

# Welcome

## Understanding mathematics at primary school

Maeve Duffy

Year 4 class teacher

Maths Subject Leader

Laura Williams

Year 6 class teacher

Maths Subject Leader

m

## Session aims

- To gain an insight into the Mastery approach
- How it works in our school
- Ideas for supporting maths at home
- Next steps

L

# Our Journey

- Primary Teaching for Mastery Work Group.
- In our fourth year.
- This involves workshops, lesson observations, rejigging the way we approach and teach maths to ensure consistency across the school, observations of us.
- Constant evaluation and reflection.

m

## How did you learn maths at school ?

Did you learn as a whole class?

Did everyone get the same work?

Were resources available?

# What's Changed since we were at school?

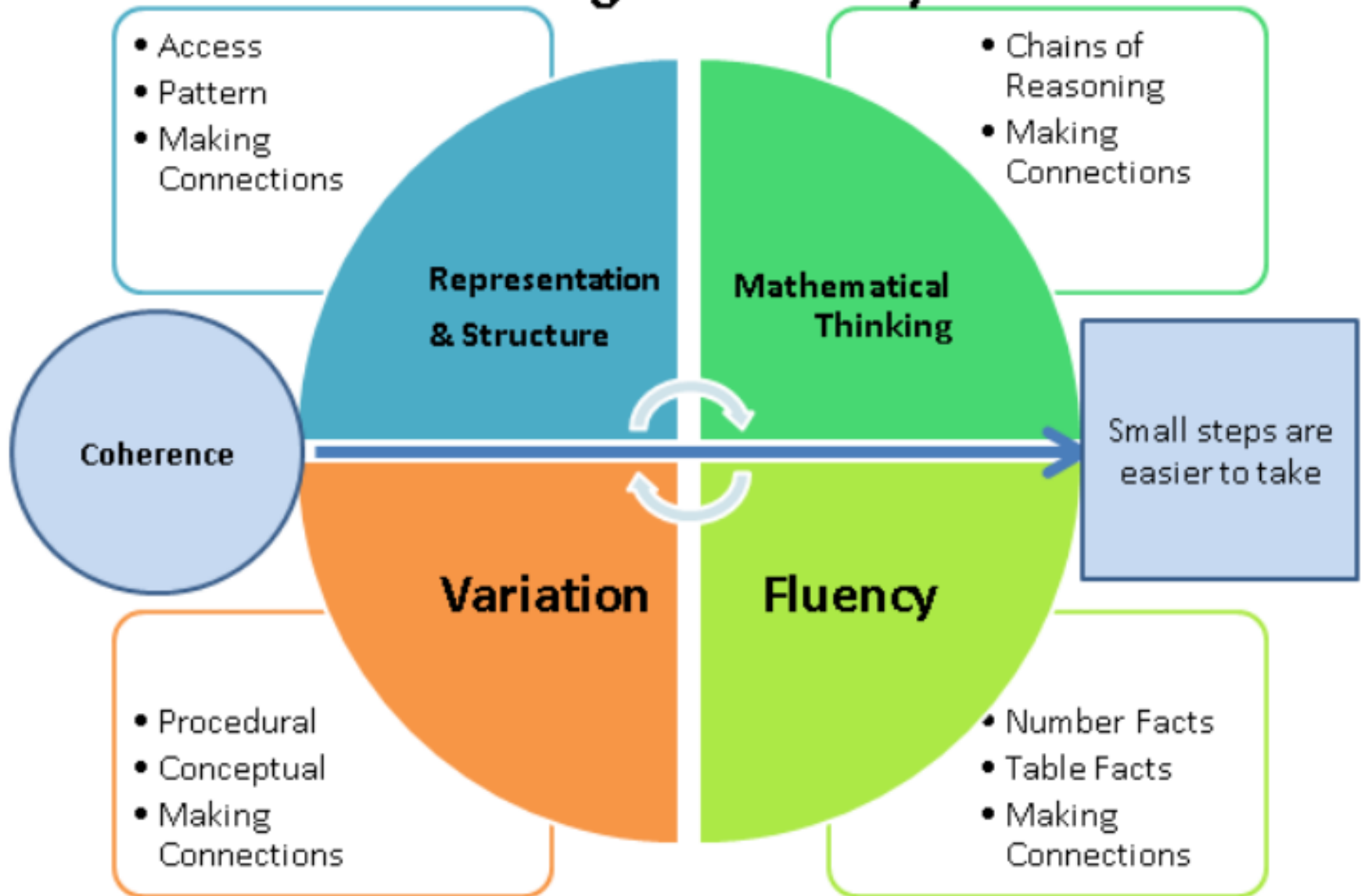
## A MATHS MASTERY APPROACH

Mastering maths means pupils acquiring a **deep, long-term, secure** and **adaptable** understanding of the subject.

Give pupils the **best chances of mastering maths**.

Children taught to require a solid enough understanding of the maths to enable them to move on to more advanced material.

# The Five Big Ideas Teaching for Mastery



m

Fluency: The foundation of everything

“maths fluency” - applying mental arithmetic  
**accurately and quickly.**

Understanding of numbers

- their **size**
- **Relationships** between them
- how they are affected by **operations** such as adding, subtraction, multiplication and division.

Number facts, times tables, making **connections.**

**More than than just memorisation of facts.** It encompasses a mixture of efficiency, accuracy and flexibility.

m

If children are not fluent in basic facts, then when solving complex problems the **working memory is taken up by calculating basic facts** and children have **less working memory to focus on solving the actual problem.**



m

# Examples:

Bridging to 10, 100.

Constantly using number bonds and times table and division facts. .

<b>4</b>	$468 - 9 =$						
	<table border="1"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>						

	4	<sup>5</sup> 6	'8
-			9
	4	5	9

# What do we do at school to help with fluency?

Foundations happen in year 1 and 2. We are **building on these foundations** by:

- **Daily** times table practice- logical order.
- Fluency is a key element embedded into every lesson.
- Efficient strategies are modelled and encouraged.
- Rainbow Maths

What can you do at home?

TTRS

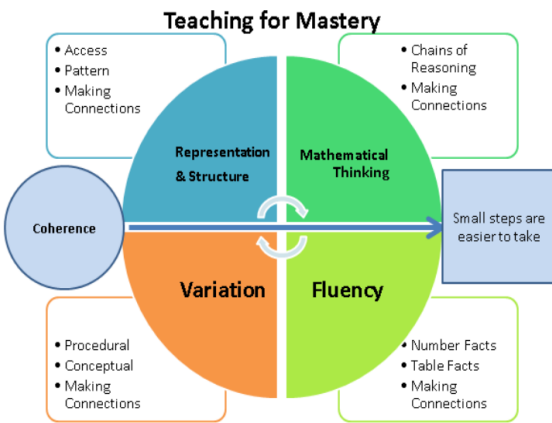
Daily number bond **and** times table practice  
(inverse!)

**Resources:**

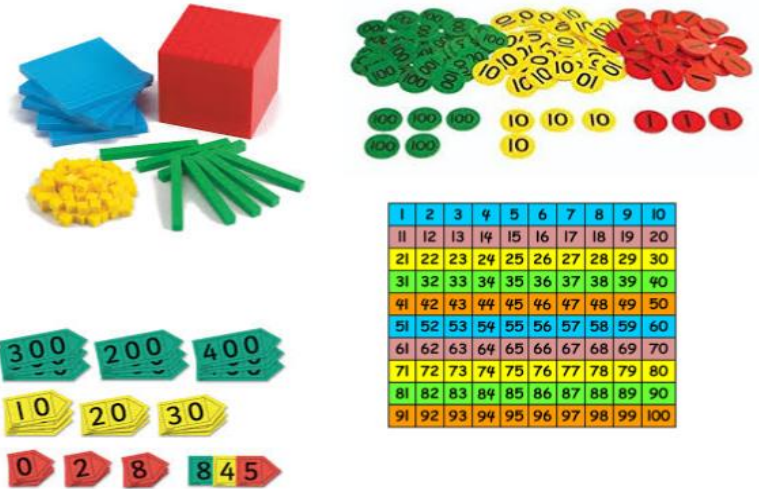
Multiplication Mastered

<https://www.thumbsupformastery.com/>

# Representation and Structure



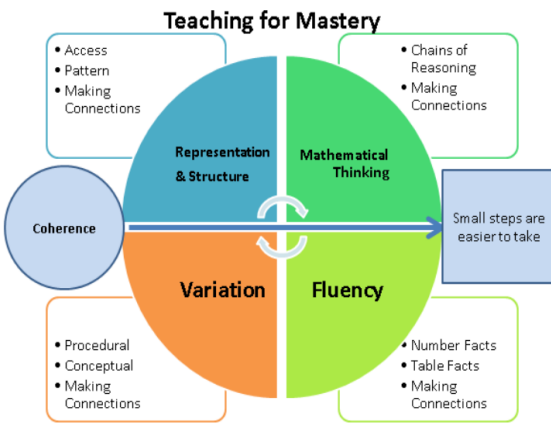
Manipulatives used to represent the maths concepts.



Understanding doesn't happen automatically, they are modelled and used in most lessons

**Eventually**, the children need to be able to do the maths **without the representation**. We want to help children move to the abstract (solving the maths with just numbers).

# Variation



## Variation

- Small step by step approach.
- Making connections
- Pattern spotting

Examples:

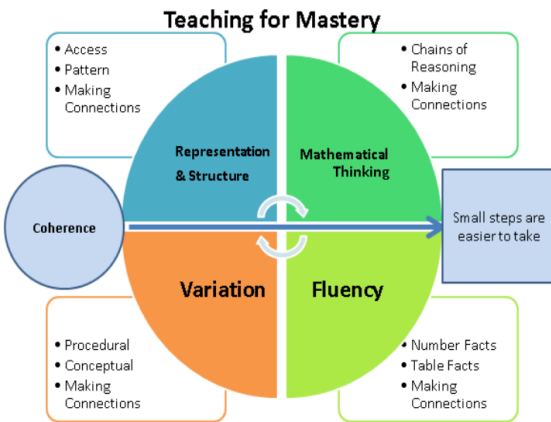
## Building on prior knowledge

$2 \times 3 =$	$6 \times 7 =$	$9 \times 8 =$
$2 \times 30 =$	$6 \times 70 =$	$9 \times 80 =$
$2 \times 300 =$	$6 \times 700 =$	$9 \times 800 =$
$20 \times 3 =$	$60 \times 7 =$	$90 \times 8 =$
$200 \times 3 =$	$600 \times 7 =$	$900 \times 8 =$

Moving on to solve problems such as:

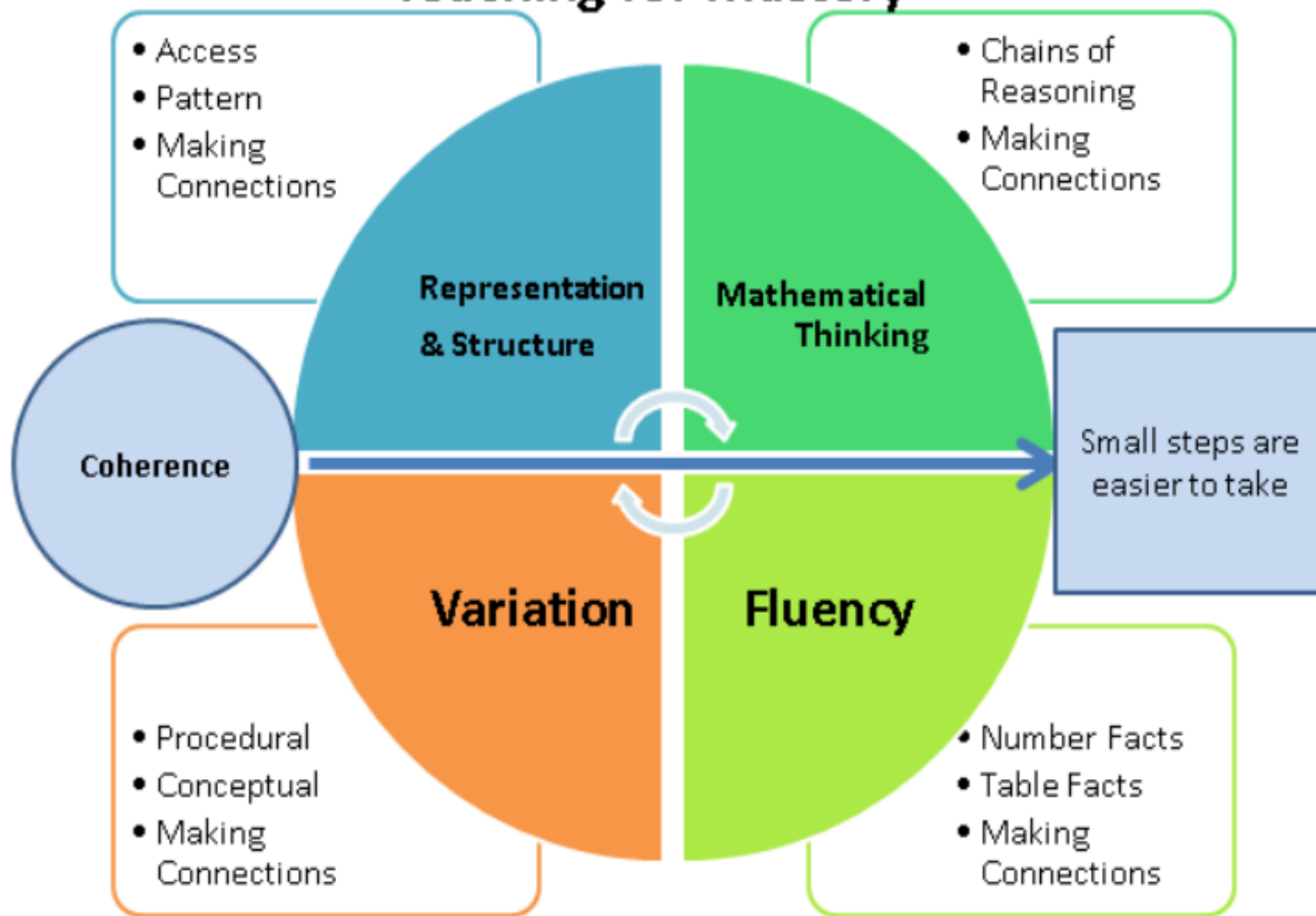
$$360 \div \boxed{\phantom{000}} = 60$$

# Mathematical Thinking

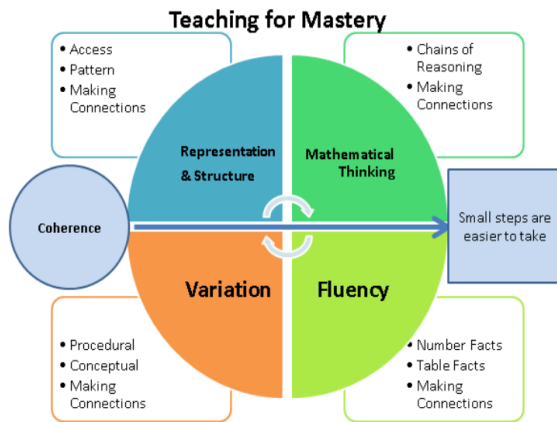


- Central to deep and sustainable learning of mathematics.
- Ideas are thought about, reasoned with and discussed. (with the whole class)
- Involves looking for patterns, looking for relationships/connecting ideas and **reasoning logically, explaining and proving.**
- **Repetition** used throughout session.

# Teaching for Mastery







# Coherence

- Sequencing concepts in a logical order.
- Lessons broken down into small steps.
- Focussing on **one key point** in each lesson allows for **deep and sustainable learning**.
- REVISITING as much as possible.

L

Most importantly, how does this benefit the children...

## How does this benefit the children

- Teaching for mastery in maths rejects the idea that a large proportion of people ‘just can’t do maths’.
- It looks to build confidence and to show children that with hard work they can succeed.
- Maths mastery works because it helps learners become more confident and self-reliant.

# Will children who find maths difficult be left behind?

- Aims to ensure **all children** have a **secure** and **deep understanding** of maths, by building up maths concepts in **small and logical steps**.
- They use mathematical vocabulary freely, **don't mind making mistakes** and **get used to explaining what they're doing**.
- Everyone contributes, but **no one dominates**.

# How will children who are already doing well in maths be challenged?

- Emphasis on **depth and breadth**, not speed and acceleration.
- Challenge children who grasp concepts quickly by providing sophisticated problems, rather than by accelerating them through new content from other year groups.

# What can you do?

Tips for helping at home

- Its important to help your child develop a **growth mind set** in mathematics
- Maths is not just about getting things “right” every time.
- A lot of maths involves problem solving which is not a quick and easy exercise - pupils need to build up **persistence and resilience**.
- As a parent - encouraging **mistakes** being made and viewing this a **normal learning process**, rather than a negative experience.
- Support children with any activities they bring home. Take care to look at the methods and models being used at school.

# Home learning

First, understand the content:

[The National Curriculum](#)

[Mathematical definitions](#)

[White Rose](#)

[Support documents for different year groups](#)

[A parent document - helping your child with maths](#)

[rich maths at home](#)

[Third space learning - home-learning-resources](#)

[Maths KS2 investigations](#)

[Maths at home 15 top tips](#)

[Maths Ninja](#)

# Next steps

Specific workshops for each of the 4 operations:

- Multiplication
- Division
- Subtraction
- Addition

Specific progression from year 3 - 6