



Maths Policy

Key Document Details

School Name: Drove Primary School

Version no: 1

Author: Rachael Cooper

Owner: Nick Capstick

Approved by: LGB

Ratified date:

Interim review date n/a

Next review date: 1-9-2023

Context:

National Curriculum Purpose of Study

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. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

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

- Become **fluent** in the fundamentals of maths, 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 maths 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.'

The National Curriculum for Maths also states:

'The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. 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, this maybe through additional practice, before moving on.' (National Curriculum, Pg. 3)

At Drove, we feel the best way to achieve the aims set out by the National Curriculum is through a Mastery Approach.

The Mastery Approach at Drove:

In essence, the Mastery Approach at Drove enables:

- pupils to have deep and secure understanding of mathematical concepts, so they do not need to be re-taught and pupils are ready for the next stage of their mathematical journey;
- the removal of gaps in learning so that pupils can make progress whilst also 'keeping up with their peers, rather than catching up'.

The Mastery Approach at Drove is underpinned by a set of shared beliefs:

- Everyone can do maths, if they have the right attitude and teachers support and challenge them appropriately;
- Teachers are expert mathematicians, who model a positive attitude towards maths;
- We only learn our year group's content and we make progress by going deeper and securing understanding of that content so that they can be applied across different contexts and in real life situations.
- Everybody has the same opportunities to be successful in Maths;
- We learn Maths together;
- Nobody is 'just good at Maths', success comes through effective teaching and hard work;
- We seek out challenge;
- Maths is enjoyable and is an opportunity to be creative;
- Maths is real; we play with it, we feel it, we draw it and talk about it so that we can understand it and use it in our own lives.

Our Aim for all Pupils:

When pupils leave Drove, they will have developed:

- Mathematical fluency based on rapid and accurate recall and conceptual understanding.
- A love of mathematics, including number, geometry and reasoning, and a desire to develop their mathematical knowledge and skills further in their next phase of education.
- Pupils develop secure and deep understanding of mathematical concepts with sustainable foundations ready to be built on in the next stage of education.
- A confidence in their ability to solve a variety of mathematical puzzles and problems that they may experience in everyday life.

Whilst learning Maths at Drove, you will see pupils:

- enjoying maths;
- embracing challenge;
- supported by adults and/or resources where appropriate;
- at different depths of understanding about the same concept (differentiation);
- describing mathematical concepts and explaining their understanding;
- representing mathematical concepts in a variety of ways (e.g. using concrete materials, pictures and symbols);
- recognising connections between the current learning and other concepts;
- recognising previous learning that can support them in their current situation.

Our approach involves **a lot** of this:

- Teaching all pupils in class, together, about an age-related concept;
- Reasoning about concepts in every part of every lesson;
- Oral rehearsal through the support of sentence stems;
- Immediate, verbal feedback and highlighting of correct concepts within lessons;
- Ongoing Assessment for Learning (AfL) during lessons;
- Spending longer on one concept, which is taught through well sequenced manageable steps;
- Adults being deployed flexibly, according to the needs of the children in the current lesson;
- Providing support for pupils who need it over shorter, more intense timescales (ideally within 24 hours) to prevent gaps in learning occurring;
- Regular, low stake assessments which inform future teaching.

And **none** of this:

- Formal marking with written feedback and 'next steps';
- Teaching lots of different ideas over a short period;
- Finding a solution by simply following a procedure, without demonstrating an understanding of the concept;
- Formal, long term interventions to help pupils outside of the Maths timetable and being separated from their peers;
- 'Setting' in to ability groups;
- Differentiating because of a predetermination about pupils' abilities.

What Maths Lessons Look Like at Drove:

Math lessons are sequenced into manageable steps of learning with concepts being taught at a measured pace. This will ensure that no child is left behind, as well as providing deeper and richer experiences for pupils who are grasping concepts quickly. To ensure coverage and progression across year groups, we use the units and manageable steps from the CanDo Maths Club.

| Maths Lessons (45 minutes) M/T/W/T/F | |
|---|-----------------------|
| 'Learning Together' | |
| 'Learning Together' | 'Support & Challenge' |

| Maths on Track Sessions (30 mins) KS1 3x a week – same day / KS2 4x a week - day after |
|--|
| 1. Reteach the concept; or 2. Problem Solving; or 3. Embed understanding of previously learned concept / recall facts. |

Typically, Maths lessons have 4 parts, which are all about the same mathematical concept (manageable step). The parts are taught in the following order:

| 1. Teach it | 2. Do it | 3. Secure it | 4. Deepen it |
|---|---|--|--|
| Teacher guiding the learning with the whole class, so pupils can explore the concept. | <i>If successful at the previous part of the lesson; pupils answer questions about the concept.</i> | <i>If successful at the previous part of the lesson; pupils explore a misconception.</i> | <i>If successful at the previous part of the lesson; pupils apply the learning to a problem.</i> |
| (Practise together) | (What it is!) | (What it is not!) | (Deepen your understanding / make connections) |

Lesson Design:

Maths lessons should share the following:

1. Sharing where we are on the journey through the unit.
2. Hook – exploring a real-life context
3. Modelling including oral rehearsal of sentence stems
4. Practising together including oral rehearsal of sentence stems and cloze procedure where necessary
5. Practising – teachers to carry out AfL - Pupils' difficulties and misconceptions are identified through immediate and rapid intervention.
6. Secure It teaching – either exploring a what is is not question together or an active/verbal part of the lesson.
7. Do It – developing fluency through the practise of standard and non-standard examples
8. Deepen It – Exploring open ended maths problems. New problems; new contexts; empty box; always, sometimes, never; prove it; explain and communicate mathematical thinking.

Pupils' progress through the parts of the lesson, depends on their depth of understanding. Pupils who complete the 'Do it' and 'Secure it' parts of the lessons successfully and independently, will meet the aim of the lesson because they are fluent and can demonstrate their understanding of the mathematical concept. Pupils who have completed all parts of the lesson successfully and independently will have mastered that concept at greater depth.

Throughout lessons, teachers will recognise pupils' misconceptions as they arise and address them immediately to enable those pupils to progress through the lesson independently. Pupils who demonstrate that they do not have a secure understanding of the concept, will be supported by adults or resources to enable them to achieve at least some success within the lesson. Maths on Track (MoT) Sessions allow those pupils who did not have a secure understanding of the concept in the lessons, a further opportunity to keep up with their peers by recapping the learning from the lesson. In MoT sessions, pupils who have met the aim of lesson will have an opportunity to explore the 'Deepen it' activity in more detail. Pupils who have completed all parts of the lesson will recap a skill which they have previously been taught to further embed their understanding of that concept.

When introducing new or more challenging concepts (particularly in EYFS and KS1), pupils can have opportunities to develop the mathematical foundations that the concept relies upon and embed this learning into their long-term memories. Pupils will achieve this by having whole lessons (which do not follow the structure above), that follow the Concrete-Pictorial-Abstract (CPA) approach:

Concrete – pupils have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial – pupils should then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.

Abstract – with the foundations firmly laid, students should be able to move to an abstract approach using numbers and key concepts with confidence.

General Structure of Maths Timetable:

Maths Lessons

Teaching for secure and deep understanding.

- Manageable Step
- Intelligent Practice, not mechanical repetition.
- Use of variation theory to develop secure and deep understanding through the use of
 - What it is (standard/non-standard).
 - What it's not
 - Solve problems to deepen understanding and make connections.

Teach up

MoT sessions

(Maths on track)

Opportunities for:

- Re-teaching of concepts (immediate intervention).
- Exploring problem solving in more detail.
- Embedding understanding of a previously taught skill.

**Intervening
Practising
Consolidating**

Keep up

Structure of Individual Maths lessons:

The Rapid Grasping Pupils

Ⓛ Ⓢ

Can you do it?

'What it is!' (Standard)
Precise and intended use of variation.

Are you secure?

The non-example
'What it's not!'
Focus on misconceptions and opportunities to reason about mistakes. 'Active Argument'

Ⓛ Ⓢ Ⓢ Ⓢ

Can you Apply it? Solve it?

Solve problems:

- Empty box/symbols
- Here's the answer
... generate the questions.
 - Always / sometimes / never.

Apply to unfamiliar contexts.

Make connections.

Ⓢ Ⓢ Ⓢ Ⓢ

Opportunities for pupils to describe, explain, justify, convince and prove.

Although we encourage challenge for all pupils through the mastery approach, we ensure that Rapid Grasping Pupils are given the opportunity to master concepts at a greater depth within each lesson. We believe that if a child is developing mastery with greater depth the child can:

- solve problems of greater complexity (i.e. where the approach is not immediately obvious), demonstrating creativity and imagination;
- independently explore and investigate mathematical contexts and structures, communicate results clearly and systematically explain and generalise the Maths.

These pupils are given the opportunity to show mastery with greater depth through daily, challenging 'Deepen it' activities.

Pupils with Special Educational Needs (SEN):

Normally, all pupils are taught Maths as part of a whole class of mixed ability pupils. This is because we believe that pupils benefit from exposure to mathematical discussion, demonstration and explanation of methods through quality first teaching, and learning alongside their peers. All pupils with SEN are encouraged and supported to participate in daily maths lessons by accessing the same concept as their peers as much as reasonably possible. However, it is recognised that where applicable, pupils will have individual targets which are based on the child's level of development and these are matched appropriately to the National Curriculum Programme of Study for Maths.

On the very rare occasion that pupils with severe SEN are unable to access the content of main Maths lessons, they are supported by additional support staff who work in collaboration with the class teachers. Pupils with severe and complex learning needs may be supported through an individualised programme of support in the main part of a lesson, so that the content of lessons is matched to their level of ability. This may mean that these pupils are being taught knowledge, skills and understanding in ways that suit their individual needs. This could be presented as teaching them knowledge, skills and understanding from previous Year Groups or Key Stages so that they can make progress at a pace which is appropriate for them. Wherever reasonably possible, this learning takes place within the classroom, alongside peers and at the same time as the main Maths lesson.

Early Years Foundation Stage (EYFS):

Teachers and practitioners support pupils in developing their understanding of Maths in a broad range of contexts in which they can explore, enjoy, learn, practise and talk about their developing understanding. This area of development includes seeking patterns, making connections, recognising relationships, working with numbers, shapes and measures, and counting, sorting and matching. Pupils use their knowledge and skills in these areas to solve problems, generate new questions and make connections across other areas of learning and development.

Pupils in the EYFS learn by playing and exploring, being active, and through creative and critical thinking which takes place both indoors and outside. We recognise that pupils learn through routine, continuous provision and incidental learning opportunities, as well as planned sessions and activities. Mathematical understanding can be developed through stories, songs, games, routine, questioning, imaginative play, child-initiated learning and structured teaching.

In Nursery, group activities are timetabled and planned in to sessions throughout the week. Reception, daily time is dedicated to Maths. Overall, these lessons include a balance between whole-class work, group teaching and individual practice. In the Autumn term, these sessions are similar to those in Foundation Stage 1. However, throughout the year there is a gradual shift where adult-directed sessions are extended in preparation for Year 1.