



Maths mastery in KS2

Monday 11th February 2019

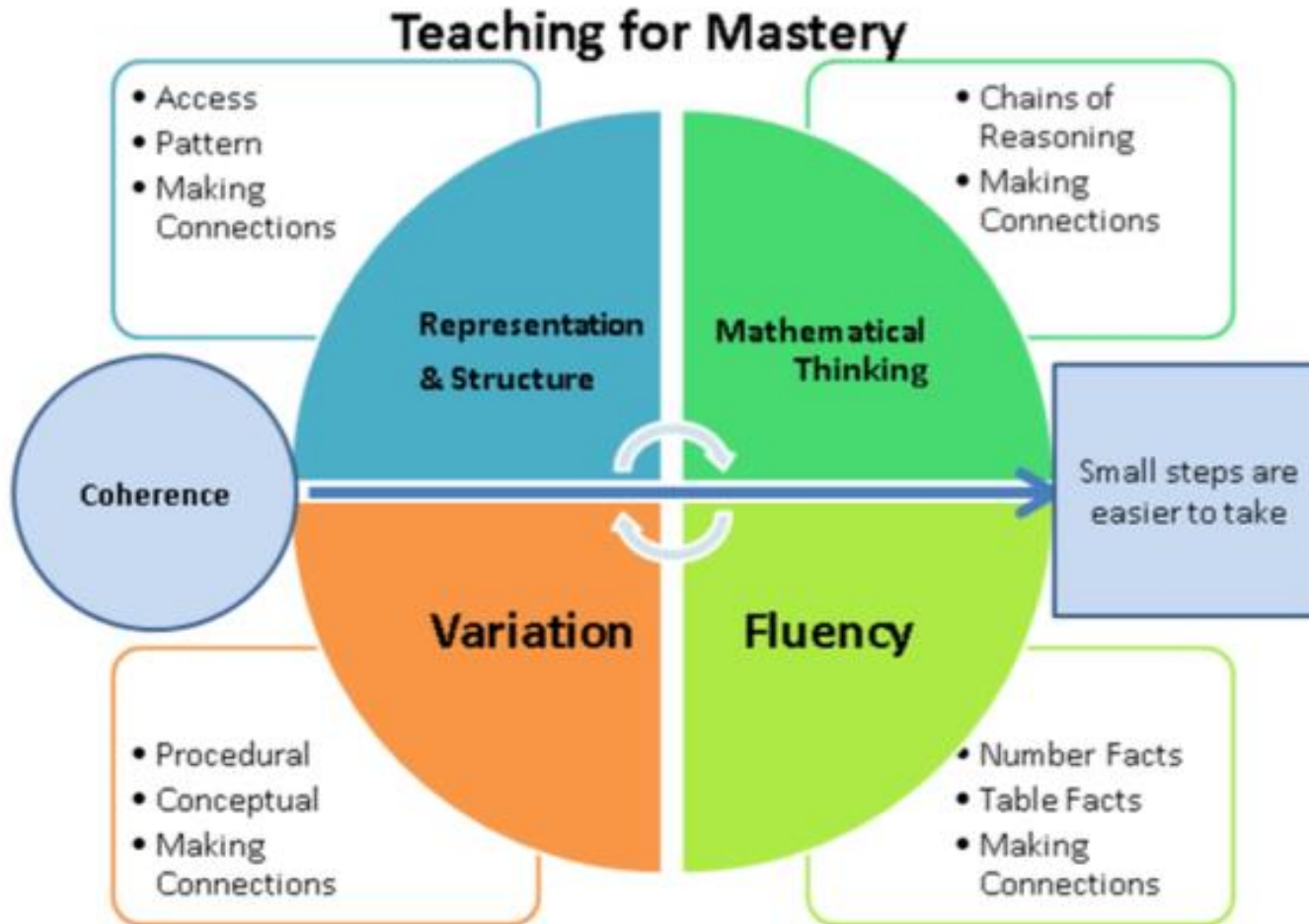
Feel free to peruse the handouts on the tables – there is a selection of work from KS2 books which shows mastery of specific mathematical concepts.

Our aim



- To explore the 5 key areas for teaching for mastery
- To equip you with some 'fluency' skills to help support your child in their understanding of multiplication (and link this with division)

How do we teach for mastery?



How do we teach for mastery?



Representation and structure

Representation and structure is used to expose the mathematical structure being taught with the aim being that children will be able to move on to doing the maths without recourse to the representation.

This can be concrete or pictorial representation and should not be limited to KS1 only.

How can we help?

Use household objects and encourage children to draw representations.

Fluency

Fluency is more than just rapid recall of number facts. It also encompasses efficiency, accuracy and flexibility. Fluency demands the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections and to make appropriate choices from a whole toolkit of methods, strategies and approaches.

How can we help?

Discuss different methods with children. Explore relationships between numbers.

Mathematical Reasoning

For children to understand a taught concept deeply, they must be able to *work on* that taught concept. This will look like a child thinking about, reasoning with and discussing that concept with others.

How can we help?

- Ask questions that require children to reason, "What is the same? What is different? What patterns can you see?"
- Ask children to explain, convince/prove, draw diagrams or use manipulatives to illustrate an idea or strategy.

Variation

Variation highlights the essential features of a concept or idea by varying the non-essential features. To emphasise variation, it is important to show children

- What the mathematical concept is
- What the mathematical concept is not

When constructing a set of activities/questions, it is important to consider what connects the examples; what mathematical structures are being highlighted?

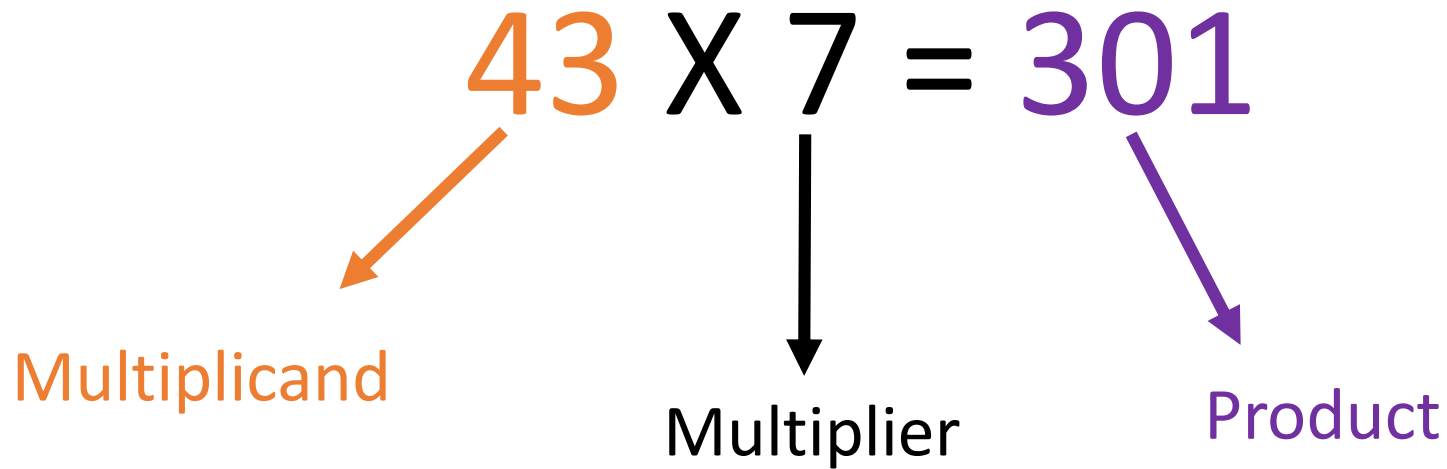
Non-negotiables by end of LKS2



Times tables

By the end of Year 4, children should be fluent in their times tables up to 12×12 . This will provide a strong foundation for them as they move on to UKS2.

Multiplication - Vocabulary



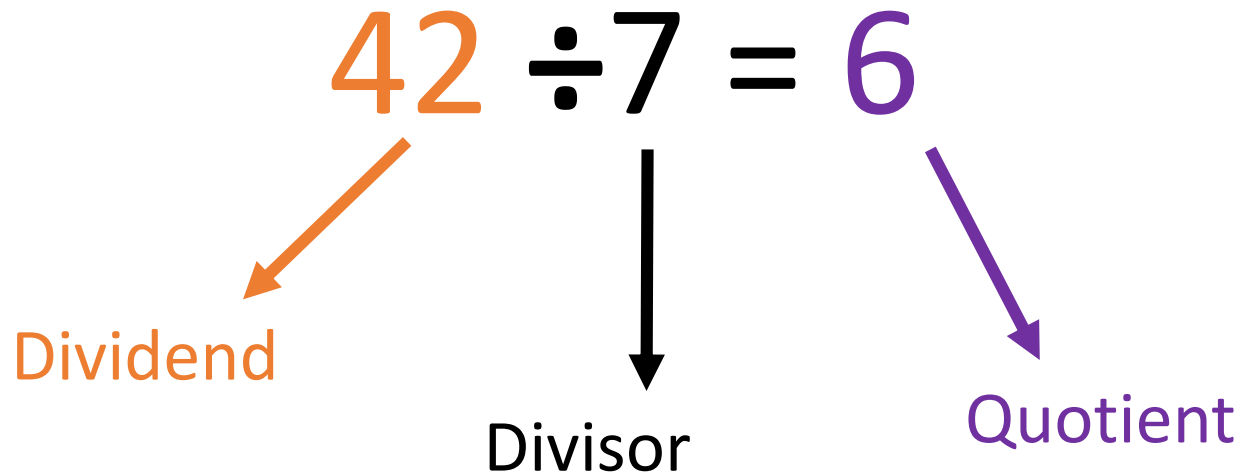
3 Laws

Commutative Law

Distributive Law

Associative law

Division - Vocabulary



Times tables



$$12 \times 7 = 84$$

More complex multiplication



$$25 \times 19 = ?$$

If $25 \times 19 = 475$, how can we use that to work out $27 \times 19 = ?$

If $25 \times 19 = 475$, how can we use that to work out $525 = 25 \times ?$

Reason your answer carefully.

I know... so...

$$25 \times 48 = \underline{\quad}$$

$$100 \times 48 = 4800$$

$$\underline{\quad} \times 48 = 4848$$

True or false?

$$17 \times 13 = 15 \times 15$$

What do you notice?

Try other examples. Do you see a pattern?

Is it the same?

$$800 + 160$$

$$240 \times 2 \times 2$$

Is **24×40** the same as...

$$6 \times 160$$

$$20 \times 40 \times 4$$



Useful Links

NCETM National Centre for Excellence in the Teaching of Mathematics

<https://www.ncetm.org.uk/>

Nrich

<http://nrich.maths.org/frontpage>

BGFL

http://www.bgfl.org/bgfl/custom/files_uploaded/uploaded_resources/12212/mathspuzzlesall.pdf

Queen's school website for written methods

