

The Devonshire Hill Nursery and Primary School
Mathematics Teaching and Learning
Lower Key Stage 2



In the Lower KS2, children build on the concrete and conceptual understandings they have gained in the KS1 to develop a real mathematical understanding of the four operations, in particular developing arithmetical competence in relation to larger numbers.

In addition and subtraction, they are taught to use place value and number facts to add and subtract numbers mentally and will develop a range of strategies to enable them to discard the 'counting in ones' or fingers-based methods of the lower years. In particular, they will learn to add and subtract multiples and near multiples of 10, 100 and 1000, and will become fluent in complementary addition as an accurate means of achieving fast and accurate answers to 3-digit subtractions.

Standard written methods for adding larger numbers are taught, learned and consolidated, and written column subtraction is also introduced. This key stage is also the period during which all the multiplication and division facts are thoroughly memorised, including all facts up to the 12 x 12 table.

Efficient written methods for multiplying or dividing a 2-digit or 3-digit number by a single-digit number are taught, as are mental strategies for multiplication or division with large but related numbers, e.g. when dividing by 5 or multiplying by 20.

Children will develop their understanding of fractions, learning to reduce a fraction to its simplest form as well as finding non-unit fractions of amounts and quantities. The concept of a decimal number is introduced and children consolidate a firm understanding of one-place decimals, multiplying and dividing whole numbers by 10 and 100.

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.

Lesson Structure

In Year 4:

Mental Arithmetic Lesson (20 minutes)

- Strategies are taught to ensure that children are secure in number facts
 - Each week the teacher will focus on teaching five or six areas of Mental Arithmetic, these will be selected using the Progressive Weekly Mental Arithmetic and based upon the teacher's assessment of the Mental Arithmetic assessment that the children will complete in Friday's Mental Arithmetic lesson
 - The teacher will model a strategy and provide the children with short bursts of time to rehearse it, before moving on to modelling the next area of teaching
- **Main teaching (1 hour)**

Each lesson must start with either a question/word problem/hook (8 min)

- Teacher display a challenge question. Children will use their reasoning skills to solve the problem. Take feedback.
- **Discussion/Modelling (12 min)**
 - The teacher introduces Learning Objective and Success Criteria (these are either differentiated outcomes that will result from the learning or a series of steps that all children will need to apply to the method being learnt)
 - The key vocabulary for the lesson is displayed, its pronunciation is rehearsed and meaning discussed
 - The progress line is displayed and discussed
 - The area of learning is modelled by the teacher
 - Understanding can be assessed by children then attempting to apply the strategy to a similar question on their mini-whiteboards (this can initially be completed in pairs and then individually). Feeding back and discussing successes/errors is used to promote progress.
- **Group/Independent Tasks (20 min)**
 - Differentiated independent work is provided
 - HLTA's/Support Staff are deployed and directed by the Class Teacher to work with a group of children
 - Where possible work is presented as a 'Chili Challenge' (work is differentiated three ways into Chili 1, Chili 2 and Chili 3). The children select which level of challenge they feel able to complete. Teacher and Self Assessment during the work allows children to move between the challenges depending on whether the work is too easy or hard
 - If children complete 'Chili 3' they can attempt the 'Hot 'n' Spicy' extension task. This may involve applying their understanding in a different context or question type, completing word problems, creating their own questions, solving exam style (Test Base) questions or acting as a 'Mini-Teacher' to explain their learning to another pupil still working on the 'Chili Challenges'

Mini-plenaries (10 min)

- Throughout the independent tasks teacher led mini-plenaries are used to address misconceptions and celebrate successes. The progress line can be updated throughout.
- **Plenary (10 min)**
- Discuss key learning points/ draw together what has been learned – find out from the children what they think they've learned, what they found easy/difficult and what they need to try and remember
 - They then write a Self Assessment statement (E.g. Today I was successful as I can now....)
 - The children then provide an example (where possible) of their success by generating their own question and solving it to demonstrate their learning from the lesson