

MATHEMATICS POLICY

Introduction

This policy outlines what we are aiming to achieve in respect of pupils' mathematical education at Percy Main Primary School. It also describes our agreed approach to the planning, delivery and assessment of the mathematics' curriculum. The mathematics taught and the methods used reflect the recommendations outlined in the DfES guidance contained in the documents:

- Curriculum Guidance for the Foundation Stage
- Framework for Teaching Mathematics from Reception to Year 6
- Renewed Framework for Literacy and Mathematics
- Early Years Foundation Stage Guidance

It provides information and guidance for teachers, governors and other interested persons.

Aims

Mathematics helps children to make sense of the world around them through developing their ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

At Percy Main Primary School we aim to:

- develop a positive attitude to maths as an interesting and attractive subject in which all children gain some success and pleasure;
- develop mathematical understanding through systematic direct teaching of appropriate learning objectives;
- encourage the effective use of maths as a tool in a wide range of activities within school and, subsequently, adult life;
- develop an ability in the children to express themselves fluently, to talk about the subject with assurance, using correct mathematical language and vocabulary (as detailed in DfES 'mathematical vocabulary');
- develop an appreciation of relationships within maths;
- develop ability to think clearly and logically with independence of thought and flexibility of mind;
- develop an appreciation of creative aspects of maths and awareness of its aesthetic appeal;
- develop mathematical skills and knowledge and quick recall of basic facts in line with NNS recommendations.

Teaching and Learning Style

The school uses a variety of teaching styles to cater for the variety of learning styles of pupils in mathematics lessons. Our principle aim is to develop children's knowledge, skills and understanding in mathematics. We do this through a daily lesson that has a high proportion of whole-class and group-direct teaching. During these lessons we encourage children to ask, as well as answer mathematical questions. They have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work. Children use ICT in mathematics lessons where it will enhance their learning, as in modelling ideas and methods. The school's use of the 'block' and 'unit' approach to planning as outlined in the Renewed Framework (2007) ensures that Using and Applying mathematics is integrated into planning and teaching.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies - in some lessons through differentiated group work, and in other lessons by organising the children to work in pairs on open-ended problems or games.

We use teaching assistants where possible to provide appropriate support to individuals or to groups of pupils.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum, and we use the National Numeracy Strategy as the basis for implementing the statutory requirements of the programme of study for mathematics.

We carry out the curriculum planning in mathematics in line with the structures and recommendations outlined in the Renewed Framework for Mathematics. Our weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught.

Basic Skills

Once a week, all children from Year 1 to Year 6 will take part in whole class 'basic skills' sessions, which will focus on the essential elements for their specific year group. These 'non-negotiables' have been identified as skills that will most

powerfully help children to access, advance and secure their learning in all areas. Children in Reception will also have a set of 'non-negotiables' that they will focus on within their mathematics sessions throughout the year.

Assessment

Assessment has two main purposes:

- assessment of learning (also known as summative assessment);
- assessment for learning (also known as formative assessment).

Assessment of learning (AoL) - summative assessment

Assessment of learning is any assessment that summarises where learners are at a given point in time - it provides a snapshot of what has been learned. Within Percy Main Primary School AoL is used appropriately, e.g. to provide a Teacher Assessment level, inform APP and grade at the end of KS1.

Assessment for learning (AfL) - formative assessment

"Assessment for learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to get to and how best to get there."

Assessment Reform Group, 2002

At Percy Main Primary School we recognise that AfL lies at the heart of promoting learning and in raising standards of attainment. We further recognise that effective AfL depends crucially on actually using the information gained.

APP is the main assessment tool used to assess pupil progress within school. It encompasses:

Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal and are not normally recorded;

Using knowledge of pupils drawn from ongoing pupil tracking records and from the 'prior learning' section at the beginning of each unit of work within the Renewed Framework to guide our planning and teaching;

Adjusting planning and teaching within units in response to pupils' performance;

Use of the 'assessment for learning' questions within the Renewed Framework to check learning against objectives at the end of each unit of work. If necessary future planning is adapted in response to assessment outcomes;

Identifying gaps in learning through using APP.

The Foundation Stage

Work undertaken within the Foundation Stage is guided by the requirements and recommendations set out in the Early Years Foundation Stage document.

We give all the children ample opportunity to develop their understanding of mathematics. We aim to do this through varied activities that allow them to use, enjoy, explore, practise and talk confidently about mathematics.

Contribution in Mathematics to Teaching in Other Curriculum Areas

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. This is recognised within the Renewed Framework for Mathematics where speaking and listening objectives are suggested for each block within each year group. For example, there are opportunities for pupils to 'use a range of oral techniques to present a persuasive argument' offered in Year 6, Block B.

The information contained in the Renewed Framework is used to guide our planning, particularly in respect of speaking and listening.

ICT

The effective use of ICT can enhance the teaching and learning of mathematics when used appropriately. When considering its use, we take into account the following points:

ICT should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics;

Any decision about using ICT in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons;

ICT should be used if the teacher and/or the children can achieve something more effectively with it than without it;

Useful suggestions as to integrating ICT into units of work is given in the planning section of the Renewed Framework.

Mathletics sessions take place once a week for children in Years 3 to 6. This is an online programme which is used to build on and reinforce methods learned within mathematics lessons. Each child has an individual Mathletics account, which enables them to access the programme at home.

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 simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs. There is useful information within the Renewed Framework in relation to 'cross-curricular' aspects of mathematics and science.

Art, Design and Technology

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 and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

History, Geography and Religious Education

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. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children 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.

Physical Education and Music

Athletic activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.

Personal, Social and Health Education (PSHE) and Citizenship

Mathematics contributes to the teaching of personal, social and health education, and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views.

Teaching Mathematics to Children with Special Needs

At Percy Main Primary School we aim to provide a broad and balanced education to all pupils. Effective pupil tracking enables identification of pupils who may benefit from early 'intervention' at an appropriate level. We also recognise, and aim to make provision for, pupils who have a particular ability in mathematics.

Resources

There is a range of resources to support the teaching of mathematics across the school. All classrooms have a wide range of appropriate small apparatus to support pupils and staff in the teaching and learning in maths. IWB are available in all classrooms. Calculators and a range of audio visual aids are available as well as a range of ICT software. Numicon is used within EYFS and Key Stage One, which is designed to give children the understanding of number ideas and number relationships that is essential for success in mathematics. We recognise our school grounds and LOTC experiences provide opportunities for a more active approach to learning mathematics through supporting and empowering children's understanding.

Responses to Children's Work

We recognise the importance of responding to children's work, whether orally or in writing. We seek to encourage children by highlighting positive achievements. This could include praise for use of a viable method even if the end result were incorrect. Children are given opportunities, and actively encouraged, to explain their work to others and to display their work when it seems appropriate. They are encouraged to value and respect the work of others. Children are also encouraged to respond to any teacher comments made as well as identifying any targets they feel they have achieved. To aid children in understanding the intended learning within a session and the steps needed to be successful, 'Learning Objective and Success Criteria' stickers are used in books and highlighted green to show success and pink to identify problems/misunderstandings.

Monitoring and Review

Monitoring of the standards of children's work and of quality of teaching in mathematics is the responsibility of the Headteacher and Governors supported by the Subject Leader.