

Hollyfield Primary School Maths Policy



Philosophy

'Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment' (Department of Education). Using the Programmes of Study from the National Curriculum it is our aim:

Aims

- To become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- To **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- To **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions
- To embed a **mastery approach to** learning by ensuring all children have a deep structural knowledge and the ability to make connections
- To encourage **personalisation** by ensuring all children work independently and collaboratively and be able to select appropriate materials for the task set, in a responsible manner.

The teaching of mathematics at Hollyfield is geared towards enabling each pupil to develop their learning without labelling them by ability. We endeavour to not only develop the mathematics skills and understanding required for later life, but also an enthusiasm and fascination about maths itself.

We aim to increase pupil confidence in maths so they are able to express themselves and their ideas using the language of maths with assurance.

We recognise the importance of developing factual, procedural and conceptual knowledge.

Organisation

Maths is taught in mixed-ability classes in each year group. There is some teaching by ability in Year 5 and 6 as pupils make the transition into the 2014 curriculum. National Curriculum for Maths (2014) is used by all teachers to ensure that all parts of the programme of study are taught. The programme of study is split into various strands which directly relate to maths at Key Stage 1 and Key Stage 2.

Children in the Foundation Stage work towards the Early Learning Goals by following Development Matters and work is planned with links to other curriculum areas so that the children have a range of learning experiences. Pupils have access to a variety of play based activities alongside more structured teaching and opportunities for self-initiated learning.

Calculation policies for Addition, Subtraction, Multiplication and Division have been agreed by the LTE and Hollyfield staff to ensure continuity and progression throughout the school. See Hollyfield Calculation Policy for further details.

Planning

The short term planning format is based on the scheme of work from Abacus Maths and the 2014 Maths Curriculum. The plans are adapted and altered to suit the children's needs in maths, based on rigorous assessment for learning. A starter activity, usually number work, allows pupils to begin learning as soon as the lesson starts. The main activities aim to introduce new learning and will be differentiated to ensure pupils are learning according to their needs. Maths challenges are used to deepen pupils' maths knowledge and understanding. Teachers also include context, knowledge, reasoning and problem solving activities, all of which will have a purpose - a real life connection and a reason for learning. Lessons will then include mini reviews which will be used throughout the lessons to develop and embed children's understanding further and allow for the progression through activities to develop at the appropriate pace for each individual child. Reviews will be used at the end of a lesson to consolidate, assess and take learning forward.

Questioning is the key to success in all our mathematics sessions and questions will be continuously adapted by the teacher and support staff based on assessment for learning.

Mental maths should be incorporated throughout all lessons and mental strategies for solving all mathematical concepts will be discussed and developed based on continuous assessment for learning.

Cross curricular

Class teachers should regularly plan for opportunities for children to apply their maths skills to different problems within maths lessons and across the curriculum. This will also allow children to revisit, practise and consolidate different areas of maths and apply them within different contexts.

Teaching

- In the Foundation Stage, children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as a whole class and in smaller focus groups. There are also a range of planned structured play situations daily, where there is plenty of scope for exploration and independent learning.
- Children will become very competent 'counters' so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards in many different sized steps as well as from different starting/ending points is essential.
- Maths learning builds from a concrete understanding of concepts where children are manipulating objects (all classes are provided with Maths Toolkits – see Appendix 1. When children are able to see concepts this way, they then need to understand the same concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations.
- Children should be encouraged at all times to verbally communicate their understanding of maths, and in KS2 write their understanding of maths, so that it clarifies their thoughts.
- Children's mental maths is of great importance, with number bonds, times tables facts and various strategies for calculations taught and practiced at school with support sought from parents through homework activities and on-line tasks (Percy Parker, Rockstar Maths, Active Learn and Mathletics).
- A progression towards efficient written calculations should be developed and applied consistently in each year-group. The school Calculation Policy should be followed.
- Though the nature of lessons will be very different depending on the needs of the class, children should be: active, practising skills they haven't yet mastered; learning something new OR learning to apply their knowledge to different contexts. They should be: 'doing' very quickly; working at a good pace and being productive; sharing their thoughts and methods and being successful.

- The children are encouraged to work independently and collaboratively. They use BLP (Building Learning Power), the 4Bs (brain, book/board, buddy, boss) when they find a task difficult and they are also encouraged to use 'Maths Toolkits' which are available in class. Working walls also allow children to see examples of the tasks they are undertaking and Juicy Mistakes are identified and used as a teaching/learning point.

Display

- In the classrooms there should be a Maths working wall display which has examples of strategies, pupil's work, questions, etc.
- Maths toolkits should contain age-appropriate resources, particularly concrete and pictorial apparatus to support children. These should be made available to pupils in all maths lessons with children choosing the resource they wish to use, in order for them to achieve the learning objective.
- Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.
- There should be a maths display in corridors and in other areas of the school in order to encourage a positive attitude and enthusiasm towards mathematics for all groups of children.

Resources

In Foundation Stage, each child has a Maths book to record their focus group Maths activities, a folder to keep independent activities and worksheets and observations are also recorded on an online journal called '2simple profile builder.' These observations of independent and teaching activities are emailed to parents weekly to inform them of their child's learning and next steps.

In KS1 and in KS2 pupils have a Maths book to record their daily Maths activities. Some teachers may use folders to keep worksheets, if they are not glued in to books.

Materials considered necessary for everyday use are kept in the classroom, labelled and easily accessible to encourage independent use by children. Staff are encouraged to have the Maths Toolkits in their classrooms, which children can help themselves to if they need extra resources during lessons. Structured apparatus for KS2 is centrally stored in the Falcon Room. For KS1, this is stored either in classrooms or in the maths cupboard, which is found in the Infant Hall. In Reception resources are stored in classrooms and centrally in the corridor. Staff select resources for children to use daily and these are accessible on tables and in activity areas. The Abacus scheme of work is followed and supplemented with additional topic related ideas and resources.

The Abacus scheme of work is used to resource the majority of Maths lessons. Most lessons require practical resources to support the children's learning and each classroom has Abacus Textbooks for the children to complete tasks. Children are encouraged to reach challenges every lesson and teachers will select challenges from a number of resources such as Testbase, Mastery in Maths document (NECTM), various websites e.g. NRich, Heinemann Textbooks, problem solving/maths investigation books

Special Educational Needs

In order to provide work that is appropriate to the learning experiences of the individual children it is necessary for the teacher to be aware of the EHCP/Learning Plans that apply to children in the class he/she is teaching. This will assist in the planning of differentiated material for the class so that all children will be able to achieve at the level that is appropriate to their abilities.

Equal Opportunities

It is the responsibility of all teachers to ensure that all pupils, irrespective of gender, ability, including gifted children, ethnicity and social circumstance, have access to the curriculum and make the greatest progress possible.

The use of differentiation allows children to respond to the work presented to them at the appropriate level.

All pupils have equal opportunities to reach their full potential across the Maths curriculum, regardless of their race, gender, cultural background or ability. Class teachers will be responsible for planning activities that are differentiated and suitably challenging to meet the needs of all children, enabling all to access the study of Maths.

British Values

We strive to promote the fundamental British values of democracy, the rule of law, individual liberty and mutual respect and tolerance of those with different faiths and beliefs across all subjects and assessments. At Hollyfield Primary School, Staff and Governors are committed to the safety and welfare of all pupils and will ensure that, through the robust implementation of all safeguarding policies, that all pupils are protected from any potential exposure to extremism and radicalisation.

We will ensure that all our pupils, especially those with SEND, will be fully supported academically and socially to ensure that no pupil is at risk of bullying or any other form of discrimination.

Safeguarding

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Information Communication Technology

All classrooms have either Smart Boards or Interactive Whiteboards with a wide range of resources available for them on ActivInspire. Each classroom has at least one computer and access to iPads. Abacus, Mathletics, Maths Packs and Maths Whizz are examples of some of the programs which can be used to practice skills and support the daily maths lesson as well as a wide range of activities on websites. There is also timetabled access to the Digital Learning Suite.

Beebots, iPads, calculators and remote controlled toys are used to in Reception through play and exploration to aid understanding of number, position, shape and measure concepts.

Differentiation

The daily maths lesson is appropriate for almost all pupils and the teaching of mathematics at Hollyfield is geared towards enabling each pupil to develop their learning without labelling them by ability. Using summative assessments and AfL, pupils are given work according to their ability in that particular area of maths. Children are also encouraged to select and move on to new tasks and challenges if they are confident. Mastery focuses on ensuring pupils work through the curriculum at the same pace. However, work is appropriately differentiated to meet the needs of individual pupils including Special Educational Needs and more able children. Resources are therefore differentiated, modified and used imaginatively to support or challenge learning, and Teaching Assistants play a valuable part in supporting the effective delivery of daily mathematics lessons for all pupils. Every effort is made to support all children in achieving their targets. If pupils are struggling with a concept in a maths lesson then further interventions will be

needed in the form of pre-tutoring or post-tutoring. Post-tutoring should take place the same day so children 'catch-up and keep-up' with the curriculum.

Marking

Work is marked according to our School Marking Policy and indicates whether or not the Learning Objective and Success Criteria have been achieved. Some maths work may be marked during the lessons by pupils or teachers to identify the amount of progress being made. Some more able pupils may need to be challenged further and other pupils may need extra support to achieve the objectives. Pupils who are falling behind in a lesson will have a further intervention later that day to help them quickly catch-up and achieve the appropriate level. See Marking Policy and Marking and Evidence Guidance. See Appendix 2.

Target setting

Children in the Foundation Stage are baselined on entry using the Development Matters age related development bands. Targets and next steps are taken from the appropriate development band and the Early Learning Goals and during the course of the year children's progress is monitored and shared with parents. Targets taken from Classroom Monitor are displayed on the inside cover of pupil's maths books.

Targets are taken from some of the KPIs on Classroom Monitor and are displayed on the inside cover of pupils' maths books. When children have independently completed the targets (or part of the targets) pupils then colour the targets to record their progress, in-line with classroom monitor.

Homework

Homework is set each week throughout school using the Active Learn Primary from Abacus Maths. These are series of games using involving pupils building up the fluency, accuracy and speed of a variety of mental maths challenges. Mathletics or Rock Stars Maths homework may also be set as another way for pupils to complete maths work and challenge each other and pupils from across the world in fun tasks. Teachers may, from time to time, send home worksheets related to work completed in lessons. Children who do not have internet access at home may complete the homework at school.

Assessment, Recording and Reporting.

Assessment for learning occurs throughout the entire maths lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. On a daily basis children self-assess against the learning objective and success criteria, giving them a sense of success.

Pupil's work is marked in line with the Marking Policy. 'Juicy Mistakes' (JM) are often used to identify errors or misconceptions in maths and pupils are encouraged to learn from their mistakes and try again. Some 'Juicy Mistakes' are displayed on the working wall and used as a teaching point within the lesson.

As part of our formative assessment, Classroom Monitor is used to assess number, measurement, geometry, statistics and for upper KS2 ratio and algebra. Teachers use iPads and computers to assess pupils during a lesson if they wish. Classroom Monitor builds up a picture of children's knowledge and skills and shows gaps, targets and what has been achieved in each objective as well as giving examples of greater depth.

Summative assessments are made each term in order to provide further understanding of the level a child is working at and to inform a more rounded judgement of their abilities.

- Reception – children are assessed against statements from the age-related development bands each half term and the Early Learning Goals at the end of the Reception Year.
- Year 1 – 5 complete PUMA (Progress in Understanding Mathematics Assessments) termly – Abacus Assessments and Mastery Checkpoints are available for staff to assess pupils at the end of each half-term.
- Year 2 and Year 6 complete end of Key Stage SATs.

Tracking is used in order that children who are not making good progress over time can be targeted for support. What that support will be and how intensive, depends upon the child's needs.

Children in the Foundation Stage are baselined in September to provide an accurate starting point for each pupil. Pupils are then continually assessed throughout the year and progress towards the Early Learning Goals is monitored.

Results of assessments from all other year groups are recorded in mark books and through Classroom Monitor, these are analysed by the Senior Leadership Team. Results of assessments are used to inform planning, groupings and to identify underachievement so that targeted support can be put in place. Staff meet in Phase teams to moderate work and agree levels. At the end of each academic year, a written report is given in maths and parents are informed of SATS results. Termly progress against targets is discussed at Parents' Evening.

An annual report will be given to governors stating what has been carried out in Maths and the impact it has had. Attainments in Maths will be reported to parents at the end of the school year.

Evaluating and Monitoring

Maths teaching is evaluated and monitored by the Maths Co-ordinator and Senior Leadership Team. This includes monitoring of planning, lesson observations, book scrutinies, working walls, displays and pupil conferencing.

January 2017

To be reviewed January 2018

Appendix 1 - Maths Toolkits

KS1

Laminated part whole model sheets
Bar model strips
Hundred squares
Times tables grids
Money purses
Arrow cards
100 bead strings
10 bead strings
Place value mat
Place value boards
Dice
Number lines
Measures conversion maps
Base 10
Cubes
Clocks
Shapes

KS2

Place Value Grid (to 3 dec. places)
Number Grid (-19 to 120)
Measurement Conversion Mats
100 Bead String
Digit cards
Place Value Counters

Other maths resources are available from the Falcon Room

Appendix 2 - Marking and Evidence Guidance for Primary Mathematics Teaching (NCETM)



Marking and Evidence Guidance for Primary Mathematics Teaching

Introduction

This document offers guidance about marking and evidence-recording within the context of primary mathematics. In this document, 'marking' is taken to mean the process whereby a teacher looks at pupils' written work, examines it for errors, misconceptions and/or conceptual and procedural fluency, and then responds in some way, either in writing, speech or action. 'Evidence-recording' is taken to mean the keeping of written or other records to show evidence of pupils' progress in their learning of mathematics.

Research (Black et al 2003) shows that the most effective and beneficial forms of assessment are ones which support learning (i.e. are formative) and are built-in to lesson design. In primary mathematics they require:

- well-structured classroom activities (involving conceptual and procedural variation and intelligent practice);
- regular opportunities for discussion of answers and strategies to support pupils' reasoning skills and check and deepen their understanding;
- interaction and dialogue (between teacher and pupils, and between pupils themselves), focusing in particular on key ideas and concepts (including misconceptions and difficult points) and effective, efficient strategies of working mathematically.

Research also shows that pupils benefit from undertaking appropriate written work outside of lessons. Teachers' marking of this work can provide extra feedback to support pupils' learning. However, **the most important activity for teachers is the teaching itself, supported by the design and preparation of lessons.** Guidelines for efficient marking and evidence recording are offered below.

Marking and evidence-recording strategies should be efficient, so that they do not steal time that would be better spent on lesson design and preparation. Neither should they result in an excessive workload for teachers.

Ofsted has confirmed that no aspect of these guidelines is in conflict with the contents of the School Inspection Handbook¹ and 'myth-busting' information.

The guidelines

Marking

- It is important for teachers to distinguish between a pupil's simple slip and an error that reflects a lack of understanding:
 - For slips, it is often enough to simply indicate where each slip occurs, particularly when the teacher's/school's approach is to encourage pupils to correct them;
 - If errors demonstrate lack of understanding, the teacher may decide to take alternative courses of action. For instance, with a small number of pupils, the teacher may arrange same-day intervention while for a large number of pupils, the errors will be addressed in the next lesson.
- Evidence shows (Black and Wiliam 1998) that pupils benefit from marking their own work. Part of this responsibility is to identify for themselves the facts, strategies and concepts they know well and those which they find harder and need to continue to work on.

Evidence-recording

- If interaction between teacher and pupils is good, then efficient marking strategies can be deployed.
- Suitable summative assessment will enable a teacher to monitor pupils' progress. Where progress is secure, no further evidence is necessary. Where an individual pupil's progress is a concern, then more detailed monitoring and recording may be justified.
- It should not be a routine expectation that next-steps or targets be written into pupils' books. The next lesson should be designed to take account of the next steps.

The NCETM's [Teaching for Mastery \(questions, tasks and activities to support assessment\)](#) materials, for pupils in year 1 to year 6, aim to assess how well the pupils understand concepts. These questions, tasks and activities, used well, can provide pupils with the opportunity to develop and demonstrate a depth of understanding and proficiency which will ensure that learning is likely to be both sustained over time and built upon in the future.

References

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

Black, P., Wiliam D., (1998). *Inside the Black Box: Raising standards through classroom assessment*. Kings College, London.