

Mathematics Policy

Rationale

Children should be equipped with mathematics skills in order to successfully approach problem solving in relevant and varied contexts. They need opportunities to develop concepts of mathematics through collaborative speaking and listening in order to rationalise ideas and processes.

Purposes

- To develop positive attitudes to mathematics in all children.
- To create an atmosphere in which children are confident and do not fear making mistakes.
- To ensure that children experience a broad range of mathematical experiences.
- To build children's mathematical vocabulary to ensure that they understand and can use the precise language of mathematics and talk confidently about their work.
- To teach the basic skills and concepts which enable children to tackle tasks confidently and give opportunities to apply skills in various situations with various resources.
- To encourage children to explore and use a suitable approach to problem solving.
- To ensure children are given the opportunity to learn and use appropriate ways to record their work.
- To ensure children develop firm visual images to enable them to tackle mental mathematics.
- To encourage children to talk confidently about their work, so that they can extend their thinking; explore new idea and review their work.

Guidelines

1. Mathematics will be taught for a minimum number of hours per week:

- **Key Stage 1:**

Year 1: A daily 40 minute lesson and an additional 20 minute "oral reinforcement" lesson, to reinforce concepts and develop mental strategies - Total 5 hours per week.

Year 2: a daily 60-minute lesson – Total 5 hours per week.

- **Foundation Stage:**

Nursery & Reception: Opportunities for developing numeracy skills take place on a daily basis within Topic Teach sessions. Reception children experience a daily 15 minute whole class numeracy session, with associated small group work follow-up.

The teaching of mathematics should take place within a learning environment, in which all children make as much academic ('maximised value added') progress as possible. It should be taught systematically and methodically each week, adhering to the governing principles, detailed below - within a caring and supportive climate, providing all children with an equitable, standardised, balanced, child-centred, ICT-rich curriculum. However, with time and maturity, and the rise in contextual value added progress that children and teachers will make as a result, progressively more reflective practioners will utilise 'assessment for learning' information to engender an increasingly more diverse, rich and personalised learning culture within this framework. Accordingly, practioners may well decide, within this context, to customise their own planning and teaching. Teachers may use assessment for learning information to provide a more reflective and responsive curriculum for their class, engendering personalised learning

opportunities to identify and tackle the needs of individuals and groups of children to maximise learning opportunities. Similarly, teachers may decide within their year group to adjust the timings of individual lessons. On occasion, it will be appropriate to have a series of short lessons and, at others, children may require time to develop ideas, and refine and consolidate learning within a more sustained period.

2. In Key Stage 1 teachers will refer to the school's scheme of work, when planning the teaching of numeracy. In the Early Years Foundation Stage, teachers will refer to the Abacus/Hamilton Charity Maths Scheme and the EYFS Curriculum, when mapping the provision for this subject.
3. Numeracy is best taught by means of a "Whole Class Interactive" approach to learning, employing a lively pace and an episodic style of teaching, with a high emphasis on oracy, class participation and effective pupil/teacher demonstration and modelling. Such lessons will include teacher exposition, guided practise, consolidation of skills and routines, practical and investigative work, discussion and recording.

Lesson structure:

◆ *Starters*

The objectives for the lesson and key vocabulary are introduced to the children. The class works together on a "warm-up" game. Starters are used to consolidate previous learning or to prepare children for new concepts. In addition, mental warm-up activities are designed to rehearse and sharpen key mental mathematics skills, including counting, comparing and ordering numbers etc. They must be fun, establishing a positive start to the lesson and involving everyone. Lower attaining children are not allowed to 'opt out'.

◆ *Teacher exposition and guided practice*

The teacher introduces new concepts or processes, demonstrating and exemplifying new work with the whole class. Teacher exposition often involves a new slant on an old skill, with gradual consolidation of understanding and fluency. Questions are frequently asked to check understanding. Children may demonstrate the new learning to the class, prompted by teacher. There is an emphasis on understanding as well as on developing speed and accuracy. This segment of the lesson may also contain short consolidation activities, or games played either by the class or pairs.

◆ *Practice and consolidation*

This takes only about a third of the lesson. Children carry out a task, usually written, to practice and consolidate the work learnt during this lesson or previous lessons. There is a strong link between the teaching and the task. Most children carry out the same task as each other. High and low attainers may be given modified tasks, but always within the same number territory and the same topic. Different pupils may be directed to complete different examples or different amounts of work. Extension and support activities are often provided. However, the focus is on keeping the class together, not on fragmenting it.

- ◆ Exceptionally able children will be taught from both the KS1 and KS2 curriculums.

- ◆ *Conclusion/Plenary*

This is an opportunity to review the lesson, revise key vocabulary and consolidate concepts taught. Arising difficulties can be addressed and this will help inform forward planning.

4. Mathematics lessons will be taught *systematically* yet within a caring and supportive climate, where children feel sufficiently secure to take risks. Learning can take place out of class too and across lessons, with children working independently or collaboratively, supervised by nearby staff.
5. Within the different episodes of the Whole Class Interactive Teaching lesson, teachers will skilfully use differentiated questioning to:
 - i. engage children in effective pupil demonstration and modelling;
 - ii. scaffold children through extended dialogue, to improve oracy skills, enhance self-esteem and to extend their children's learning through giving extended responses;
 - iii. identify assessment for learning information, to gauge understanding and to re-focus teaching, if necessary;
 - iv. offer children focused feedback.

Wherever possible, questioning and discussion should be encouraged between pupil and adult, and pupil and pupil. Children are expected to develop skills of speaking clearly to the class, not just their teachers. They are expected to use extended vocabulary to explain their understanding. Learning should be developed through discussion, rather than through writing. Written work is used principally as a way of reinforcing what has been learnt orally and aurally.

6. Short term plans should state clearly the learning intention in 'child speak' and the learning intention must be shared with the class, so that children know what they are expected to learn. The teacher must be sure of the learning purpose of the lesson. All children need positive feedback to reinforce their knowledge and self-confidence and activities may need to be modified to ensure that all children can participate. Teachers will also differentiate their planning to meet the needs for Gifted and Talented children within their class.
7. Children's achievements within lessons would be measured against learning intentions and notes made on weekly plans.
8. Half-termly summative assessments will take place, and the data from which will help address target setting and attainment support. "End of Unit Assessments" will take place at the end of each Unit of Study. Teachers will give a "best fit" level for the attainment of each child in the term previously taught. This judgement will be based on a combination of the teacher's own knowledge of that child's achievements during lessons, their formative assessment notes, summative assessments, as well as any formal or informal observations that might take place. Teachers will need to decide on a "best fit" os,

drawing upon their own 'assessment for learning' information and after consulting the Development Stages for Mathematics.

9. Maths homework will be set within KS1 on a weekly basis (see school's "Homework Policy"). This will help involve parents in their child's learning. It will utilise the context of the home and apply numerical strategies in a non-school situation. Furthermore, it will extend the time for learning mathematics and give some extra practise in number work. Homework is differentiated according to ability.
10. All children need positive feedback to reinforce their knowledge and self-confidence and activities may need to be modified to ensure that all children can participate.
11. Real situations from children's homes and from school will be used, wherever possible, to show the application of mathematics in our lives.
12. Teachers will integrate ICT wherever appropriate into all lessons:
 - a. Within the various episodes of the Teaching & Guided Practice Segment:
 - as a tool to aid the teaching of key skills; engage children, engender pupil modelling & demonstration and to enhance oracy.
 - b. Within the Child Consolidation Segment:
 - enabling children to undertake an ICT-based alternative activity, directly consolidating the learning intention for that lesson;

or

 - to provide an activity which consolidates the lesson's learning intention, whilst at the same time embedding skills linked to that week's ICT lesson.

Within this manner, ICT will be employed as a vehicle to engender oracy, independent and collaboration worked and personalised learning, linked to this subject.

Mathematical Materials (within class or centrally based):

Interlocking cubes	Washing line with pegs
Counters	Hoops
Spotty dice	Feely bag
Numbered dice	Construction equipment
Dominoes	
Coin	
2D and 3D shapes	
Containers (for capacity)	
Analogue and digital clocks	
Sand and rocker timers	
Weighing balances/scales	
Calculators	
Sets of weights	
Rulers/meter sticks/tape measures/centicubes	
Pegboards and pegs	