Hollyfield Primary School Maths Policy

Intent

Maths is the foundation for understanding the world and we want our children to know the purpose behind their learning and to apply their knowledge to their everyday lives. At Hollyfield, we foster positive 'can do' attitudes and we believe all children can achieve in maths. We teach using a concrete, pictorial, abstract approach for secure and deep understanding of mathematical concepts through manageable steps. We use 'Juicy Mistakes' and misconceptions as an essential part of learning and provide challenge through rich and sophisticated problems. We want children to make connections across mathematical ideas to develop fluency, reasoning and competence in solving problems.

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 developing their vocabulary and 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 so that it is embedded in their long-term memory and applied fluently across the curriculum

- 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.

Implementation

Organisation

Maths is taught in mixed-ability classes in each year group with some teaching by ability in Year 6. The 2014 National Curriculum for Maths 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 meeting the Early Learning Goals at the end of the Reception year – these goals are 'Number' and 'Numerical Patterns'. We use the reformed 2021 Development matters along with resources and planning guidance from White Rose to inform our planning. Daily maths teaching in Reception is very practical and resources are used in every lesson to help develop children's understanding of number, patterns, measures and shape. Maths work is recorded weekly through our online journal 'Tapestry' where parents can access their child's learning and support their child further at home - these gaps are identified as 'next steps'. Children will engage in adult-focused activities weekly with their class teacher but will also be facilitated in their continuous provision by accessing play-based mathematical resources around the classroom.

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

Planning/Lessons

The long term and short-term planning is based on the planning from White Rose Maths and Power Maths. 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/fluency, allows pupils to immediately practise a range of skills. The main activity often begins with a mathematical problem and give children an opportunity to explore the problem. New learning is then taught through a step-by-step approach and continuous AfL helps teachers judge the progress children are making. Children will then practise their new learning through independent tasks and maths challenges are used to deepen knowledge and understanding. Teachers also include context, knowledge, reasoning and problem-solving activities, all of which will have a purpose - a real life connection. Lessons may include mini reviews, which can 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 reflect, consolidate, assess and/or 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.

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 (continuous provision), 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. Extra fluency sessions take place daily across school.

• Maths learning builds from a concrete understanding of concepts where children are manipulating objects (all classes are provided with practical resources – 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.

• 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, often through working with partners/small groups. Working walls also allow children to see examples of the tasks they are undertaking and Juicy Mistakes are identified and using as a teaching/learning point.

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 tasks according to their ability in that particular area of maths. Children are encouraged to move on to new tasks and challenges if they are confident. Mastery focuses on ensuring all pupils engage in 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.

Cross curricular

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.

Staff should also teach specific reading and comprehension skills when children are tackling word problems and puzzles in Maths. Children should be able to use Reading OWLs skills and APE skills to answer questions clearly and precisely.

Marking

Maths work is often 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.

Display

• In the classrooms there is a Maths working wall display which has examples of strategies, pupil's work, questions, etc.

- Maths resources should be age-appropriate, particularly the concrete and pictorial apparatus used 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 is displayed so that children use this in the communication of their understanding.

• There is 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 KS1, pupils have a Maths book to record their daily Maths activities. In KS2, pupils will complete work in their Power Maths books and they will also have a Maths book to practise fluency skills, calculation methods, record maths starters and complete extra challenges and investigations.

Most practical equipment considered necessary for everyday use is kept in the classroom, labelled and easily accessible to encourage independent use by children. 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. White Rose Maths, Primary Stars and Power Maths scheme of work is followed and supplemented with additional topic related ideas and resources.

The White Rose Maths and Primary Stars scheme of work is used to resource the majority of Maths lessons in Reception and KS1, and KS2 follow the Power Maths scheme. Most lessons require practical resources to support the children's learning 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.

Homework

Homework is set each week throughout school using Microsoft Teams/Tapestry. In KS1 and KS2, teachers usually set questions on a worksheet and children complete these online or hand the worksheet in to their class teacher. TTRock Stars/Numbots/Hit the Button may also be used as another way for pupils to complete maths work and challenge each other in fun tasks. These are series of games involving pupils practising their fluency, accuracy and speed through a variety of mental maths challenges.

Information Communication Technology

All classrooms have either Apple TV 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. Power Maths, Primary Stars 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.

Special Educational Needs and Disabilities

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. Some SEND pupils may be working below the level of their peers.

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.

Entitlement

The Mathematics curriculum is accessible to all pupils regardless of race, gender, class, culture or disability. Pupils will have equal opportunity to develop their full potential in all areas of the mathematics curriculum. The contributions of all children will be respected and valued.

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

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, including cyber-bullying) or any other form of discrimination.

Impact

Assessment, Recording and Reporting.

Formative assessment

• Assessment for learning occur 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.

• Pupil's work is marked in line with the Feedback 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.

• Pupils' maths knowledge and skills are assessed using Classroom Monitor. Teachers will assess pupils' independent work throughout the week and record progress on Classroom Monitor, which awards levels for the different areas of Maths. See Assessment policy for further details.

• 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. Where further support is deemed necessary, children can access interventions.

• 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.

Summative assessment

Summative assessments are also carried out in each year group:

- Daily AfL occurs in reception and teaching staff intervene to plug any notable gaps within daily continuous provision but there is no formal recording of assessments this year (part of the new EYFS 2021 reform).
- Year 1 – 5 complete NTS (National Test style Standardised) Assessments tests termly.
- Year 2 and Year 6 complete end of Key Stage SATs.

Children in the Foundation Stage are baselined in September to provide an accurate starting point for each pupil.

Results of assessments from all other year groups are recorded through Classroom Monitor. These are analysed by the maths co-ordinator and SLT. Results of assessments are used to inform planning and to identify targeted support where needed. 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' Evenings.

Target setting

Children in EYFS are baselined within their first few weeks of starting school following the statutory 2021 Reception Baseline. Staff also make informal assessments during this time to help inform planning and gain an insight into the children's prior knowledge before formal mathematic lessons commence in week 3.

Targets are taken daily from teachers' formative assessments, Classroom Monitor and from test results. These targets are then discussed, reviewed and monitored in pupil progress meetings with the Head Teacher/Deputy Head/Assistant Head.

Evaluating and Monitoring

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

The work of the Maths leader also involves supporting colleagues in their teaching, staying up-to-date with current subject developments, and providing a strategic lead and direction for Maths across the school. The subject leader gives the Head Teacher and Governing Board an annual summary report evaluating the strengths and areas for development in the subject and indicates areas for further improvement.

January 2022

To be reviewed January 2023

Appendix 1 - Maths Resources for class

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 Grids
Number Grid
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)

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.