

The Devonshire Hill Nursery and Primary School

Mathematics Teaching and Learning

Key Stage 1



Children in Years 1 and 2 will be given a really solid foundation in the basic building blocks of mental and written arithmetic. Through being taught place value, they will develop an understanding of how numbers work, so that they are confident in 2-digit numbers and beginning to read and say numbers above 100.

A focus on number bonds, first via practical hands-on experiences and subsequently using memorisation techniques, enables a good grounding in these crucial facts, and ensures that all children leave Y2 knowing the pairs of numbers which make all the numbers up to 20 at least. They will also have experienced and been taught pairs to 20. Their knowledge of number facts enables them to add several single-digit numbers, and to add/subtract a single digit number to/from a 2-digit number.

Another important conceptual tool is their ability to add/subtract 1 or 10, and to understand which digit changes and why. This understanding is extended to enable children to add and subtract multiples of ten to and from any 2-digit number. The most important application of this knowledge is their ability to add or subtract any pair of 2-digit numbers by counting on or back in tens and ones. Children will extend this to adding by partitioning numbers into tens and ones.

Children will be taught to count in 2s, 3s, 5s and 10s, and will have related this skill to repeated addition. They will associate this with the 2x, 3x, 5x and 10x tables. Engaging in a practical way with the concept of repeated addition and the use of arrays enables children to develop a preliminary understanding of multiplication, and asking them to consider how many groups of a given number make a total will introduce them to the idea of division.

The children will also be taught to double and halve numbers, and will thus experience scaling up or down as a further aspect of multiplication and division. Fractions will be introduced as numbers and as operators, specifically in relation to halves, quarters and thirds.

Children have access to a wide range of practical resources such as Numicon, number squares and horizontal number lines to help them work out calculations and word problems independently.

Mathematics Lesson

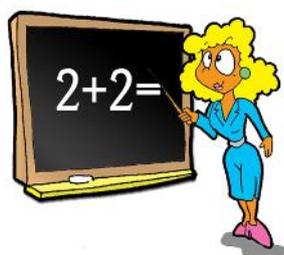
In Year 2

-) **Mental Arithmetic (15 mins) - Strategies are taught to ensure that children are secure in number facts.**
-) **Main Teaching (1 hour)**

Each lesson must start with a 'hook', question or an activity.

For example: When teaching Array (bring in a large box of eggs/ chocolate and discuss how the eggs/ chocolate are arranged, what happens if I rotate the box? Assess whether children know or can use any of the key vocabulary i.e. do they know what row/ column is).

Discuss Learning Objective and explain key vocabulary, array, row, columns, sorting, arrangement, etc. (8 min)



Group Practice (10 min) – Children actively engaged in 'doing' Mathematics.

For example: Children practically exploring array, looking around the classroom, photos. Teacher to correct children's misunderstanding and provide support.



Regroup- Discuss learning so far (5 min)

Independent/ group activity- Practising and applying their knowledge to solve problems e.g. use of array to solve problems (10 min)



Mini Plenary- (5 min): To review progress, clarify misunderstandings and move the work forward

Independent/ group activity- Practising and applying their knowledge to solve problems (10 min)



Maths Talk / Plenary (7 min) e.g. Question: Ask children to share: What is array? How can you make an array? Give us three things you found that is array? How and why is array useful?

- 1) Mini whiteboards and pens for writing key points from the lesson and holding up.
- 2) Show and Tell

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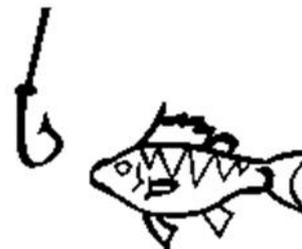
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A 'hook' is the opener, which grabs the children's attention making them interested in the lesson to come.

The Elements of a Strong Hook:

- * Explains **what** students are about to learn.
- * Explains **why** what they are about to learn is important.
- * Connects **what** they are about to learn to what they already know
- * Explains **how** the learning will take place
- * **Captures** children's interest.



Examples of hooks

Brown Bag: Place objects in a brown bag. Have children reach in and make observations about the contents of the bag (similarities, differences). This can also be used for children to pull out a strip of paper that gives them or their group a task to complete.

Walk: Using images or objects, children move from station to station making observations. The goal is for children to come to a conclusion about the objects/images that are related to a particular concept.

Survey: Survey the children by asking questions and having them step to a side or corner of the room that represents their response.

Prediction: Present a scenario and have children make a prediction (great for probability, statistics and data analysis).

Song: Play a song as the children enter the room. Leave it on during the mental maths session. Ask children how the song might be related to a given mathematics concept. Let them share their ideas before you explain your purpose for doing it.

Experiment: Conduct an experiment that illustrates a concept. For example, use water to fill 3D containers to illustrate volume or help children make a recipe using benchmark measurements.

Vocabulary connections: Give children a group of words related to the lesson...have them guess the topic or find the word that doesn't fit in the group.

News: Bring in a newspaper article or online news clip that addresses an area of interest or importance to your children.

Give children roles and have them act out a skit. Or, you can come in dressed for a given role. It can be as simple as wearing a sports jersey if you're writing algebraic equations on a person buying a £75 ticket and x number of hot dogs at a game.

Show a movie or TV clip, read an excerpt from a book, writing prompt ("Tell me about a time when..."), Riddles, Brain Teasers, scavenger hunt

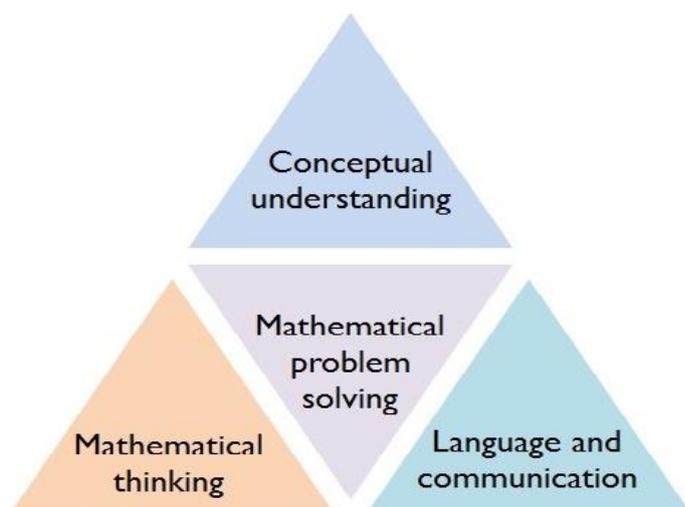
MATHEMATICS MASTERY – A DEPTH BEFORE BREADTH APPROACH

At the Devonshire Hill Nursery and Primary School, we believe that children from all backgrounds can succeed in mathematics. Our focus is on raising standards – working together to show what children are capable of, and finding effective ways to enable every child to succeed. We follow the Mathematics Mastery Approach to teaching Mathematics. Children have daily mathematics lessons and 5 maths meetings each week where they focus on specific knowledge and skills.

The key features of the approach namely conceptual understanding, language and communication, mathematical thinking and problem solving have been demonstrated by education research to be most effective for pupils' understanding of mathematics. They drew significantly on the curriculum and pedagogy of the highest performers in the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS).

What is special about mathematics Mastery is that it brings these approaches and techniques together in a rigorous and systematic structure:

-) High expectations for every child
-) More time to spend on fewer topics
-) Problem solving at the heart



The programme emphasises cumulative mastery of the essential knowledge and skills of mathematics. It embeds a deep understanding of maths by employing a concrete, pictorial, abstract (CPA) approach – using objects and pictures before number and symbols so that pupils understand what they are doing rather than just learning to repeat routines without grasping what is happening.

Mathematics Mastery is currently used in Reception and Year 1. An emphasis on following the CPS approach has been adopted so that children gain a deeper understanding of the mathematics covered through the national curriculum. Lessons follow a six part structure to allow for continuous Assessment for Learning: 1) Do Now 2) Sharing of the learning objective and modelling of the new learning 3) Paired Talk Task 4) Develop Learning 5) Independent Work and 6) Plenary.

Mathematics Mastery lessons follow a 6 part structure. This keeps the lesson pacy, gives flow and allows more opportunities to teach creatively, give feedback and assess learning.



1. Do Now

This is a quick task all pupils can access without any teacher input as an introduction to the mathematics lesson.

2. New Learning

The New Learning segment introduces the main mathematical concepts for the day's lesson.

3. Talk Task

The Talk Task segment of the lesson practises the new learning by talking about maths with key vocabulary.

4. Develop Learning

The Develop Learning segment builds on the new learning and develops a deeper understanding of the maths concepts of that lesson.

5. Independent Task

The Independent task practises learning independently through solving problems.

6. Plenary

The Plenary segment recaps on the lesson, checking understanding and celebrating success.