

Welcome

Understanding mathematics at primary school

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Session aims

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

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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.

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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?

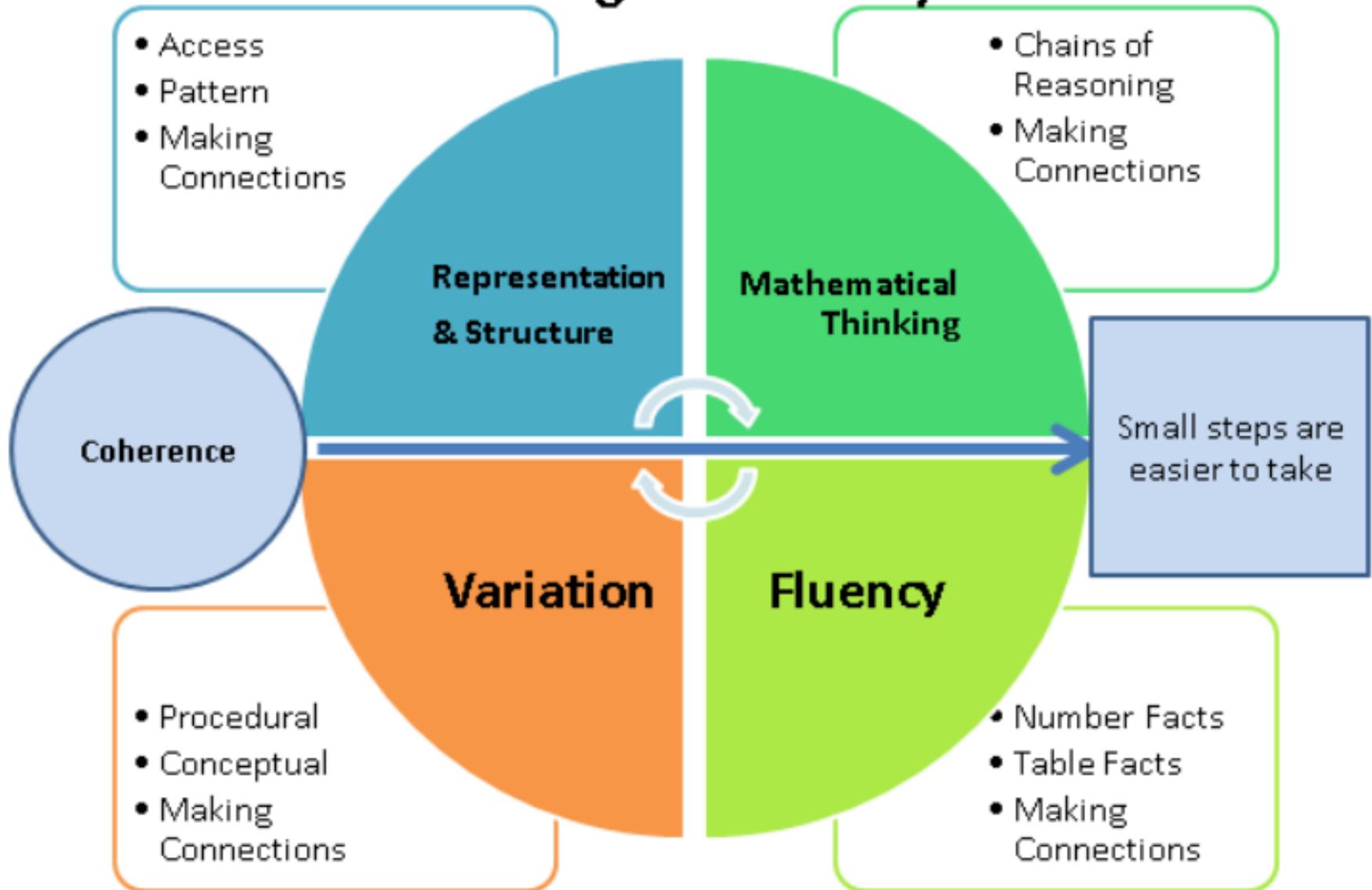
A MATHS MASTERY APPROACH

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



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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.

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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.**

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Examples:

Bridging to 10, 100.

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

4	$468 - 9 =$						
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	4	⁵ 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

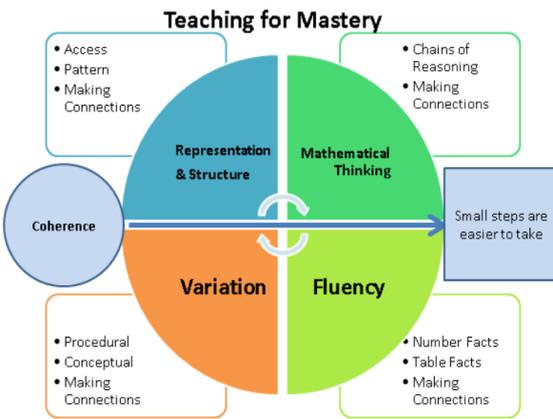
Daily number bond **and** times table practice
(inverse!)

Resources:

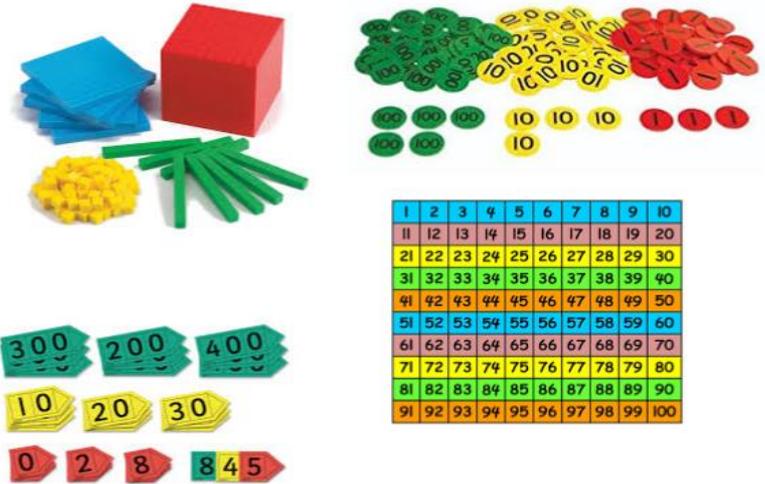
Multiplication Mastered

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

Representation and Structure



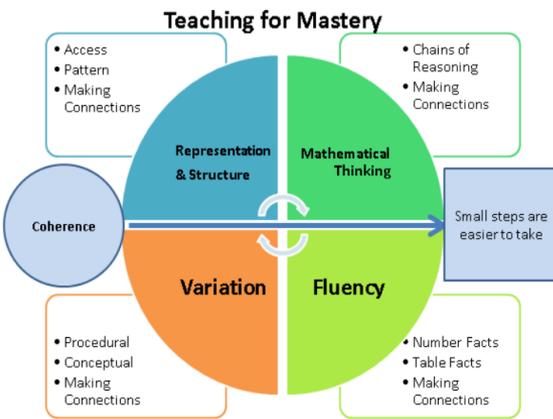
Manipulatives used to represent the maths concepts.



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:

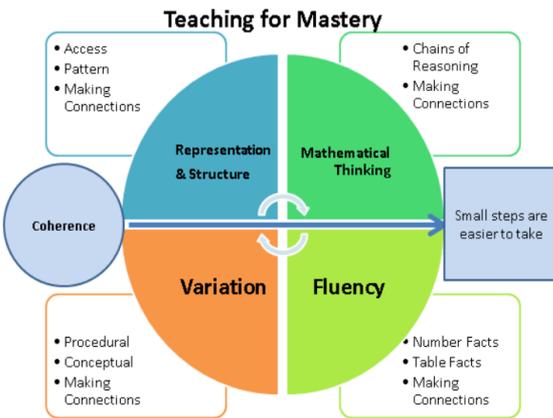
Building on prior knowledge

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

Moving on to solve problems such as:

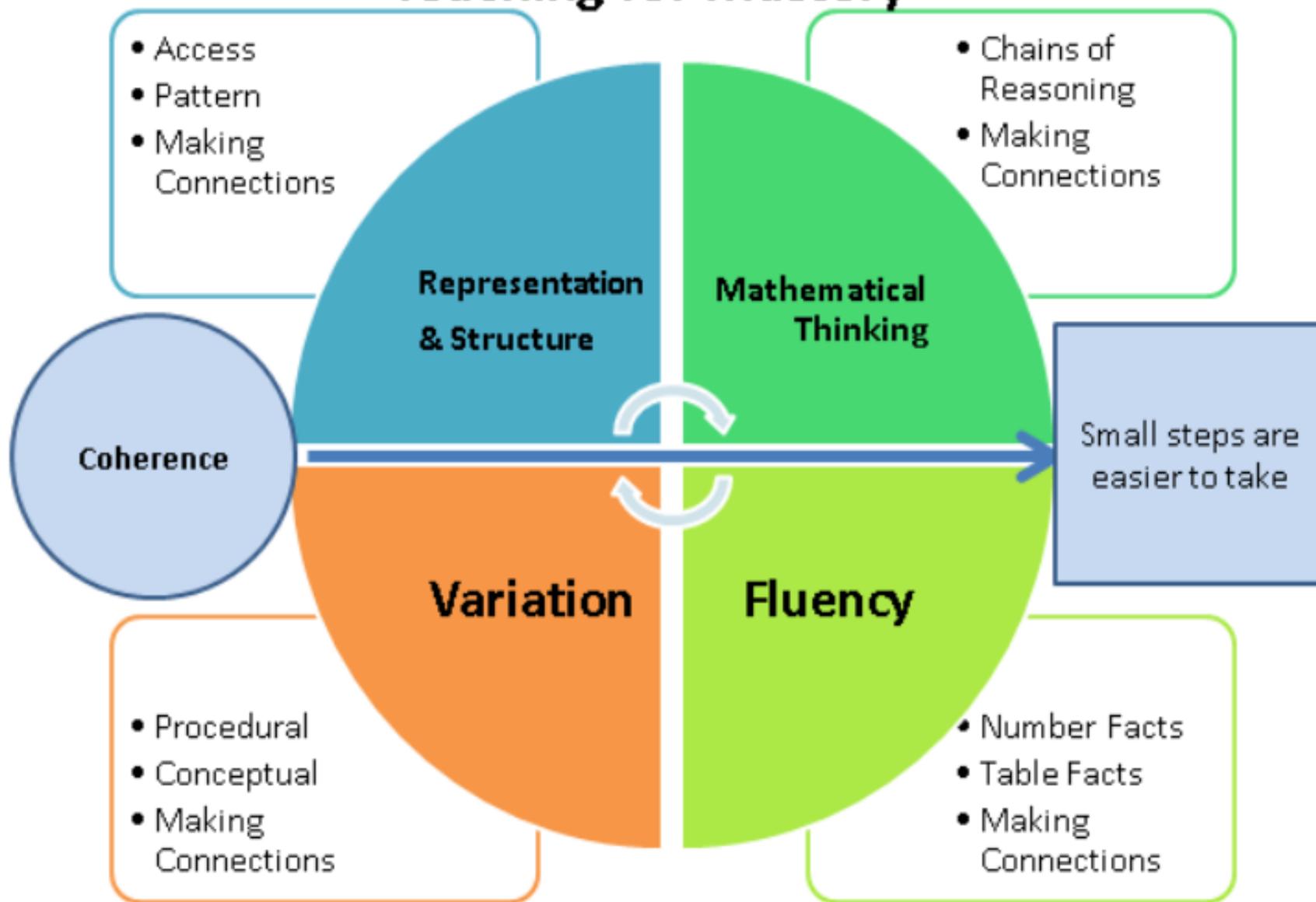
$$360 \div \boxed{} = 60$$

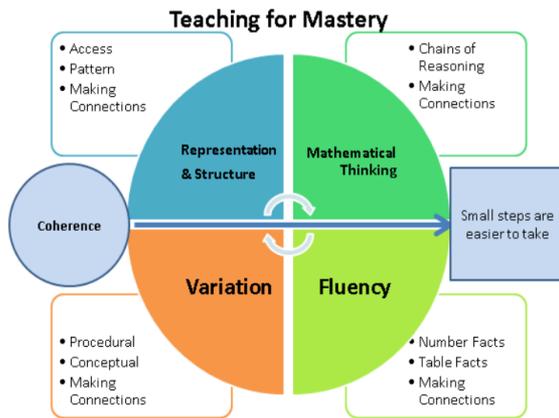
Mathematical Thinking



- 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.

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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