Mathematics Policy

Rationale
We believe that the development of mathematical knowledge provides a way of viewing and making sense of the world. It requires not only facts and skills but understanding gained through exploration, application and discussion. It can be used to analyse and communicate ideas and information effectively and to tackle a range of practical tasks and real life problems. We aim to raise standards through high expectations of all pupils, enriching their experiences of mathematics through challenging and through engaging activities. Through mathematics, pupils will acquire knowledge, skills and understanding and practical abilities to the highest standard of which they are capable.

Aims
Our aims in teaching Mathematics are that the children will:

- Enjoy the subject and study it with a sense of confidence and achievement,
- Achieve a high standard in Mathematics and gain a secure foundation of knowledge, skills and concepts,
- Use and apply these skills with confidence and understanding in real life problems and within mathematics itself,
- Develop persistence through sustained work over a period of time,
- To develop logical thinking and reasoning skills through natural curiosity and an investigative approach,
- Have an appreciation of mathematical pattern and relationships,
- Have a positive attitude towards mathematics as an interesting and creative subject,
- Gain experience of working independently, investigating their own ideas and developing their own mental and written methods.

Outcomes
As outlined in the Primary curriculum (2014) for Mathematics, by the end of Key Stage 2, the overall aim is that children:

- Have a secure knowledge of number facts and a good understanding of the four operations,
- Are able to use this knowledge and understanding to carry out calculations mentally and to apply general strategies when using one digit and two digit numbers and particular strategies to special cases involving higher value numbers,
- Make use of diagrams and informal notes to help record steps and part answers when using mental methods that generate more information than can be kept in their heads,
- Have an efficient, reliable, compact written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally,
- Use reasoning skills to apply knowledge to multistep problems with real life concepts,
• Recognise a range of 2D and 3D shapes and identify their properties,
• Use charts and graphs effectively to find out information,
• Use and recognise a variety of measuring units.

Implementation
Development of core skills through the use of the guidance found within the curriculum guidance for Early Years Foundation Stage (EYFS) where mathematical skills of problem solving, reasoning and numeracy are taught.

In Key stage one and Key stage two, mathematics is a National Curriculum core subject. In the Primary Curriculum for Mathematics (2014) the subject is divided into three key strands of learning:
• Problem solving.
• Reasoning.
• Rapid recall of number.

Planning
In the Early Years, planning follows the Early Years Foundation Stage curriculum. Lessons are based around the two strands:
• Number.
• Shape, Space and Measure.

Mathematics is taught every day, and children have access to mathematics physical and visual activities. Early Years planning shows the EYFS curriculum objective for each lesson and the key vocabulary to be taught. A variety of activities, teacher led and independent, based on the objective are also highlighted on the planning.

All planning in Key Stage One and is based on the Primary curriculum (2014) for mathematics. Planning and lesson preparation follows Southfield Primary School’s medium term planning (MTP) structure that is based upon the National Curriculum requirements for mathematics.

Weekly planning is organised by individual class teachers and monitored by the mathematics coordinator. Planning identifies the current teaching area and objectives to be covered that week, taken from the MTP. Differentiation is shown on the planning grids for children working at all abilities and within lesson activities.

Teaching and Learning
The use and application of mathematical principles underpins the whole of mathematical teaching and learning. Opportunities are given for pupils to apply their knowledge to a wide range of real life situations. They need to be able to choose appropriate equipment and methods for the task and to communicate and justify their findings in a manner appropriate to their age and ability, showing increasing concern for clarity and accuracy of meaning.

The children will record their work in appropriate ways for a variety of purposes, with high expectations for the quality of presentation.

At the Foundation Stage:
Teaching and learning promotes social skills and develops the mathematical understanding of young children through stories, songs, rhymes and finger games, board games, sand and water, construction on a large and
small scale, imaginative play, outdoor play, cooking and shopping, 2 and 3-D creative work with a range of materials and by observing numbers and patterns in the environment and in daily routines. Practical equipment is used to support the teaching and learning of number calculation.

**Key Stages One and Two**

Mathematics lessons broadly follow the following structure:

- An oral and mental starter involving the whole class. Teachers will include an opportunity for daily counting, times table practice or development of the four operations.
- The main teaching activity includes whole class teaching, followed by group, paired or individual tasks where the children will use previously explored learning or application of new concepts and skills.
- A plenary that concludes the lesson’s objective, provides a challenging activity or the next step in their learning. This gives children the opportunity to reflect on what they have learnt and identify and correct any misconceptions, expand their learning or prepare for the next stage in their topic/learning. The plenary can be used by the teacher as an assessment of the pupils.

From time to time, this structure may be adapted to reflect the needs of the class. The teacher will give demonstrations and explanations, with an emphasis on the use of appropriate mathematical language. Mental calculation is a key feature of developing fluency of number and children are taught a range of strategies to work out answers as well as learning the quick recall of simple mathematical facts. Teaching is interactive, visual, provides opportunities for feedback and discussion and supported by practical equipment when appropriate and may also involve:

- Whole class and group discussions,
- Practice to consolidate specific skills,
- Problem solving and investigational activities in order to learn how to break down a problem,
- Practical activities,
- Mathematical games and puzzles, including ICT,
- Challenge and puzzle activities.

**Teaching Assistants** support learning in Mathematics by:

- Giving focused support to individuals and small groups,
- Delivering targeted intervention programmes,
- Supporting differentiation within the classroom,
- Preparing and managing resources,
- Supporting assessment.

**ICT**
The use of ICT is an integral part of mathematics teaching and learning. The teaching of mathematics is supported by the ICT software provided by Mathletics and other teaching tool. This provides tools for assessment, visual learning opportunities and support for teaching and learning. There are also opportunities for online homework to be set by teachers to pupils’ individual accounts using Mathletics.

**Links to Other Policies**

SEN Policy
Equal Opportunities Policy
Gifted and Talented Policy
EAL Policy
We aim to ensure that all pupils, irrespective of special educational needs, gender, race and culture have access to a wide range of stimulating problems and activities.

**Resources**
We use a wide range of practical apparatus in school that are stored in a central location as well as within classrooms. All teachers and teaching assistants can access these resources easily, whenever they are needed. Teacher resource books and photocopiable sheets are kept in each year group. We have a wide range of digital resources that teachers can access to provide support for planning and lesson content.

**Monitoring and evaluation**
The purpose of monitoring and evaluating activities is to raise the overall quality of teaching and levels of pupil attainment. The mathematics co-ordinator, the Head teacher and the SLT will monitor the quality of teaching and learning and the monitoring will include:
- Scrutiny of planning,
- Quality of teaching and learning through lesson observations and feedback,
- Moderation of standards in children's work,
- Evaluation of children's attainment against targets.

**The role of the mathematics co-ordinator**
The co-ordinator is to:
- Take the lead in policy development and review, including the implementation of the National Curriculum and the calculation framework,
- Keep up-to-date on local and national initiatives and disseminate information,
- Take responsibility for the purchase and organisation of mathematics resources,
- Monitor the planning for mathematics across the school,
- Write, review, implement and update the Maths Action Plan,
- Encourage the professional development of staff,
- To monitor Mathematics lessons,
- To raise the kudos of the subject through whole school activities.

**Assessment**
At Southfield Primary School, assessment is an integral part of the teaching process. Assessment is used to inform planning and to facilitate differentiation. The assessment of children’s work is on-going to ensure that understanding is being achieved and that the correct amount of progress is being made.

Feedback is given to the children as soon as possible, and marking work will be guided by the school’s **Marking and Feedback Policy.**
- This aims to encourage and to give guidance for future work,
- Ticks and written comments are clear, with errors indicated,
- Some marking will be immediate, depending on the activity,
- Displays of mathematical work reinforce mathematical concepts, assist in learning and celebrate achievement,
- Oral feedback is given to enhance understanding.
**Formative assessment** enables the teacher to identify a child’s understanding and progress, to inform their immediate teaching and to plan for their coming lessons. This can take the form of:

- Discussing mathematics in the context of a practical task,
- Short tests given in oral or written form,
- Observations of pupils’ work,
- Individual discussions with children to evaluate progress,
- Judgements made through the use of Assessment for learning on a daily basis,
- Judgements against benchmarks set out by the National Curriculum.

**Summative assessments** consist of:

- Early Years Foundation Stage Profile
- Key Stage One SATs (Test and Teacher assessment)
- Key Stage Two SATs (Test and Teacher Assessment)

**Maths across the curriculum**

Although the mathematics curriculum is organised as a discrete subject, there are many potential cross-curricular activities. Making links between areas of learning deepens children’s understanding by providing opportunities to reinforce and enhance learning. Learning is enhanced by:

- Giving further opportunities to practise taught skills through purposeful use in other curriculum areas,
- Providing real experiences, context and meaning for the development of core mathematical skills,
- Assisting memory through providing opportunities for children to use skills in a different context,
- Providing opportunities for the application of knowledge in new contexts, to involve children in higher order thinking skills, such as reasoning and problem solving,
- Providing opportunities for learners to recognize and develop key aspects of learning, e.g. looking for patterns and relationships, problem solving and reasoning,
- Building concepts by providing children with opportunities to meet the same or related information in different ways, adding to the richness of their experience.