



Maths mastery at OMS



29th September 2022



PURPOSE OF THIS SECTION

- Explain the concept of mastery in mathematics
- Show how the children learn
- Show what a mastery lesson looks like
- Discuss ways to support your child at home
- Answer any questions you may have

What does it mean to master something?

- I know how to do it
- It becomes automatic and I don't need to think about it- for example driving a car
- I'm really good at doing it – painting a room, or a picture
- I can show someone else how to do it.

WHAT IS MASTERY?



If you drive a car, imagine the process you went through...



- The very first drive, lacking the knowledge of what to do to get moving*
- The practice, gaining confidence that you are able to drive*
- The driving test, fairly competent but maybe not fully confident*
- A few years on, it's automatic, you don't have to think about how to change gears or use the brake*
- Later still, you could teach someone else how to drive*

Learning to master driving takes time and a lot of practice!

WHAT IS MASTERY OF MATHEMATICS?

- Achievable for all
- **Deep** and sustainable learning
- The ability to build on something that has already been sufficiently mastered
- The ability to reason about a concept and make connections
- Conceptual and procedural fluency
- Based on the ideas of Shanghai and Singapore mathematics

TEACHING FOR MASTERY

- The belief that all pupils can achieve
- Keeping the class working together so that all can access and master mathematics – all schools are now following this format including the Infant Academy
- Development of **deep** mathematical understanding
- Development of both factual/procedural and conceptual fluency
- Longer time on key topics, providing time to go deeper and embed learning

NATIONAL CURRICULUM

Progress in mathematics learning each year should be assessed according to the extent to which pupils are gaining a deep understanding of the content taught for that year, resulting in sustainable knowledge and skills.

Key measures of this are the abilities to reason mathematically and to solve increasingly complex problems, doing so with fluency, as described in the aims of the National curriculum:

'The national curriculum for mathematics aims to ensure that all pupils:

- *become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop **conceptual understanding** and the ability to recall and apply knowledge rapidly and accurately*
- ***reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language*
- *can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.'* (National curriculum p3)

FEATURES OF A MASTERY LESSON

- *Whole class work together – mixed ability pairs*
- *Journey taken – small step*
- *Ping pong teaching*
- *Accurate use of mathematical knowledge language*
- *Repetition (of each other and of the teacher)*
- *Build on each others ideas (differentiation by questioning)*
- *Longer units which build on each other*
- *An expectation that all children can achieve*
- *Depth vs Acceleration – children do not move on; they explain, apply and reason*

WHAT DOES THIS LOOK LIKE ACROSS A YEAR?

- Every year group starts with place value
- - Year 3 work with 3 digit numbers, year 4 – 4 digit numbers, year 5 – 5 and 6 digits, year 6 – 7 or more digits.
- The next few units are usually calculation based.
- Recap of previous year content to make links and connections.
- Going deeper – we don't accelerate through the learning, we stay on that concept and go deeper.

WHAT DOES MASTERY LOOK LIKE AT OMS?

The 4 main parts of a maths lesson are:

- Fluency
- In focus
- Let's learn/Your turn
- Independent practice.

- Quick recall of facts and procedures
- The flexibility and fluidity to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections in mathematics
- This might be arithmetic questions, times table practice and flashback 4.
- Flashback 4 has a question from the previous lesson, the previous week, previous topic and then the previous year.

FLUENCY

Flashback 4

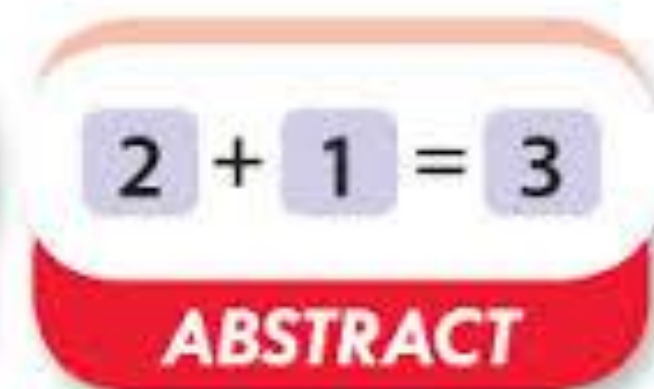
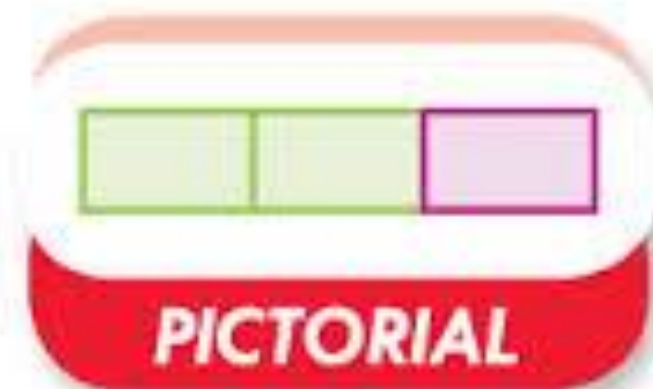
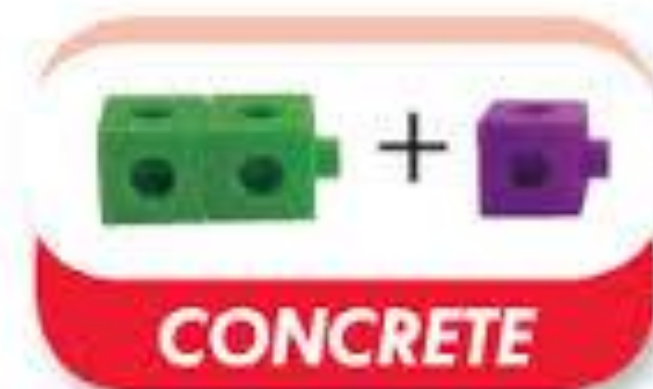
Year 5 | Week 3 | Day 5

LXXXVIII

- 1) What range of whole numbers round to 700,000 to the nearest hundred thousand?
- 2) What number lies halfway between 350,000 and 650,000?
- 3) The coordinate (2, 4) moves 2 right and 4 up. What is the position of the new coordinate?
- 4) What inverse calculation could you do to check that $2,405 + 6,360 = 8,765$?

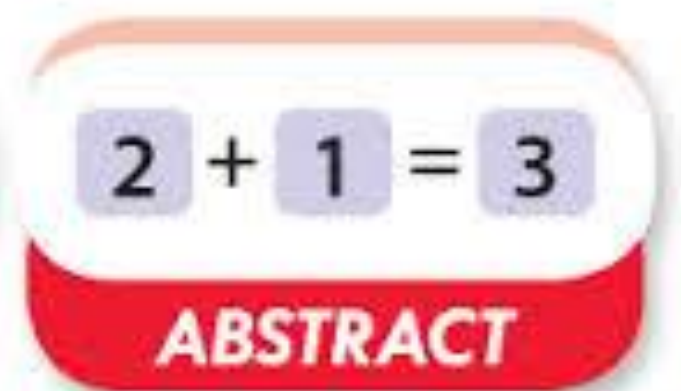
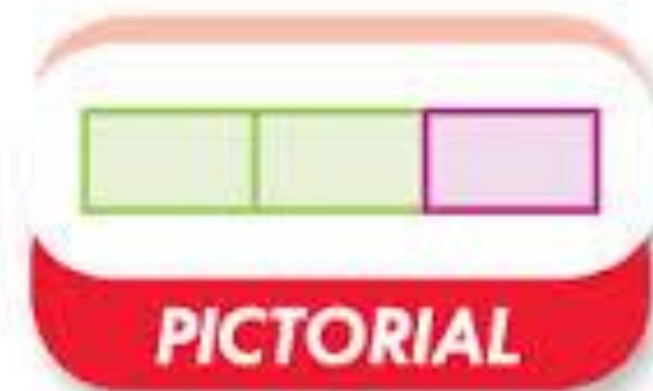
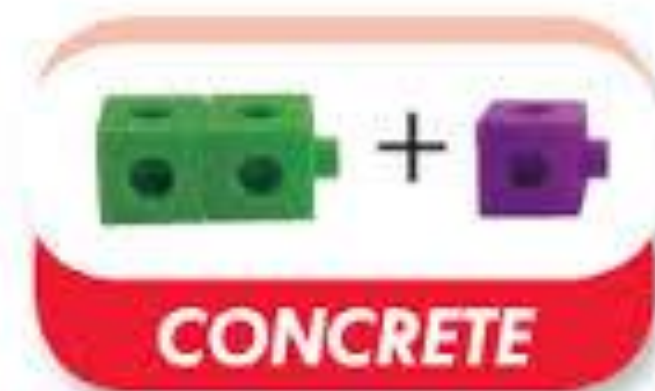
IN FOCUS

- A 'hook' into the lesson concept – this might be a word problem, diagram or a 'what do you notice?' style question.
- Concrete resources. We use a CPA approach (concrete, pictorial, abstract) meaning that in the lessons the children will use physical resources before looking at how we can represent that with diagrams and images, before working on abstract – calculations and word problems.
- Children would discuss how to approach the problem.



LET'S LEARN/YOUR TURN

- Ping pong approach – the teacher will model and teach a bit (with input from the children). Then the children would have a go in pairs/groups.
- There's lots of opportunity for discussion – between the teacher and children, and between the children.



INDEPENDENT PRACTICE

- Children apply what they've learnt.
- Range of questions – fluency and reasoning/ problem solving.
- Extensions throughout. These might be explaining their understanding, or applying their knowledge in a different context.

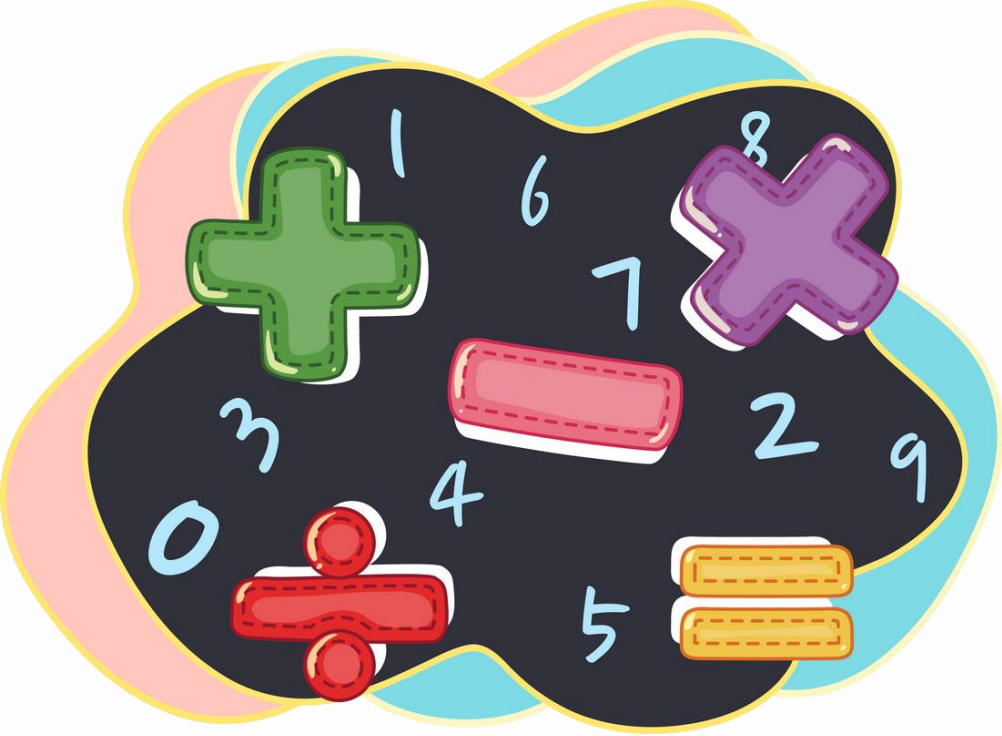
HOW DO WE SUPPORT YOUR CHILDREN?

- *Scaffolding – specific questioning.*
- *Small group work*
- *Same day interventions*
- *Concrete resources.*

- *Extensions*
- *Targeted questioning*
- *Encouraging full sentences with mathematical vocabulary*

HOW CAN YOU SUPPORT YOUR CHILDREN?

- Practice times tables at home using TTRockstars (or any other resource). We ask year 3 and 4 to use TTRockstars at least 3 times a week for 10 minutes at a time.
- Ask children to practice the 4 calculations.
- Michael Underwood videos
<https://whiterosemaths.com/maths-with-michael>
- Talk about Maths in everyday. Shape, money, telling the time.



Questions?

