



# Broomhill Infant School Mathematics Policy

2021

*“Maths is like ice-cream, with more flavours than you can imagine – and if all your children ever do is textbook math, that’s like feeding them broccoli-flavoured ice-cream” Denise Gaskins*

## **Rationale:**

At Broomhill Infant School, we want our children to develop a positive and enthusiastic attitude towards maths and to think and speak like mathematicians. Our school ethos states that 'Nature, Nurture, Knowledge' is at the heart of all that we do and we believe that children learn best through practical, hands-on, meaningful experiences. We provide rich learning opportunities both in lessons, links with Tinkering Tuesdays (**STEM**), and carefully resourced outdoor areas and continued provision.

*“Creating a mathematical environment outside, making the most of practical situations and creative problem solving will result in young learners who are confident with the number system and who will comfortably apply mathematical ideas to new situations.” Jan White*

Throughout their time at Broomhill, children will develop a secure and deep understanding of fundamental mathematical concepts and procedures through a mastery approach. Opportunities to develop mathematical fluency, reasoning and problem-solving will be planned into every lesson and encouraged through continuous provision.

## **Aims for our pupils:**

- To develop a growth mindset and positive attitude towards mathematics.
- To become confident and proficient with number, including fluency with mental calculation and look for connections between numbers.
- To become problem solvers, who can reason, think logically, work systematically and apply their knowledge of mathematics.
- To develop their use of mathematical language.
- To become independent learners and to work cooperatively with others.
- To appreciate real-life contexts to learning in mathematics.

## **How we teach mathematics:**

The 2014 National Curriculum states:

- *The expectation is that most pupils will move through the programmes of study at broadly the same pace.*
  - *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.*
- At Broomhill Infant School we have chosen to adopt a mastery approach which involves all children accessing the same quality first teaching and resources, with those that grasp concepts easily, challenged, and those that find concepts trickier, supported through extra practice.
- Staff use **White Rose Maths Schemes of Learning** as a starting point to develop a coherent and comprehensive conceptual pathway through mathematics. The focus is on the whole class progressing together. Collaborative planning with year group colleagues is encouraged to ensure consistency.

- In KS1, children receive mathematics inputs and additional 10-15 minute **NCETM** 'Mastering Number' sessions each day. This year we have transitioned from whole class table work to an adult working with a small group whilst the rest of the children are accessing high-quality continuous provision inside and outdoors. This enables practitioners to clarify misconceptions and provide challenge instantly to ensure that each child progresses. The continuous provision allows children to practice skills and concepts, and explore challenges and solve problems.
- In Reception, children have daily **NCETM** 'Mastering Number' sessions which cover most of the Number and Numerical Patterns areas of the Early Learning Goals. Practitioners use **White Rose Maths Schemes of Learning** to plan for any gaps in coverage. Children also develop their mathematics through continuous provision and the outdoors.
- In Nursery, core mathematical skills are constantly embedded through high quality interactions, a challenging and stimulating mathematical environment which provokes open ended problem solving, a range of mathematical thinking and the development of the appropriate key vocabulary needed to start them on their educational journey.
- In Blossoms, children receive individual maths inputs dependent on their ability and year group. Activities are sensory based and develop through the children's interests.
- Learning is broken down into small steps that build on children's previous knowledge.
- Misconceptions and difficult points are identified in advance and strategies are planned to address them.
- New concepts are taught through a **CPA** approach and representations are readily available and displayed in classrooms.

### **Classroom/Outdoor Expectations:**

#### **8 Classroom Norms to Establish:**

1. Everyone can learn mathematics to the highest levels.
  2. If you 'can't do it', you 'can't do it **yet**'.
  3. Mistakes are valuable.
  4. Questions are important.
  5. Mathematics is about creativity and problem-solving.
  6. Mathematics is about making connections and communicating what we think.
  7. Depth is much more important than speed.
  8. Mathematics lessons are about learning, not performing.
- KS1 classrooms have a 'First, Next, Then, So That' display which has representations displayed to support children's understanding. They follow the **CPA** approach with 'First' showing the concrete example, 'Next' showing the pictorial example, 'Then' showing the abstract example, and 'So That' showing an example of reasoning and problem-solving.
  - Reception Classrooms have a 'First, Next, Then' display where they use representations and vocabulary to support children's learning over a three week period.
  - Each classroom has well-labelled resources that are easily accessible for children to use during explicit lessons and continuous provision.

- Outdoor areas provide opportunities for purposeful problem-solving and challenge through, but not limited to, water play, construction, role play, weather station, mud kitchen, game invention, and gardening.
- Maths objectives that are best taught on a large scale are learned outside instead of inside the classroom. These include, but are not limited to, measurement of length, height, mass, weight, capacity, volume and time, shape, geometry, and statistics.
- All adults encourage children to develop fluency, reason mathematically, and solve problems when learning inside and outside of the classroom.
- All adults use effective questioning to assess children's understanding and further their thinking and reasoning.

#### **Parents/Carers:**

- Parents and children starting at Broomhill Infant School are provided with a set of Numicon and an activity leaflet to support home learning and fluency with number.
- Termly problem solving challenges are provided for all year groups and all contributions are celebrated with special Dojos and certificates.
- Parents/Carers are kept informed of their child's progress, and what they can do to support their child, through parents' meetings, Class Dojo and informal conversations.

#### **Useful Guidance:**

National Curriculum

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/335158/PRIMARY\\_national\\_curriculum\\_-\\_Mathematics\\_220714.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf)

Early Years Framework (p.13-14)

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/974907/EYFS\\_framework\\_-\\_March\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974907/EYFS_framework_-_March_2021.pdf)

White Rose Maths Hub

<https://whiterosemaths.com/resources/primary-resources/primary-sols/>

DFE Ready to Progress Guidance

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1017683/Maths\\_guidance\\_KS\\_1\\_and\\_2.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf)

NCETM Early Years Materials

<https://www.ncetm.org.uk/in-the-classroom/early-years/>

NCETM Mastery Materials

<https://www.ncetm.org.uk/teaching-for-mastery/mastery-materials/>

#### **Useful Websites/Resources:**

Interactive Rekenrek

<https://mathsbot.com/manipulatives/rekenrek>

Interactive Ten Frame

<https://www.coolmath4kids.com/manipulatives/ten-frame>

Interactive Base Ten

<https://www.coolmath4kids.com/manipulatives/base-ten-blocks>

Interactive Number Line

<https://www.coolmath4kids.com/manipulatives/number-line>

Interactive Hundred Square

<https://www.topmarks.co.uk/learning-to-count/paint-the-squares>

**Acronyms:**

**CPA** – Concrete Pictorial Abstract

**NCETM** – National Centre of Excellence in the Teaching of Mathematics

**STEM** – Science Technology Engineering Maths