HOO ST WERBURGH PRIMARY SCHOOL AND MARLBOROUGH CENTRE

MATHS POLICY

Updated: 19th December 2017

Head of school: _____

Chair of Governors: _____

Aims

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. We believe it is a vital life skill as well as an academic subject. It enables children to understand relationships and patterns in their everyday lives. The demands of the New Primary National Curriculum (compulsory from September 2014) ensures that we now place greater emphasis on improving the fluency of children's mathematical understanding, with a corresponding increase in memorisation and daily practice.

At Hoo we believe Maths teaching should contribute to our pupils acquiring life-long skills and promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion.

Through our provision we aim:

- to develop the ability to solve problems through collaboration, decision- making and reasoning in a range of contexts and see links between contexts and topics;
- to promote speed and fluency with number and calculating;
- to secure the learning of Key Instant Recall Facts (eg. times tables etc.); to promote confidence, competence and enjoyment in manipulation of number;
- to provide children with seamless progression from mental models and ways of working to abstract methods in an age-appropriate way;
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, develop measuring skills in a range of contexts;
- to understand the importance of mathematics in everyday life.

Teaching and learning

Teachers employ a variety of creative teaching and learning styles in mathematics. During daily lessons we encourage children to ask and explore inventively, as well as answer, mathematical questions. The focus is on children's understanding and encouraging them to articulate this using accurate mathematical language and vocabulary.

In the Early Years and KS1, the children have the opportunity to use a wide range of resources, such as Numicon, bead strings, number lines, counting sticks, Base Ten, multilink cubes, 100 squares, digit cards and small apparatus to support their work. These continue into Lower KS2 until the individual child no longer needs to support their own learning and reasoning in this way. Some children will still need this type of support into secondary school. However, teachers in KS2 will consider how manipulatives, such as those listed above and place value disks, may support learning when introducing new concepts, helping the children to understand more abstract concepts.

Appropriate resources are provided, however we aim to promote the independence of the child wherever possible, encouraging him/her to decide which resources they would like to use. Our aim is to ensure that resources are fully accessible for every child. Indeed, in lots of cases, children from KS1 and KS2 can draw their own representations to support their understanding.

In every primary class there will be a wide range of requirements. We recognise this fact and provide suitable learning opportunities for all children through considering how we can support all pupils to achieve within the learning objective.
Starting in Key Stage 1, we are working towards a mastery approach, as we believe that all pupils are capable of mastery in maths. This mastery approach means that we differentiate through the amount of scaffolding we provide children (differentiating depth of understanding; not giving different children different tasks).
We achieve this differently in each Key Stage:

- In Key Stage 1 we set the same task for all, with support provided through
    - concrete or pictorial aides;
    - adult or peer support;
    - variation theory – small changes to support their ability to link learning;

Prove it challenge tasks will deepen and enrich the understanding of the objective for those rapid graspers.

- In Key Stage 2 we have a wider range of understanding within each class (as prior teaching was not following a mastery approach) so we provide differentiated tasks, which aim to progressively deepen understanding. (Bronze, Silver, Gold, Platinum tasks)

We achieve this through a range of strategies:

- Immediate formative assessment – rapid intervention should lead to less gaps to close. Rapid intervention is in the lesson (led by teacher), or before the next lesson (by class TA).
- Providing support in the form of concrete equipment;
- TA or teacher working with a guided group;
- buddy or paired working;
- Group discussion and investigative work;
- TA or Teacher led booster or extension activities with small group/individuals;

Most maths lessons include some form of discussion activity. It is very important that children learn to explain their understanding and this is often achieved by asking them to explain their understanding to somebody else.

There is an emphasis on using and applying maths in everyday situations, hence all areas of calculation will be practised regularly by tackling real-life word problems.

Children are expected to make progress within a lesson, within a concept, and are expected to make connections between concepts.

Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum, and we use this document as the basis for developing our planning to meet the needs of every child. The new emphasis on flexibility, fluency and memorisation of number facts has a number of implications for planning. Each year group has a yearly overview, which ensures coverage of the appropriate topics, with a focus on number. Each unit has an overview, which considers the key themes, National Curriculum objectives, key vocabulary to use and possible misconceptions, in order to fully support our staff in planning high quality maths lessons for all.
Plans will include sections for:

- the overall learning objective
- formative and summative assessment
- important vocabulary to be used and explained
- specific questions to be used to extend and challenge thinking
- the use of concrete apparatus or visual models/representations eg. bar models, arrays, etc.

Assessment

Effective maths assessment includes a range of activities:

Assessment for learning, where the teacher makes short-term assessments, often on a daily or weekly basis, in order to inform them of the next steps for a child or group of children. This allows the teacher to more closely match teaching and learning to the child.

End of term assessments which are summative in nature and aim to encapsulate the level that a child has achieved to date. These will be recorded on Target Tracker.

Yearly assessment, again summative in nature and reported annually to parents. Results will be compared to yearly expectations. At present we use PUMA tests for years 1, 2, 3,4, 5 and 6, in addition to the externally marked end of Key Stage SATs tests. These testing arrangements may change in the next few years.

Accurate assessment allows for accurate target-setting. Targets for every child will be set on an annual basis and used to monitor progress.

Feedback

Feedback to children is given in a number of different ways, including:

Marking of books. Children's work is marked on a regular basis against the learning objective, often providing support on developing their understanding. We try to complete a lot of marking within the lesson, with the child, to intervene rapidly, in order to fully support their understanding of the learning.

Verbal Feedback. We use verbal feedback to develop their understanding, for example, to pose an extension activity for the child, or to ask a question for the child to think about which ensures understanding rather than adherence to a procedure. We try to give information to the child about how to improve their work, or offer an alternative 'way of thinking' about a particular problem. For further information please see our marking policy. We also encourage self and peer feedback. We recognise that verbal feedback is one of the most important ways to develop an individual's understanding and to correct misconceptions.

Contribution of mathematics to teaching in other curriculum areas

English
The teaching of Mathematics contributes significantly to children's understanding of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, in mathematics lessons we expect children to read and interpret problems, in order to identify the mathematics involved. They may not be aware of it, but children are developing their speaking and listening skills whilst they explain and present their work to others during learning discussions that take place frequently within maths lessons.

Science
Science uses many mathematical skills and a range of knowledge. Children use measuring equipment with a range of scales, adapting their measurement skills and the expectations we have of them as they move through the primary age-range. This starts with, for example, non-standard measures such as hand spans, say, and develops to using measuring equipment with two decimal places during KS2. Their skills in presenting and analysing information also develops, through the use of a variety of types of charts and graphs.

PSHE and citizenship
The teaching of mathematics supports the social development of our children through the way we teach them to work together during maths lessons. Daily buddy or paired work helps children to understand the importance of explanation and reasoning to help them solve real-life problems. They also tackle real-life problems such as money management.

Computing
Information and communication technology enhances the teaching of mathematics significantly. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results, or when creating repeating patterns, such as tessellations. When working on control, children can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships.

Mathematics in EYFS

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

Although all classes have children with different mathematical ability, we endeavour to give all children ample opportunity to develop their understanding of mathematics. We do this through varied activities that allow them to use, enjoy, explore, practise and talk confidently about mathematics. eg. Meaningful play activities allow a child to communicate their understanding of concepts such as ‘more’ or ‘less’. This ‘mathematics talk’ and the richness of maths vocabulary can then be built upon this foundation, throughout KS1 and KS2.

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 rich education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make good or outstanding progress. We endeavour 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, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Detailed assessment 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 will lead to detailed provision planning to meet the needs of a child or a group of children with special educational needs.

Mathematics Coordinator

The subject leader has a number of roles:

- To take a strategic lead in the development of maths within the school and feedback to leadership and governors when appropriate;
- To agree with colleagues a Progression in Calculation Policy to ensure in- school coherence for children, and to communicate this to the school community;
- To ensure that maths teaching is creative, skilled and up to date by ensuring that all teachers have access to regular and effective CPD;
- To monitor the quality of maths teaching by regular lesson observations;
- To give feedback to colleagues about their maths teaching;
- To advise colleagues about developments in best practice;
- To undertake regular book-monitoring to ensure that feedback to children is timely and challenges each individual child;
- To undertake moderation activities with colleagues, including colleagues from our local consortium and Kent and Medway Hub work, comparing samples of work with national exemplification materials;
- To encourage the focussed embedding of maths in cross-curricular topic work.
- To inform parents and carers about contemporary maths teaching methods so that they may support their child with confidence at home.

It is, therefore, important that the subject leader keeps up to date with current theory and practice in Maths, through research and action research, where appropriate.

Monitoring and review

The subject leader evaluates the strengths and weaknesses in the subject, indicating areas for further improvement and reports this on an on-going basis to the head of school. The subject leader has allocated time in order to perform lesson observations and undertake book monitoring and pupil conferencing. A named member of the school's governing body is briefed to oversee the teaching of mathematics (curriculum governor). This governor meets with the subject leader to review progress annually.

This policy will be reviewed every two years.