# Mastery Mathematics at Larkfields

# KS1 Parent Guide

At Larkfields Infant School, we take a 'Mastery' approach in the teaching of Mathematics. Mastering maths means children acquiring a deep, long-term, secure and adaptable understanding of the subject.

1. Everyone can learn maths to the highest level.

2. Mistakes are valuable.

3. Questions are really useful.

4. Maths is making sense.

5. Maths is about connections and communicating.

7. Depth is more important than speed.

## Mastery Maths in the Classroom

Children are taught through whole-class interactive teaching, enabling all to master the concepts necessary for the next part of the curriculum sequence.

In a typical lesson, the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion, enabling pupils to think, reason and apply their knowledge to solve problems.

Use of precise mathematical language enables all pupils to communicate their reasoning and thinking effectively.

If a pupil fails to grasp a concept or procedure, this is identified quickly, and gaps in understanding are addressed systematically to prevent them falling behind.

Significant time is spent developing deep understanding of the key ideas that are needed to underpin future learning.

Key number facts are learnt to automaticity, and other key mathematical facts are learned deeply and practised regularly, to avoid cognitive overload in working memory and enable pupils to focus on new learning.

We encourage our children to develop a greater depth of understanding rather than just working on the next topic. It is important for children to really grasp how to perform a procedure in many different ways and contexts rather than just working with greater numbers. So before exploring numbers to 100, we would consider the following with numbers to 10:

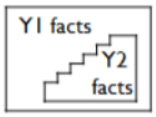
| | | |
|---|---|---|
| 3 + 2 = □ | 4 + 3 = 6 + □ | 5 = □ - 2 |
| □ = 6 + 2 | 9 – 3 = □ | □ - □ = 7 |
| 3 + □ = 4 | 6 - □ = 2 | 5 – □ = 8 - □ |
| □ + □ = 8 | | |

Help your child learn key addition facts (and related subtractions) at home.

Having key facts at their fingertips frees up their working memory to allow them to learn new concepts more easily.

## Year 1

| + | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 + 0 | 0 + 1 | 0 + 2 | 0 + 3 | 0 + 4 | 0 + 5 | 0 + 6 | 0 + 7 | 0 + 8 | 0 + 9 | 0 + 10 |
| 1 | 1 + 0 | 1 + 1 | 1 + 2 | 1 + 3 | 1 + 4 | 1 + 5 | 1 + 6 | 1 + 7 | 1 + 8 | 1 + 9 | 1 + 10 |
| 2 | 2 + 0 | 2 + 1 | 2 + 2 | 2 + 3 | 2 + 4 | 2 + 5 | 2 + 6 | 2 + 7 | 2 + 8 | 2 + 9 | 2 + 10 |
| 3 | 3 + 0 | 3 + 1 | 3 + 2 | 3 + 3 | 3 + 4 | 3 + 5 | 3 + 6 | 3 + 7 | 3 + 8 | 3 + 9 | 3 + 10 |
| 4 | 4 + 0 | 4 + 1 | 4 + 2 | 4 + 3 | 4 + 4 | 4 + 5 | 4 + 6 | 4 + 7 | 4 + 8 | 4 + 9 | 4 + 10 |
| 5 | 5 + 0 | 5 + 1 | 5 + 2 | 5 + 3 | 5 + 4 | 5 + 5 | 5 + 6 | 5 + 7 | 5 + 8 | 5 + 9 | 5 + 10 |
| 6 | 6 + 0 | 6 + 1 | 6 + 2 | 6 + 3 | 6 + 4 | 6 + 5 | 6 + 6 | 6 + 7 | 6 + 8 | 6 + 9 | 6 + 10 |
| 7 | 7 + 0 | 7 + 1 | 7 + 2 | 7 + 3 | 7 + 4 | 7 + 5 | 7 + 6 | 7 + 7 | 7 + 8 | 7 + 9 | 7 + 10 |
| 8 | 8 + 0 | 8 + 1 | 8 + 2 | 8 + 3 | 8 + 4 | 8 + 5 | 8 + 6 | 8 + 7 | 8 + 8 | 8 + 9 | 8 + 10 |
| 9 | 9 + 0 | 9 + 1 | 9 + 2 | 9 + 3 | 9 + 4 | 9 + 5 | 9 + 6 | 9 + 7 | 9 + 8 | 9 + 9 | 9 + 10 |
| 10 | 10 + 0 | 10 + 1 | 10 + 2 | 10 + 3 | 10 + 4 | 10 + 5 | 10 + 6 | 10 + 7 | 10 + 8 | 10 + 9 | 10 + 10 |

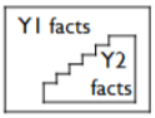



Year 1 - Progression of Addition Fact Fluency, Color-Coded by Strategy

| | | |
|---|---|---|
| **Doubles** | *10 facts* | 1 + 1 2 + 2 3 + 3 4 + 4 5 + 5 6 + 6 7 + 7 8 + 8 9 + 9 10 + 10 |
| **Sums of 10** | *8 facts* | 9 + 1 8 + 2 7 + 3 6 + 4 4 + 6 3 + 7 2 + 8 1 + 9 |
| **Adding 0** | *21 facts* | 0 + 0 0 + 1 0 + 2 0 + 3 0 + 4 0 + 5 0 + 6 0 + 7 0 + 8 0 + 9 0 + 10 |
| | | 1 + 0 2 + 0 3 + 0 4 + 0 5 + 0 6 + 0 7 + 0 8 + 0 9 + 0 10 + 0 |
| **Adding 1** | *14 facts* | 1 + 2 1 + 3 1 + 4 1 + 5 1 + 6 1 + 7 1 + 8 2 + 1 3 + 1 4 + 1 5 + 1 6 + 1 7 + 1 8 + 1 |
| **Doubles Plus 1 (Up to 10)** | *6 facts* | 2 + 3 3 + 2 3 + 4 4 + 3 4 + 5 5 + 4 |
| **Sums Up to 10** | *12 facts* | 2 + 4 2 + 5 2 + 6 2 + 7 3 + 5 3 + 6 4 + 2 5 + 2 5 + 3 6 + 2 6 + 3 7 + 2 |

# Year 2

| + | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 + 0 | 0 + 1 | 0 + 2 | 0 + 3 | 0 + 4 | 0 + 5 | 0 + 6 | 0 + 7 | 0 + 8 | 0 + 9 | 0 + 10 |
| 1 | 1 + 0 | 1 + 1 | 1 + 2 | 1 + 3 | 1 + 4 | 1 + 5 | 1 + 6 | 1 + 7 | 1 + 8 | 1 + 9 | 1 + 10 |
| 2 | 2 + 0 | 2 + 1 | 2 + 2 | 2 + 3 | 2 + 4 | 2 + 5 | 2 + 6 | 2 + 7 | 2 + 8 | 2 + 9 | 2 + 10 |
| 3 | 3 + 0 | 3 + 1 | 3 + 2 | 3 + 3 | 3 + 4 | 3 + 5 | 3 + 6 | 3 + 7 | 3 + 8 | 3 + 9 | 3 + 10 |
| 4 | 4 + 0 | 4 + 1 | 4 + 2 | 4 + 3 | 4 + 4 | 4 + 5 | 4 + 6 | 4 + 7 | 4 + 8 | 4 + 9 | 4 + 10 |
| 5 | 5 + 0 | 5 + 1 | 5 + 2 | 5 + 3 | 5 + 4 | 5 + 5 | 5 + 6 | 5 + 7 | 5 + 8 | 5 + 9 | 5 + 10 |
| 6 | 6 + 0 | 6 + 1 | 6 + 2 | 6 + 3 | 6 + 4 | 6 + 5 | 6 + 6 | 6 + 7 | 6 + 8 | 6 + 9 | 6 + 10 |
| 7 | 7 + 0 | 7 + 1 | 7 + 2 | 7 + 3 | 7 + 4 | 7 + 5 | 7 + 6 | 7 + 7 | 7 + 8 | 7 + 9 | 7 + 10 |
| 8 | 8 + 0 | 8 + 1 | 8 + 2 | 8 + 3 | 8 + 4 | 8 + 5 | 8 + 6 | 8 + 7 | 8 + 8 | 8 + 9 | 8 + 10 |
| 9 | 9 + 0 | 9 + 1 | 9 + 2 | 9 + 3 | 9 + 4 | 9 + 5 | 9 + 6 | 9 + 7 | 9 + 8 | 9 + 9 | 9 + 10 |
| 10 | 10 + 0 | 10 + 1 | 10 + 2 | 10 + 3 | 10 + 4 | 10 + 5 | 10 + 6 | 10 + 7 | 10 + 8 | 10 + 9 | 10 + 10 |




Year 2 - Progression of Addition Fact Fluency, Color-Coded by Strategy

| | | |
|---|---|---|
| **Doubles Plus 1 (Up to 20)** | *10 facts* | 5 + 6 6 + 7 7 + 8 8 + 9 9 + 10 6 + 5 7 + 6 8 + 7 9 + 8 10 + 9 |
| **Adding 10** | *16 facts* | 10 + 1 10 + 2 10 + 3 10 + 4 10 + 5 10 + 6 10 + 7 10 + 8 |
| | | 1 + 10 2 + 10 3 + 10 4 + 10 5 + 10 6 + 10 7 + 10 8 + 10 |
| **Sums Up to 20** | *24 facts* | 7 + 4 7 + 5 8 + 3 8 + 4 8 + 5 8 + 6 9 + 2 9 + 3 9 + 4 9 + 5 9 + 6 9 + 7 |
| | | 2 + 9 3 + 8 3 + 9 4 + 7 4 + 8 4 + 9 5 + 7 5 + 8 5 + 9 6 + 8 6 + 9 7 + 9 |

## Ideas for Parents

- Help your child learn times tables (2, 5 and 10) and key number bonds (see below) at home - having key facts at their fingertips frees up their working memory.
- Sing number rhymes together—there are lots of commercial downloads and CDs available.
- Give your child the opportunity to count a range of interesting objects (coins, pasta, shapes, buttons etc.). Encourage them to touch and move each object as they count.
- Count things you cannot touch or see (more difficult!!). Try lights on the ceiling, window panes, jumps, claps or oranges in a bag.
- Play games that involve counting (e.g. snakes and ladders, dice games)
- Look for numerals in the environment. You can spot the numerals at home, in the street or when out shopping.

- Make mistakes when chanting, counting or ordering numbers. Can your child spot what you have done wrong?
- Choose a number of the week e.g. Practise counting to 5 and on from 5. Count out groups of 5 objects (5 dolls, 5 bricks, 5 pens). See how many places you can spot the numeral 5.
- Halve and doubling numbers, ordering random numbers, counting in 2s, 5s and 10s.
- Learning number bonds up to ten using your fingers. Give your child a number up to ten and ask your child to give you the different ways of making it e.g. 7 could be made by adding 6 + 1 or 5 + 2 etc.
- Throw two or more dice. Ask your child to find the total of the numbers (+) and the difference between (-). Can they do this in their heads?
- Use a set of playing cards. Turn over two (progressing to three or more) cards and ask your child to add or subtract them. If they answer correctly, they keep the cards. How many cards can they collect in two minutes?
- Play 'ping pong' to practise number bonds with your child. You say a number. They reply with how much more is needed to make 5, 10 and 20. Encourage your child to answer questions quickly, without counting or using their fingers.
- Plan an outing during the holidays. Ask your child to think about what time you will need to set off and how much money you will need to take.

**Maths props in your house**

Tape measure and ruler - get your child involved when completing DIY.

Bar of chocolate (with squares) - good for showing multiplication and fractions.

Magnet numbers - a great way for impromptu maths in the house.

Dartboard - darts teaches not only addition, subtraction and multiplication but also raises discussions of what is needed to finish the game.

Unusual dice - they don't have to be 6 sided.

Dominoes - another great game to show combinations of numbers

Guess who - this game shows how to group characters into categories and can be extended to shapes and numbers.

Thermometer - shows both positive and negative numbers to discuss.

A prominent clock - try using both an analogue and digital clock. Can you compare the two?

A wall calendar - not only good for noticing days and months, but also for finding patterns.

Board games with dice or spinner - why not make your own board game?

Pack of playing cards - not only can you learn about counting but also chance and probability.

Calculator - you can discover so many patterns with calculators, not just basic computation.

Measuring jug - discover both imperial and metric ways of measuring.

Scales - traditional balances can show counting as well as measuring.

Dried beans, pasta - useful for counting, dividing and finding the difference. Keep an eye out for the 'maths sacks' which will be sent home with lots more maths ideas and games