



# Monkhouse Primary School

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## MONKHOUSE PRIMARY SCHOOL

### MATHEMATICS POLICY

**Rationale:** At Monkhouse, we aim to inspire all children to reach their full academic potential. In mathematics this means ensuring a curriculum that is fully inclusive of all children which:

- Develops children's knowledge and understanding of Mathematical concepts whilst enabling them to practice and hone skills and methods;
- Enables them to think critically and communicate their understanding;
- Gives them opportunities to apply learnt mathematical skills in different contexts across the curriculum.
- Provides opportunities to develop problem solving skills useful for maths and across the curriculum.
- Develops children's fluency, reasoning and problem solving skills.

This policy is set within the context of the school's vision, aims and policy on teaching and learning. As a result of their learning in mathematics and problem solving across the curriculum children will:

- Be prepared for applying their skills effectively in everyday life situations, in their future learning and in the work place.
- Have the building blocks in place and to provide a solid foundation to lead onto secondary, further and higher education.

Through teaching with a problem solving approach, children will learn to understand, distill and clarify information; consider what they know that will help them to solve problems, realizing what they need to know next; create systems and strategies, organizing information in a way that helps find patterns and ultimately solutions and to communicate and present their findings effectively.

### Principles

#### Planning

- Planning begins from a thorough understanding of children's needs gleaned through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve.
- Teachers use the North Tyneside Curriculum Progression Maps as their Medium term planning, which outlines the areas of mathematics that will be taught during each term to ensure coverage of the National Curriculum.
- Using the North Tyneside Curriculum Progression Maps, Teachers select the main teaching objectives which best match the age and ability of the group they will teach each term.
- The Curriculum Progression Maps should be kept in staff files and are to be used as a working document being highlighted and annotated throughout the year to reflect the assessment of learning. This will form part of the records at the end of the year to pass onto the next teacher.
- Teachers should record their weekly planning on Google docs using the agreed planning grids.
- Within short term planning, clear success criteria for each learning objective taught should be created – demonstrating the progression needed to reach and exceed the objective. This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are differentiated by considering which parts of the success criteria individual children are ready for.
- Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.
- Planning, where possible, should involve real life contexts for maths, where children are problem solving with a purpose in mind.
- There should be a whole class investigation planned at least once per unit to practice different elements of problem solving, including: finding all possibilities, logic problems, finding rules and describing patterns, diagram/visual problems and exploring different aspects of number. During these investigations, there should be a honing in on specific problem solving skills that are transferable to other contexts.
- 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, practice 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 well as a range of planned structured play situations, where there is plenty of scope for exploration.
- 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 and ending points is essential.
- Maths learning builds from a **concrete** understanding of concepts where children are manipulating objects. 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 communicate their understanding of maths so that it clarifies their thoughts.

- Talk for maths mats should be used at least once pre unit to encourage children to develop their reasoning skills. Mathematical vocabulary must be used by the children to prove or disprove statements and explain why.
- Children's mental maths is of great importance, with number bonds, times tables facts and various strategies for calculation taught and practiced at school with support sought from parents through homework activities.
- Daily Hi-5 sessions focus on pupil's basic number skills through a 15 minute, whole class counting session (see basic skills policy)
- A progression towards efficient written calculations should be developed and applied consistently in each year-group. The school Calculation Policy should be followed.
- Class targets should be used to ensure areas where the majority of the class have not grasped a concept can be revisited and mastered.
- Though the nature of lessons will be very different depending on the needs of the class, children should be: active; practicing skills they haven't yet mastered (perhaps recapping on class targets); 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.
- When teaching problem solving skills across the curriculum, time (and sometimes whole lessons) should be given to each aspect of problem solving ensuring children get thorough practice at: 'preparing for problem solving', 'thinking through problems to establish what they know and don't know so far'; actually 'doing the problem solving' effectively AND 'communicating the answer effectively'. They should evaluate the process too. Over time children will improve at each aspect.
- Teachers should provide suitable challenge for all children through teaching directly to specific groups throughout the lesson and delivering masterclasses when necessary.

### **Assessment**

- We see assessment as an integral part of the teaching process and endeavour to make our assessments purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress.
- Pupils are assessed before being taught a new topic in numeracy using a pre unit assessment. The objectives are taken from the Curriculum Progression Map and focus on fluency, reasoning and problem solving.
- Teachers use example questions from the Mastering Mathematics grids and the NCETM planning tool to create their pre and post unit assessments.
- An analysis grid should be completed following the pre unit to identify areas of strength for each pupil and objectives that need to be taught. A second analysis grid is completed after the post unit assessment to show the progress children have made.
- At the end of the maths unit (ie. a progress sequence of related lessons) the same assessment is carried out with pupils. This gives children the opportunity to demonstrate (to themselves and their teacher) what they have learnt, and gives them a strong sense of accomplishment, as inevitably they get more correct the second time.
- Assessment for learning should occur throughout the entire maths lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This feedback should be incisive and regular.
- On a daily basis children should self-assess against the learning objective and success criteria, giving them a sense of success. Children should know when they are meeting their targets and be self-assessing against those too.
- Pupil's work should be marked in line with the Marking Policy and should model how corrections should be made, giving children a chance to learn from their misconceptions or incorrect methods.
- Future lesson design should depend on class success evaluated through marking and observations made during the lesson.

- Teachers should use the Mastering Mathematics grids to support their assessments. Using the example questions for each strand, they can assess whether a child has mastered an objective.
- Assessment of pupil work and progress is ongoing by the class teacher and informs future planning. Teachers mark work in mathematics in line with the school marking policy. Teachers use NTAGs (North Tyneside Assessment Grids) to assess children's progress in mathematics, gathering evidence over the course of the year. Teachers use this information to inform planning for groups and individual pupils.
- NTAGs should be stuck in the back of children's books and updated after each unit of work covered.
- Summative assessments are made once per 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.
- Tracking is used in order that children who are not making good progress over time can be targeted for support in one form or another. What that support will and how intensive, depends upon the child's needs and it may be a simple strategy within whole class teaching that is needed. Where further support is deemed necessary, children can access interventions, explained below.

### **Display and Resources**

- In the classrooms there should be, either on display or easily accessible to children, level appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts.
- Display should provide a visual support for the development of children's mental processes and reflect the strategies being taught within that year group.
- Mathematical vocabulary should be displayed on the 'In maths we are talking about.....' so that children use this in the communication of their understanding.
- A wide range of manipulatives are located outside each year group so that they are easily accessible by the teacher and pupils. Pupils are taught how to use the practical equipment to support and develop their mathematical understanding.

### **Tracking and Intervention:**

At Monkhouse we aim to provide children who are not making good progress, with extra support through interventions. Interventions in maths should be based on developing key number skills that are appropriate for the children involved.

Intervention provided to boost children's progression in maths should be tightly planned, with success criteria set and assessments made frequently to ensure progress is being made. Whilst interventions could be carried out by Teaching Assistants, for example, what is being taught and how it is delivered is the class teacher's responsibility and communication is essential. Teacher meetings with TAs are planned as regularly as is possible.

Intervention boxes contain resources and manipulatives essential to ensuring pupils make rapid progress in sessions and that they are lively and engaging.

We identify from tracking any gender issues that exist and plan initiatives that would address these as part of teacher performance review meetings where children's performance is evaluated on an individual basis with class teachers.

We also examine the progress of ability groups and those with English as an additional language, those entitled to the Pupil Premium and those with a Special Educational

Need. Where data indicates a whole school issue, it will form part of the School Development Plan.

### **Monitoring:**

Monitoring of children's progress begins with performance review meetings but continues with the subject leader evaluating further evidence to ensure children are making progress. This monitoring happens through monthly examination of work in books, pupil interviews, analysis of assessment results and the assessments used, and through other means depending on what information needs to be gleaned.

Following monitoring activities, feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities built in where it would be deemed valuable. These might take the shape of inputs during staff meetings or by a variety of other means.

Where specific initiatives have been put in place through action planning for school development, these are monitored by the subject leader in order to evaluate their impact. Findings are reported to the headteacher and governors through use of the 'Subject Leader's Ongoing Report'.

The success of interventions is also monitored by the Inclusion manager and this informs future planning of intervention.

### **Parents and Homework**

We recognise that parents make a significant difference to children's progress in Maths and encourage this partnership. The homework policy and individual class homework leaflets outline how parents can support.

### **Other policies and documents to be read in conjunction with the Maths Policy:**

Calculation Policy  
National Curriculum 2014  
Teaching and Learning Policy  
Marking Policy  
SEN Policy  
Basic Skills Policy and  
Presentation Policy