



This document gives a snapshot of the school's approach towards maths and outlines how maths is taught in our school.

At Ashburnham we aim to:

1. Develop a positive attitude to maths as an interesting and attractive subject in which all children gain success and pleasure
2. Develop mathematical understanding through systematic direct teaching of appropriate learning objectives
3. Encourage the effective use of maths as a tool in a wide range of problem solving activities within school and, subsequently, adult life
4. Develop an ability in the children to express themselves fluently, to talk about the subject with assurance, using correct mathematical language and vocabulary
5. Develop mathematical skills and knowledge and quick recall of basic facts
6. Develop a range of efficient mental calculation strategies for all four operations;
7. Be confident using written calculation methods for all four operations.

Planning

Planning in mathematics is in line with the structures and recommendations outlined in the National Curriculum Programmes of Study. Our weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught. Day to day, small, progressive steps are made in order for all children to understand key concepts. Across all year groups, we follow medium term programs of study, which map out the year's curriculum across the three terms.

Reception to Year 6 uses the programme 'Mathematics Mastery' (MM). This program was first taught in Ark schools and is based on the Singapore approach to mathematics teaching. The program is based around three principles: that conceptual understating is key, that children must be able to speak in full sentences and use correct mathematical vocabulary and that they can learn to think like mathematicians. MM uses problem solving as a way to promote these principles. We supplement this programme with additional, rich tasks to allow key concepts to be explored in different ways.

Resources

One of the main aspects of 'teaching to mastery' is the concrete-pictorial-abstract approach (CPA) which insists that children understand key concepts using concrete manipulatives, are exposed to and can record scenarios using pictures and can then apply this understanding in an abstract way. It is important that links between the three stages are explicitly made during teaching and that all children, regardless of ability or age, are exposed to a variety of different representations as a result of planned conceptual variation. Resources should be removed at an appropriate stage where conceptual understanding is secure, so they are not used procedurally during calculations.

Lesson Structure

The structure of a lesson will vary based on the topic covered and the needs of the pupils. Steps throughout a lesson are small to ensure that all pupils understand the key concepts before they are exposed to new ones. It is important that nothing is assumed and that all key prior knowledge is revisited as appropriate. It is expected that all pupils have the opportunity to apply their understanding of a topic as a result of their exposure to rich and deep mathematical problems.

During a lesson, children will be given the opportunity to practise new skills, apply these skills in different ways as a result of variation or within a different concept and reason and explain about the concept. It is expected that the majority of pupils reach a depth task in the majority of lessons. These four key elements form the structure of a typical worksheet, where the number of each question type is limited to allow progression to the depth questions.

Differentiation

The majority of children in a class move through the programme of study at broadly the same pace and are exposed to the same questions during lessons. Children in all classes sit in mixed ability pairings to allow collaborative learning, exposure to different opinions about the same work and regular opportunities for discussion of answers to support pupils' reasoning skills and check and deepen their understanding. Learners are supported by the structure of the lesson, their peers and additional adults as well as scaffolds provided by teachers. Children are extended as a result of higher order questioning where conjectures and generalisations are required and consistent exposure to rich tasks, rather than acceleration to new content. It is expected that all pupils will experience challenge in a lesson.

Marking

The marking policy follows the NCETM guidelines published in April 2016 and it acknowledges the different style of teaching maths. All adults in the classroom mark during the lesson, in a time efficient manner, to allow an immediate evaluation of understanding to be achieved by the end of the lesson. This allows same day intervention to be put in place for the children that did not understand the key concepts taught within a lesson (shown using a stamp). Because of the small, progressive steps made between lessons, no individual next steps are given as the next lesson should be designed to take account of the next steps. If there is a common misconception, the whole class will be exposed to it within the next lesson. Children use green pens for self/peer assessment, marking and corrections.

Same Day Intervention

A daily slot is timetabled for all year groups to allow a small number of pupils (maximum of 6) to receive additional support (by the class teacher where possible) following the lesson to ensure no child falls behind because of a lack of conceptual understanding. If more children require support, then the lesson should be retaught the following day using variation to focus on the areas of misconception.

Maths Meeting

Daily sessions are timetabled for all years and are used to consolidate key areas of maths for each year group. Maths meetings provide an opportunity for children to revisit key concepts throughout the year and increase their memorisation of key facts that may not be explicitly covered during all maths lessons. This means that pupils are practicing concepts and skills on a regular basis, meaning they are continually building on their mastery of these concepts (Mathematics Mastery 2017) and are more likely to become fluent in these areas.

Assessment

Research (Black et al 2003) shows that the most effective and beneficial forms of assessment are ones which support learning. Formative assessment forms a crucial part of every lesson and as such is built-in to lesson design. It is therefore important that classroom activities are well structured and involve conceptual and procedural variations and intelligent practise. Regular opportunities for discussion and critiquing of answers form a significant part of this assessment as well as further opportunities for reasoning and explanation skills to be developed. Summative assessment, following our assessment policy, enables teachers to monitor and track pupil's progress. Where progress is not secure, then more detailed monitoring and recording may be justified

Home Learning

Home learning is given on a daily basis. It provides the children with an additional opportunity to consolidate the key learning from each day's lesson. It follows the same format as that day's lesson and provides an example for parents to support with at home. It is designed to take between 5-10 minutes to not overload pupils. This is a further step implemented to ensure that children do not fall behind their peers.

References

Black, P., Harrison, C., & Lee, C. (2003). *Assessment for learning: Putting it into practice*. McGraw-Hill Education (UK).

NCETM. (2016). *Marking and Evidence Guidance for Primary Mathematics Teaching*.

Mathematics Mastery. (2017) <http://toolkit.mathematics mastery.org/applying-the-approach/maths-meetings>