



## **Dishforth Airfield Primary School**

### **Mathematics: Intent, Implementation, Impact**

**We believe that every child can master an understanding and love of maths with the right kind of teaching and support.**

#### **Intent**

Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

**We aim that all pupils are taught through a metacognitive approach so that they:**

- Become **fluent** in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Can **solve** problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- Can **reason** mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

At Dishforth Airfield Primary School, our Mathematics curriculum has been developed to ensure every child can achieve excellence in mathematics. Children can experience a sense of awe and wonder as they solve a problem for the first time, discover different solutions and make links between different areas of mathematics. It provides pupils with a deep understanding of the subject through a concrete, pictorial and abstract approach. This ensures pupils fully understand what they are learning. We are very aware that our school community is highly mobile and therefore we ensure that we make good use of pre-assessment and pre-teaching to identify and overcome any misconceptions or gaps in children's learning. We adapt our planning to meet the needs of the children in our care to ensure that they all receive high quality, relevant and meaningful Mathematics learning.

#### **Key features of our Maths curriculum:**

- High expectations for every child
- Fewer topics, greater depth using a metacognitive approach
- Number sense and place value come first
- Focus on mathematical thinking and language
- Resources to support
- Problem solving is central
- Calculate with confidence– understand why it works

Mathematics Mastery places emphasis on the cumulative mastery of essential knowledge and skills in mathematics. It embeds a deeper understanding of maths by utilising a concrete, pictorial, abstract approach so that pupils understand what they are doing rather than just learning to repeat routines without grasping what is happening.



## **Implementation**

### **Organisation of teaching and learning**

Teaching and learning in all three key stages takes place in a range of environments.

#### **Early Years Foundation Stage**

In the Early Years Foundation Stage (EYFS), teaching follows the EYFS Curriculum and is planned through using the scheme 'Master the Curriculum'. Daily opportunities to informally develop mathematical understanding through child-initiated activities and routines are capitalised upon.

#### **Key Stage 1 and 2**

In Key Stage 1 (KS1) and 2 (KS2), teaching follows the National Curriculum and is planned through using White Rose Hub materials. Other resources are also used to extend or support learning through the teacher's adaptive teaching approach. The teaching of Mathematics involves a daily Earlybird activity when children start the school day with a calculation focus or recapping previous objectives, a daily mathematics lesson, an Afternoon bird at 1pm that focuses on reasoning and problem-solving and, where appropriate, pre/ post teaching sessions / interventions.

### **Planning**

At Dishforth Airfield, we use the Master the Curriculum scheme in EYFS and White Rose Mathematics resources in KS1 and KS2 to support staff in their planning.

- Long term plans map out the units to be covered each term, during each Key Stage from EYFS to KS2.
- Medium term plans identify learning objectives and outcomes for each unit, as well as indicating the skills being taught.

- Short term plans prepared by each teacher, highlight the skills and objectives of the lesson, and identify resources and appropriate differentiation. They also indicate key questions and stem sentences.
- At the start of the unit, children complete a 'pre-learning' assessment which identifies what they already know about the unit being taught. Any child who has not made expected progress is quickly identified and interventions are put in place to ensure the knowledge gaps are filled.

### **Structure of a lesson**

1. Daily counting
2. Mental / oral starter which links to a different aspect of the maths curriculum each day, such as a focus on statistics, shape, time, mental calculations. These aspects are expanded on every week in order to develop children's working memory.
3. A metacognitive approach to teaching and learning:
  - Explicitly teach metacognitive strategies - activating prior knowledge, independent practice and structured reflection
  - Modelling by the staff, verbalising their thinking and scaffolding tasks
  - Setting an appropriate level of challenge
  - Promoting and developing metacognitive talk in the classroom – language development and acquisition
  - Explicitly teaching children how to organise and effectively manage their learning
4. Task – independent / paired / group
5. Plenary

### **Resources**

- Each class has a range of resources to support learning which are progressive throughout the school as set out in progression documents. These are easily accessible for the children so that they can lead their own learning.
- Central resources are kept in the stock cupboard and in the hall.
- Different environments - classrooms, outdoor learning spaces and the hall.
- A range of ICT software to support the teaching of specific concepts such as Maths Packs and also Times Table Rockstars which can be used at home.
- The White Rose Mathematics Hub Mastery resources are used by all classes for planning and activities.

### **Assessment**

In Mathematics assessment is continuous. From the beginning of every lesson, teachers and teaching assistants will be assessing what their pupils are, or are not understanding and use this to scaffold each segment of the lesson. Interventions will be both planned for and 'live', meaning that misconceptions are dealt with immediately and high attaining pupils are challenged appropriately.

Pre and post teaching in each maths unit ensures that all children can achieve and are prepared for the following lesson.

### **Foundation Stage – Nursery and Reception**

- Staff's ongoing observational assessments ascertain a baseline when each child begins EYFS which then informs subsequent teaching and learning for each child.
- Future attainment is noted using photographs and observational notes. Progress is recorded in each child's Learning Journey and the next steps to be taken are identified. Progress is monitored termly for nursery and reception children.
- Statutory assessments are made on exit of the EYFS.

### **KS1 and KS2**

- In the daily mathematics lesson, formative assessments are made on a day-to-day basis. Practitioners observe, question and evaluate lesson outcomes to further determine progress made and the next steps in learning.
- Pre/ post assessments take place for each new unit of work.
- Summative assessments are made at the end of each term to monitor children's knowledge and understanding of concepts taught. Progress in Using Mathematics Assessment (PUMA) tests are used in all year groups from 1 – 6.
- Progress is discussed at termly 'Pupil Progress Meetings' and focus children are indicated.
- Statutory assessments are made at the end of each key stage.

### **Monitoring procedures**

The Head teacher and maths subject leader play a central role in the monitoring and evaluation of the quality of teaching and learning of mathematics in the school.

The monitoring strategy:

1. Children's work and planning scrutinies are conducted.
2. Pupil progress meetings are held termly.
3. Lesson 'drop ins' and observations take place in all classes throughout the year.

The subject leader is responsible for monitoring attainment and progress, the outcomes of which are collated in the subject leadership folder and fed back to staff.

## **Cross- Curricular Links**

Using mathematical skills and language in a wide range of contexts is key to the development of successful mathematicians. We therefore encourage as much cross curricular maths activity as possible in order to give our learners a true sense of the relevance of mathematical skills as well as an awareness of how mathematics underpins many other aspects of the curriculum. (Refer to Maths across the curriculum progression document).

Examples of cross curricular maths could be: Role playing shops, cafes and other environments using money (EYFS)

Recording the results of investigations using data tables and / or graphs (Science)

An investigation of religious affiliation in our local area – calculating percentages and drawing pie charts (RE) Practicing key skills with children who are resistant to or struggle with desk- based learning (PE)

Conducting and recording market research (DT)

Studying / creating art work using geometric shapes based on Matisse, Mondrian, Picasso etc (Art)

Using timelines (History)

Calculating distances – lengths, width, depths of rivers, seas and oceans (Geography)

## **Impact**

As a result, learners will –

- know more, remember more and understand more about Mathematics
- demonstrate a rapid recall of facts and procedures including key facts and multiplication tables
- show confidence in their ability to achieve in Mathematics
- have the flexibility and fluidity to move between different contexts and representations of maths
- develop the ability to recognise relationships and make connections in maths lessons, deepening and consolidating their understanding of key concepts
- show mastery of mathematical concepts or skills and can show it in multiple ways, using mathematical language to explain their ideas
- understand the importance of and differences between their reasoning and problem-solving skills
- The majority of learners will achieve or exceed age related expectations in Mathematics