

GRINDON INFANT SCHOOL



MATHEMATICS POLICY

Intent

At Grindon Infant School we are committed to the *Mastery Maths* philosophy that is for all children to develop a secure understanding of mathematical concepts and processes, combined with genuine fluency when completing calculations. We give children the opportunity to explore different methods that will improve their understanding of maths as a whole. We follow the order of teaching set out by White Rose Maths. It is important to note that this scheme is used as a guide and teaching staff are encouraged to adapt the small steps as required for their cohort of children and the length of time spent on a domain. The methods taught are built upon within each unit and are continually revisited and embedded throughout EYFS and key stage 1. Our Mastery approach teaches and challenges children to use methods in the most appropriate, efficient way and develop their problem solving and reasoning skills. We aim to spark curiosity, engage reasoning, secure understanding and deepen maths learning for all.

The National Curriculum for Maths aims to ensure that all pupils:

- 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.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- Can 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.

We aim for:

- Pupils to develop confidence and mental fluency with whole numbers, counting and place value. Involving working with numerals, words and the four operations.
- Developing pupils' ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary.
- Pupils to use a range of measures to describe and compare quantities such as length, mass, capacity/volume, time and money.
- By the end of Year 2, pupils knowing the number bonds to 20 and be precise in using and understanding place value.
- Pupils being able to read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1

Implementation

All children in Reception, Year 1 and Year 2 are taught five Maths lessons per week.

1. Nursery and Reception (EYFS)

In Nursery, Mathematics is delivered through adult led group sessions, adult lead focus tasks and challenges in the continuous provision and implemented throughout the daily routine. In Nursery the children begin to develop their understanding of simple mathematical concepts such as counting to 5 (then 10), maintaining 1 to 1 correspondence etc. Children are taught these concepts using physical and pictorial resources, songs, games and role-play activities.

In Reception, Mathematics is delivered through whole class teaching, adult led focus activities and challenges in the maths area, through continuous provision. The lessons are split into three parts. This consists of:

1. Whole class counting/subitising – 5 minutes
2. Whole class main teaching – 10 minutes
3. Adult led focus activity.

The structure of the lesson enables Teachers to secure a good balance between whole class work, group teaching and individual practice. It supports assessment, as well as providing individual verbal feedback to children, ensuring that children have a clear understanding of the task they have completed, as well as any next steps.

In both Nursery and Reception, through continuous provision, children can self-select Maths resources to consolidate their learning during child-initiated activities. We recognise the importance of play-based learning and therefore encourage children to develop their understanding during their play. Such opportunities are provided in both the inside and outside environment. Regular observations and assessments help to ensure that children that need additional intervention to consolidate their mathematical understanding are identified and supported appropriately.

2. Years 1 and 2 (Key Stage 1)

Maths is taught daily. Children begin with fluency task in relation with recall of number facts and or counting (See Counting and Fact Document for progression.) Following this, the main lesson begins, generally in which a contextual problem is shared for the children to discuss with partners. This helps promote discussion and ensures that mathematical ideas are introduced in a logical way to support conceptual understanding. During this part of the lesson concrete resources will be available for the children to access.

Following this, the children are presented with varied similar problems which they might discuss with a partner or within a small group. At this point, stem sentences and relevant word banks are introduced to the children to develop their mathematical talk and scaffolding carefully reduced to prepare children for independent practice. The children might record some of their ideas on whiteboards to share and discuss. The Teacher uses this part of the lesson to address any initial errors and confirm the different methods and strategies that can be used. The children are then shown a 'challenge' which promotes a greater depth of thinking.

Following this, the class progress to the 'Practice' part of the lesson, which is completed independently. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. In this part of the lesson, some children will be encouraged to use concrete resources alongside pictorial representations. Others might be supported through additional scaffolding provided by the Teacher, which may include provided models of the calculation method that the children will need to use, or adapted copies of the worded question, with key aspects highlighted. All children will be challenged at their level throughout the lesson.

At Grindon Infants we believe the importance of pupils becoming more fluent with their problem solving and reasoning skills. Therefore, pupils in Key Stage 1 have a discrete session, once per week to develop these skills. See Problem Solving and Reasoning Progression Document.

We also believe that the curriculum needs to be enriched with activities such as board games, baking sessions, maths events such as Bingo and Number Days to engage and enthuse the pupils with everyday maths.

3. Retrieval Practice

To support Key Stage 1 pupils with retrieval practice and knowing and remembering more we have built in an additional 10-minute Memory Jogger daily session, which revisits key fluency skills including, subitising, counting, fact recall and calculation. In EYFS, the pupils have an activity within the learning environment to also support this.

The Mastering Number Programme is also taught from Reception through to Year 2 to:

- Build a strong sense of number
- Use more efficient strategies.
- Build increased confidence and engagement
- Develop and enhance mathematical language
- Build retrieval of facts

4. Resources

Each class has a Maths trolley that houses concrete resources, such as number lines, multi-link cubes, Dienes, hundred squares and counters. Resources within individual classes are accessible to all children who are encouraged to be responsible for their use.

An interactive teaching tool for the purpose of modelling strategies is sometimes used in addition to the Teacher modelling by hand on the whiteboard as part of the lesson.

Resources to support Teachers' own professional development and understanding of new approaches as part of a mastery approach are available. As a White Rose Maths Premium member and part of the Great North Maths Hub, we have access to related resources and reference materials that Teachers can use, as well as to inform, their lessons and teaching practice.

The Maths Lead and Class Teachers regularly attend training through Together for Children (Local Authority) and the Great North Maths Hub for networking and signposts of new resources such as those published by the National Centre for Excellence in the Teaching of Mathematics (NCETM), for use in specific areas of maths.

5. Organisation

We follow a blocked curriculum approach to the teaching of Mathematics. This ensures that children can focus for longer on each specific area of maths and develop a more secure understanding over time. This approach is also designed to enable children to progress to a greater depth of understanding. Teachers may need to spend additional time on a mathematical concept to ensure that children have developed a secure understanding before moving on to more complex concepts.

Subsequent blocks continue to consolidate previous learning so that the children continually practise key skills and can recognise how different aspects of maths are linked. For example, when children have completed a block which has enabled them to master the dividing by 2 a subsequent block on fractions might provide opportunities to use this understanding when finding half of an amount.

The additional daily sessions also support this consolidation, with carefully selected questions being used to encourage children to practise skills and retain knowledge.

6. Inclusion & Equal Opportunities

Staff at Grindon Infant School are committed to ensuring the active participation and progress of all children in their learning. All children will be given equal opportunities to achieve their best possible outcome, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

With a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages.

The National Curriculum states: *'Children 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.'*

There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Children's misconceptions are identified through immediate assessment and addressed with immediate intervention – commonly through individual or small group support the same day.

Although the mastery expectation is that most children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states: 'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.' In exceptional circumstances, if a child's needs are best met by adapting the independent task, including coverage of the content from a previous year, any specific arrangements for the provision of children with SEND will be shared with relevant staff and communicated to parents at SEND reviews and parent meetings. Some children need more time to learn certain concepts within Maths. To support this we incorporate pre-teaching into our school day so that the children keep up with the pace of the curriculum being taught.

7. Parental Involvement/Home Links

At Grindon Infant School we recognise that parents and carers have a valuable role to play in supporting their child's mathematical learning.

- An overview of the maths curriculum and calculation policy are available on the Maths page on the website.
- Related activities which link to each maths topic are set as homework half termly.
- A Maths Café is held yearly, to set out maths expectations for each year group and an opportunity for parents to work alongside their child.
- Parents are informed of their child's progress at Parents' Evenings, and this is also communicated in written school reports. Information about their child's achievements and future targets in Maths is shared during these meetings, as well as ways that parents/carers may be able to assist with their child's learning.

8. Role of the Maths Lead

The Curriculum leader will

- Work to raise the profile of maths at Grindon Infants through best practice. They will model lessons, as appropriate, to new staff, ECTs and peers to support continued professional development.
- Ensure classroom environments are conducive to learning, through effective use of displays, vocabulary boards and accessibility and availability of resources.
- Monitor progression and continuity of maths throughout the school through learning walks, team teaching and regular monitoring of outcomes of work in books.
- Ensure that all staff have access to year group plans and the relevant resources which accompany them.
- Monitor children's progress through the analysis of whole school data. They will use this data to inform the action plan which will detail how standards in the subject are to be maintained and developed further.
- Organise, audit and purchase central and class-based maths resources.
- Keep up to date on current developments in maths education and share information with colleagues.

Impact

Assessment

Children receive effective feedback through Teacher assessment, both verbally and through our green and pink pens. Pink pen indicates 'growth' where a child may need to go back to

correct an error, correct number reversals or modelled examples/Teacher support. The green pen or tick indicates that children have achieved the learning.

Assessment is used to monitor progress and to identify any child needing additional support as soon as they need it. Assessment for Learning is used as follows:

- Children are informally assessed daily in every lesson to assess their understanding. Support or challenge is put in place to ensure that every child is making progress at their level.
- The structure of the teaching sequence ensures that children know how to be successful in their independent work. Guided practice, which takes place within part of the lesson, provides further preparation for children to be able to apply the skills, knowledge and strategies taught during the later phases. Common misconceptions are addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the Teacher and the children before progression to further depth.
- Opportunities for additional practice and correction are provided by the Teacher as appropriate, during verbal feedback.
- At the end of each unit of work, each child completes an end of unit check. This covers a range of concepts that have been covered within that unit to ensure that children have a secure understanding before moving on and that any identified gaps in understanding can be addressed and added accordingly into future sessions.
- Children are assessed formally on a half-termly basis; this is a detailed assessment on everything that has been covered so far within the term. Children's attainment and progress is carefully measured throughout the year to ensure all children make good progress from their starting point.

We will be able to see that the children know more and remember more through the regular revisiting and consolidation lessons, evidence in their maths workbooks and progress tests. We will see that they are able to recall prior learning and apply it in a range of unknown contexts, for example, when problem solving or when finding more than one possible answer to a question. Children will be able to explain their understanding through reasoning and justifying the methods they have chosen and how they found the answer. We will see that children will have developed automaticity in the required skills and number facts they need by the end of each year. This will ensure children start their next year of learning with the necessary skills and knowledge to build on their learning.

- ✓ Careful and detailed half-termly tracking of children's progress and attainment will show good progress and secure understanding.
- ✓ Measurable impact of interventions will 'plug gaps'.
- ✓ Children will be applying the number facts they have learnt e.g. number bonds, doubles, times tables etc.
- ✓ Children will understand and use a range of methods to find all the possible answers to a question or problem.



Mathematics Policy

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SIGNATURES:

Head Teacher	
Chair of Governors	