

Mastery in Maths

Miss Hammerton – Maths Lead

Mrs Rochester - St Bede's governor with responsibility for maths and maths hub lead of Archimedes NE at Carmel College



How has the maths curriculum changed?



- ❖ 2014 National Curriculum for mathematics
- ❖ Designed to raise standards
- ❖ Fundamental aim is for the majority of pupils to achieve mastery of the subject.

What is Mastery?

- A mathematical concept or skill has been mastered when a person can represent it in multiple ways, has the mathematical language to communicate related ideas, and can independently apply the concept to new problems in unfamiliar situations.

So how can we do this at St Bede's?

What does this look like at the end of KS1 and KS2?

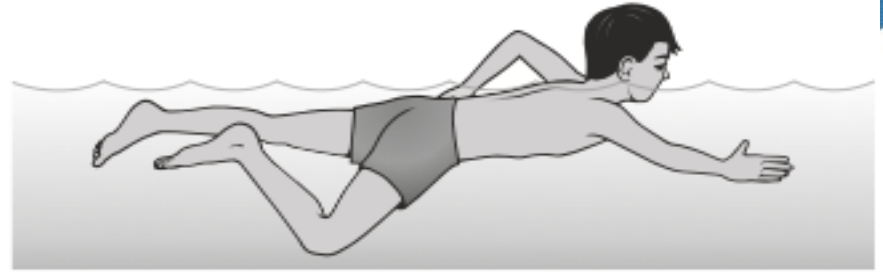
- ❖ At the end of KS1, children will sit two papers

Arithmetic

- ❖ $97 + 5 =$

- ❖ $8 \times 3 =$

- ❖ $3 + \square + 6 = 16$



One length of a swimming pool is **10** metres.

Abdul swims the length of the pool **4** times.

Abdul works out how many metres he swims altogether.

Circle the **two** calculations that Abdul can use.

$$10 + 4$$

$$4 \times 10$$

$$10 + 10 + 10 + 10$$

$$4 + 4 + 4 + 4$$

Reasoning Paper

What does this look like at the end of KS1 and KS2?

- ❖ At the end of KS2, children will sit three papers

Arithmetic and 2 Reasoning Papers!

Let's have a try...

How will this mastery approach
benefit our children post KS2?

So how are we going to prepare our children?

- Carefully planned curriculum and lesson design
- We aim to make sure that a detailed, structured curriculum is mapped out across all phases, ensuring continuity and supporting transition across from Reception to Year 6.
- We want our children to become better at calculating rather than counting – do we need our fingers in maths?
 - $7 + 3 =$

Lesson Structure

What do maths lessons look like for your child?

- Concrete
- Pictorial
- Abstract
- Fluency
- Reasoning
- Problem Solving

Let's have a
look at this in
action...

Concrete



- Concrete is the “doing” stage, using concrete objects to model problems.
- The use of concrete resources brings concepts to life by allowing children to experience and handle physical objects themselves.
- Promotes a deep understanding of what they are doing.



Lets have a go...

Using the concrete resources on your tables can you show me:

💧 1. $213 + 36 =$

💧 2. $4 \times 3 =$

💧 3. $72 - 15 =$

Through the use of concrete resources, questioning and discussion we really help children to understand what they are doing.



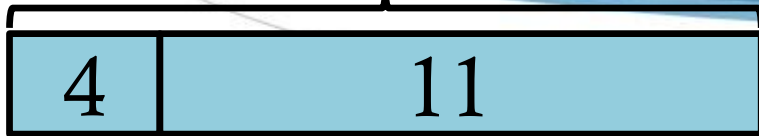
Pictorial

- Pictorial is the “seeing” stage, using representations of the objects to model problems.
- Children make a mental connection between the physical object and abstract levels of understanding by drawing or looking at pictures, circles, diagrams or models which represent the objects in the problem.
- Sometimes we can start straight with pictorial with the option of going back to concrete if required or progressing straight to abstract.

A Consistent Picture

$$4 + 11 = ?$$

?



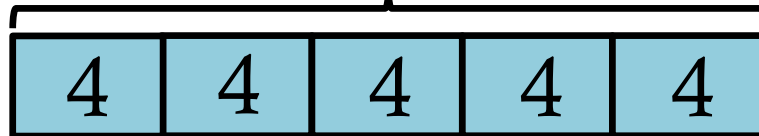
$$15 - 4 = ?$$

15



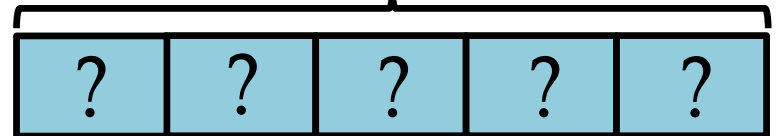
$$5 \times 4 = ?$$

?



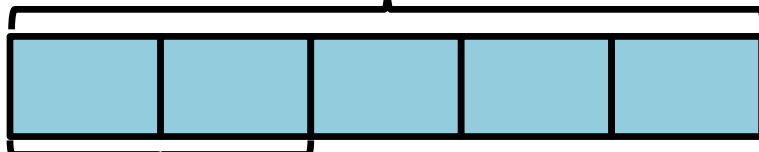
$$20 \div 5 = ?$$

20



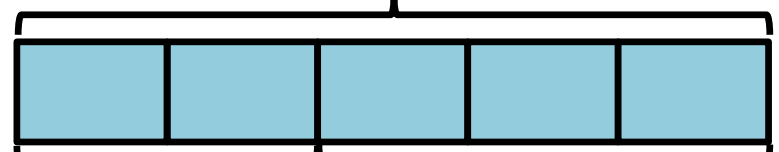
$$\frac{2}{5} \text{ of } 20 = ?$$

20



Share 20 in the ratio 2:3

20



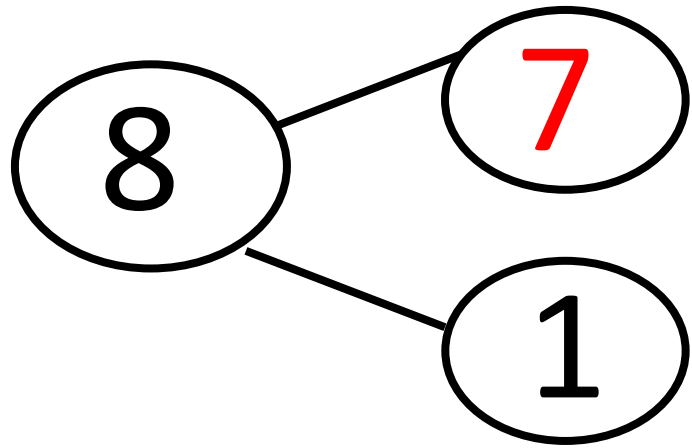
Abstract

- Abstract is the “symbolic” stage, where children are able to use abstract symbols.
- Only once a child has demonstrated that they have a solid understanding of the “concrete” and “pictorial” representations of the problem, we introduce the more “abstract” concept, such as mathematical symbols for example $+$, $-$





●	●	●	●	●
●	●	●		



8	
7	1

$$7 + 1 = 8$$

What happens next?

- ◆ As we move on to fluency, reasoning and problem solving, it is important that at ANY time our children can come back to pictorial and concrete resources to support them.
- ◆ We are promoting independent, confident learners!

Fluency

- Children are ready to recall and apply mathematical knowledge both rapidly and accurately.
- Fluency allows children the opportunity to move confidently between contexts and representations, recognise relationships and make connections.

Reasoning

- 💧 This is where we turn our focus to mathematical language.
- 💧 We want our pupils to explain in full sentences using mathematical vocabulary.
- 💧 We want to encourage our children to use their reasoning skills and mathematical vocabulary so rather than simply saying the answer, they are encouraged to explain HOW they know it's the right answer.
- 💧 Prove...? Convince me...? Explain...?

Problem Solving

- ◆ The final step is problem solving where children are encouraged to use all the knowledge they have acquired to identify, understand and apply these skills to problem solving

What do the children of
St Bede's think of their
maths lessons?



How can you support your child at home?

<http://www.stbedesrc.co.uk/wp-content/uploads/2017/10/CalculationPolicy.pdf>



Any
questions?