on four key principles. These are:

- dedicated mathematics lessons.
- direct teaching and interactive oral sessions with the whole class and/or groups.
- an emphasis on mental calculation and reasoning with explanation.
- controlled differentiation, with all pupils engaged in mathematics related to a common theme.

We feel that successful learning enables children to develop confidence to meet the challenge of new work. To ensure a coherent approach to pupils’ learning, account is taken of what the pupils already know. Wherever possible, we encourage the children to apply their learning to everyday situations.

Through careful planning and preparation we aim to ensure that throughout the school children are given opportunities for:

- practical activities, active maths and mathematical games;
- problem solving;
- individual, group and whole class discussions and activities;
- open and closed investigations;
- a range of methods of calculating e.g. mental, pencil and paper and using a calculator;
- using computers as a mathematical tool;
- using and manipulating a wide range of practical resources and materials.
- Active maths involving the outdoor learning space
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Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum and teachers use the National Curriculum 2014 to plan from.

Curriculum planning in mathematics is made in three phases (long-term, medium-term and short-term).

The National Curriculum gives a detailed outline of what is to be taught in the long term and the medium term, while the teachers' unit plans detail what is to be taught in the short term. Teachers use the White Rose Hub Mastery plans, adapted for their classes and with an emphasis on 'top-down' planning to enable children to achieve their highest potential. This approach to learning maths is based on developments in Shanghai and Singapore. This approach works on the concept that all children can be successful in maths and concepts should be mastered and developed in depth before a new concept is taught. 'Rapid graspers' are enriched by problem solving and reasoning around the concept whilst 'struggling learners' are given extra same- day intervention to consolidate their understanding.

Plans from each teacher in each year group are saved to a central drive. This makes it easier for the subject leaders to review planning but also allows access to plans to support teachers teaching in a new year group.

Planning strategies will be revised in the light of any key changes that are introduced from County or the Central Government.

The Foundation Stage

We teach mathematics in our reception class. As the class is part of the Foundation Stage of the National Curriculum, we relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space, through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

Mathematics in Foundation stage is initially developed through stories, songs, games and imaginative play. A positive approach to mathematics around the classroom helps the children to begin to relate mathematics to their everyday lives.

Pupils' recording of their work

Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording. Children are encouraged to use mental strategies before resorting to a written algorithm - see Calculation Policy.

While it is acceptable on occasions for work to be on sheets, the majority of work in maths should be in the children's books. All children are encouraged to work tidily and neatly when recording their work.

Mathematics and inclusion

At our school we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style and differentiation – so that we can take some additional or different action to enable the child to learn more effectively.

Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of an Individual Learning Plan (ILP) for children with special educational needs. The ILP may include, as appropriate, specific targets relating to mathematics.

We enable all pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom (a 'maths trail', for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Assessment for learning

Teachers will assess children's work in mathematics in three ways (long-term, medium-term and short-term). We use short-term assessments to help us adjust our daily plans. These short-term assessments are closely matched to the teaching objectives.

From September 2018, we are trialling end of unit assessments published by the White Rose Hub.

We make long-term assessments towards the end of the school year, and use these to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents. We pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We make the long-term assessments with the help of end-of-year tests and teacher assessments. We use the national tests for children in Year 2 and Year 6.

Marking

We recognise that the quality of marking in Mathematics is crucial to ensuring all children make good progress. Maths books should be marked regularly. Titles should reflect the lessons' learning objectives. A tick through the title shows the child that they have succeeded in understanding the concept of that lesson. If a child has not succeeded then a 'way forward' should be indicated with a blue highlighted mark. The child will then address this, using purple pen, during the next lesson or appropriate time.

Self and peer assessment of individual pieces of work is encouraged as part of the plenary, encouraging children to become independent learners, identifying for themselves areas to improve/develop (next steps). We encourage dialogue between the teacher and the child and/or between the child and their response partner.

Home Learning

We recognise the importance of making links between home and school and encourage parental involvement with the learning of mathematics. Home learning provides opportunities for children

- to practise and consolidate their skills and knowledge,
- to develop and extend their techniques and strategies, and
- to share their mathematical work with their family
- to prepare for their future learning.

See **Home Learning** policy for further details

Computing

Teachers incorporate the use of computing in their mathematics lessons when appropriate.

- Computers are used during whole class work to provide a starting point as well as to demonstrate concepts and encourage problem solving.
- Computers are used by groups of children working independently within the classroom on programs relating to the mathematical objectives being addressed that day.
- Calculators are used in mathematics at Key Stage 2 for a range of purposes depending on the age of the children. Calculators are not used for basic calculation where a mental or written method is more appropriate but are used for calculations where numbers are long and difficult and where it enables children to concentrate on the problem.

Resources

All classrooms have a number line and a wide range of appropriate small apparatus. Mathematical dictionaries are available in all classrooms. There is a central store where the resources are stored according to the area of mathematics they support. A range of software is available to support work with the computers.

Monitoring and evaluation

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the subject leaders. The work of the subject leaders also involves supporting colleagues in their teaching, being informed about current

developments in the subject, and providing a strategic lead and direction for mathematics in the school.

A named member of the school's governing body is briefed to oversee the teaching of mathematics. This governor meets regularly with the subject leaders to review progress.

Monitoring and evaluation will be carried out by the

- Headteacher
- Mathematics Subject Leaders
- Member of the LEA Inspection/Advisory team (on request)

This exercise will entail:

- scrutiny of medium and short-term planning and feedback
- classroom learning walks, coaching in pairs and feedback
- reviewing children's work
- analysis of test data and papers
- monitoring of assessment and record-keeping, marking
- monitoring of home learning
- a staff meeting each term will be devoted to discussion of the teaching and learning of mathematics
- the mathematics subject leaders will make an annual report to the governors

APPENDIX 1

MANAGEMENT OF MATHEMATICS

Role of the Subject Leader

- Teach demonstration lessons;
- Ensure teachers are familiar with the mathematics national curriculum and help them to plan lessons;
- Lead by example in the way they teach in their own classroom;
- Prepare, organise and lead INSET, with the support of the Headteacher;
- Work co-operatively with the SENCO;
- Work with colleagues from time to time with a view to identifying the support they need;
- Attend INSET;
- Inform parents;
- Discuss regularly with the headteacher and mathematics governor the progress of the mathematics curriculum in the school.

Role of the Maths Governor

- To discuss regularly maths progress within the school with the Maths Subject Leaders.
- To visit the school regularly to talk with the teachers and when possible, observe some of the daily mathematics lessons;
- To report back to the curriculum committee on a regular basis;
- To attend any relevant inset or training.

Role of the Headteacher

- Lead, manage and monitor the implementation of the maths curriculum, including monitoring teaching plans and the quality of teaching in the classrooms;
- With the mathematics governor, keep the governing body informed about the progress of the framework;
- Ensure that mathematics remains a high profile in the school's development work;
- Deploy support staff to maximise support for the teaching of maths.

APPENDIX 2: Agreed approach to teaching written methods of calculation

(Refer to Calculation Policy)