



Maths Mastery at Churchside

At Churchside we aim to foster an enthusiasm for Maths while developing a confident understanding of the subject. Maths teaches children to solve problems and it develops their ability to reason. It is essential to everyday life as well as being crucial to success in many other subjects, such as science, technology and engineering. Our children should be able to effectively use Maths as a tool both within and outside of school. At the same time, they should also develop an appreciation of the subject in its own right, by exploring patterns, investigating and discussing mathematical ideas.

By teaching for Mastery, we aim to give all pupils (including those with SEND) a Maths classroom where they can participate, feel encouraged and make progress. All children should be supported to develop a deep, connected and sustained understanding of the Maths being explored, with opportunities to discuss, reason and problem-solve.

The Maths classroom at Churchside creates a comfortable environment where it is okay to get things wrong and to struggle, by:

- Encouraging pupils to have a go even when they are not sure.
- Actively encouraging mistakes.
- Praising effort and struggle, rather than correct answers.
- Focussing on the process (not getting the answer right).

In Maths lessons at Churchside, you will see:

- All pupils working on the same focus, but with differing support, scaffolding or challenge to allow them to access the learning.
- Rehearsal and revisiting of prior learning before moving on to new concepts.
- Learning broken down into small steps.
- All pupils using a range of manipulatives, moving through concrete, pictorial and abstract methods to show the structure of Maths.
- Use of age-appropriate mathematical vocabulary, including stems sentences.
- A focus on talking about Maths, including: discussion, articulating & justifying their ideas, agreeing and disagreeing, asking questions, working with others, decision-making, reflecting on different methods.
- Children being active, e.g. working practically, learning outside of the classroom, using a range of equipment etc.

As we encourage a creative active curriculum, not every lesson will be recorded in books.

However, when Maths is recorded you will see:

- Pupils working on the same maths but representing their thinking and understanding in different ways (rather than pupils working through many different examples).
- Pupils recording their thinking through pictures, diagrams, symbols, numbers and writing.
- High expectations regarding presentation, inc. digits formed correctly and written methods recorded neatly and logically to reduce the risk of accidental errors.
- The use of pink & green by adults and purple pupil responding in line with our school marking policy.
- *NB: This may result in less in books and no obvious differentiation by task – see appendix A. However, pupils will be able to demonstrate understanding by talking about their Maths.*

Throughout the week at Churchside you will see:

- Opportunities to use and apply their Maths in other subjects, daily routines and at play
- Rehearsal, revisiting and practice, including through low-stakes testing to ensure learning is secured in long-term memory. This takes a variety of forms, including: NCETM Mastering Number in KS1 & EYFS, Maths Meetings, KS2 arithmetic including PIXL weekly tests, White Rose Flashback 4s.

Appendix A: Differentiation in a Mastery Curriculum

In a Mastery approach, there are no fixed ability sets or groups. In general, children will sit in mixed ability groupings. Most children will be working through the curriculum at broadly the same pace, with scaffolding to support and opportunities to extend and deepen.

NB: There may be a small minority of pupils who even with all the scaffolding, they are not able to do it and are not learning/progressing, then they may need to step back and follow a different programme. This should be a related objective within the same Maths concept but may be from an earlier year group.

Supporting & scaffolding

- Pre-teaching (especially for gap-filling and catch-up)
- Low starting point for lessons
- Think about what makes something hard? How can I remove that element?
 - Use of manipulatives
 - Partially completed methods
 - Different numbers
 - Using calculators, times table squares etc.
 - Word mats with key knowledge (e.g. conversion of units of measure)
 - Stem sentences
- A cycle of modelling, scaffolding, prompting, independent activity
- Assessment within the lesson and immediate feedback and time to respond
- Identifying misconceptions and same-day interventions
- Whole class feedback & responding prior to the next lesson

Ways to Challenge & Extend

Constraints: Children work on the same problem but with additional constraints (e.g. you can only use odd numbers; the answer must be greater than 100).

Deepening Understanding Through Talk:

- Describe it in their own words.
- Prove it; explain how you know.
- Represent it in a variety of ways (e.g. using concrete materials, pictures and symbols)
- Solve it in a different way.
- Explain it to someone else.
- Make up their own examples (and non-examples) of it.
- See mathematical connections between it and other facts or ideas.
- Recognise it in new situations and contexts.
- Make use of it in various ways, including in new situations.

Additional investigations, problems and challenges *can* be prepared for children (but remember there is no expectation to provide lots of different tasks every lesson and these should be a deepening of the same concept, not moving on):

- white rose true/false statements
- classroom secrets have differentiated versions of f, r, ps questions for each small step, as well as discussion problems

- nctm mastery documents contain example greater depth questions.

10 Quick Ways to Ensure Pupils are always busy

1. Challenge box of problems
2. Display an extension on the board
3. Throw out a 'if you've done that, then ... try' question: *Is there a different way of doing it? Can you find more than one answer? How can you check your answers? Can you prove it?*
4. Challenge them to think of real life situations where they might use the skill/calculation/whatever they are learning.
5. Have a ready-prepared extra challenge
6. A game or activity on the table that children can play/do while waiting
7. Maths games (that have been previously taught or from previous lessons – make sure children know how to play them)
8. Game or activity on chrome book or ipad
9. Have a Maths area within the classroom with practical activities (think EYFS – continuous provision style)
10. Use & Apply BIF Question: Where would you use this in real life? Why is this useful?

Remember: rehearsal and practice are an important element of mastery and crucial to securing long-term memory. Children do not always have to be 'moving on'.