KS1 & KS2 MATHS WORKSHOP FOR PARENTS

MISS MCLELLAN

MATHS SUBJECT LEAD

OBJECTIVES

- Explain how we teach Maths across KS1 and KS2
- Understand the importance of fluency
- What we mean by 'depth'
- How to support your child at home

FIRST, A GAME!

- Take a whiteboard and pen.
- Draw a place value chart for a four digit number

1000s (Th)	100s (H)	10s (T)	1s (O)

- Aim: to make the greatest number possible.
- Write down the digit from the dice. Once it has been written down, you cannot change its position!

WHAT WERE YOUR EXPERIENCES OF MATHS AS A CHILD?

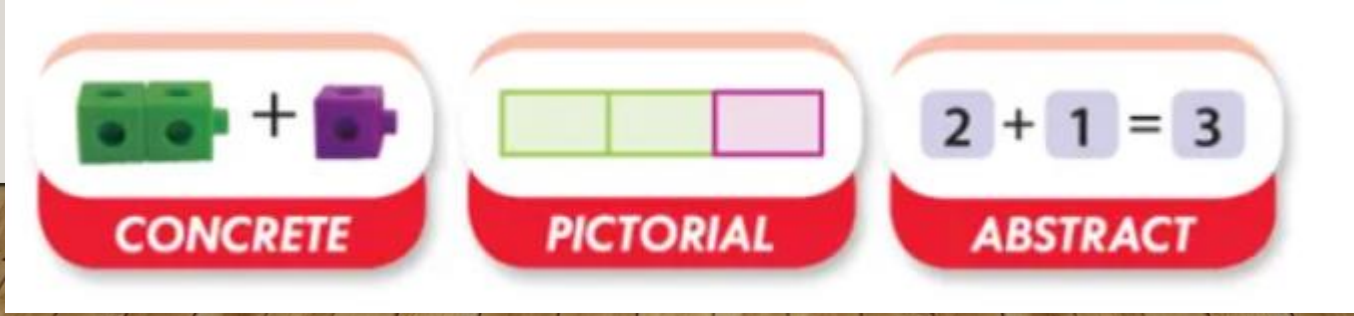
- With **effort**, every child can improve their mathematical skills.
- We should praise children for **working hard**, not for arriving at the correct answer.
- Children would then associate **achievement** with **effort** (rather than just being naturally 'clever').
- When children hear *'I can't do maths'* or *'I've never been any good at maths*', they believe that maths is not important and being 'bad' at maths is acceptable. If children believe this, they won't put in the **effort**.

THE CURRICULUM

- The Curriculum is designed in a way that allows us to teach mathematical ideas **in depth**.
  - Number – number and place value
  - Number – addition and subtraction
  - Number – multiplication and division
  - Number – fractions (decimals from Year 4; percentages from Year 5)
  - Measurement
  - Geometry: properties of shape
  - Geometry – position and direction
  - Statistics (from Year 2)
- Reading and spelling mathematical vocabulary (starting with numbers and shapes in Year 1)
- Teaching for depth (sometimes referred to as 'mastery')

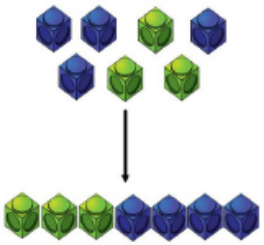
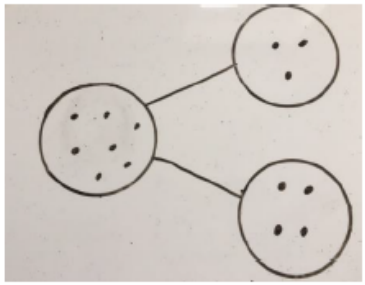
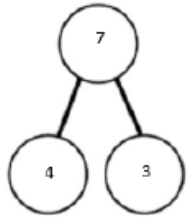
HOW WE TEACH ACROSS KS1 & KS2

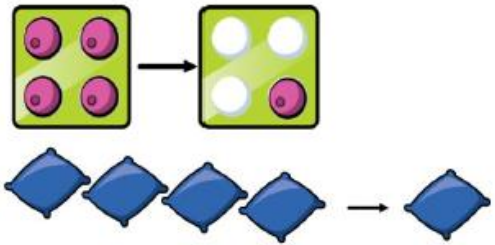
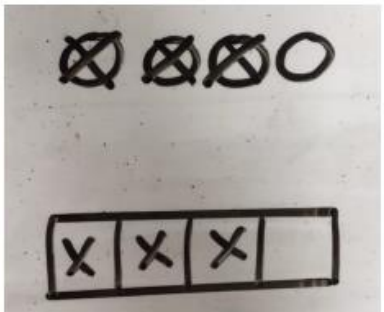
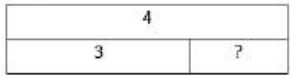
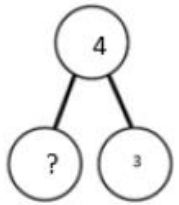
- **Conceptual Understanding**
  - Representing concepts using objects, pictures, words or symbols. Making connections.
  - Concrete objects are used throughout the school from Reception to Year 6.
  - They are essential for children to gain **conceptual understanding**.
  - This process should not be rushed or we risk children not truly understanding mathematical concepts.
  - Our calculation policy shows the progression to follow



HOW WE TEACH ACROSS KS1 & KS2

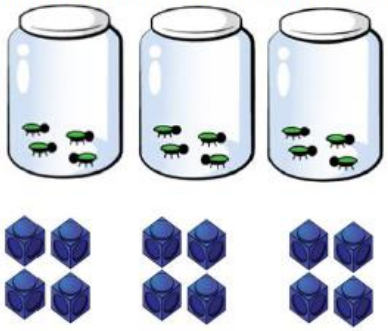
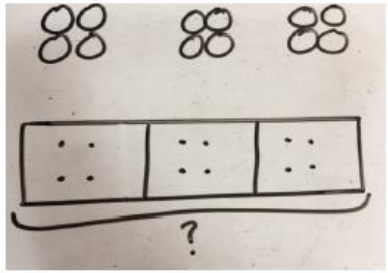
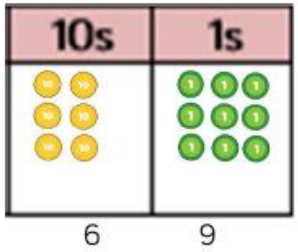
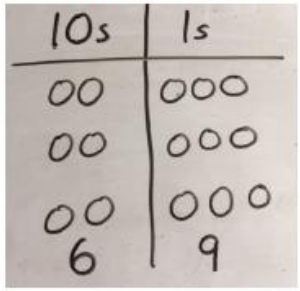
Addition:

Concrete	Pictorial	Abstract
Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars). 	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too. 	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven. 

Concrete	Pictorial	Abstract
Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used). 4 – 3 = 1 	Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used. 	4- 3 = □ = 4 – 3  

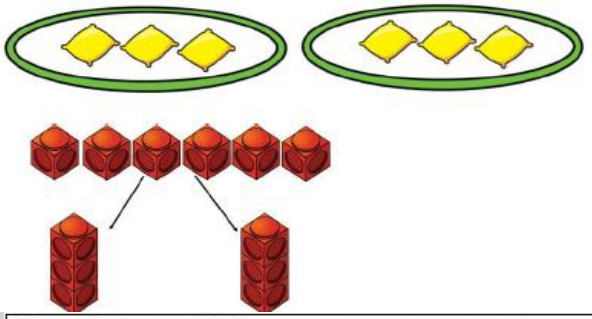
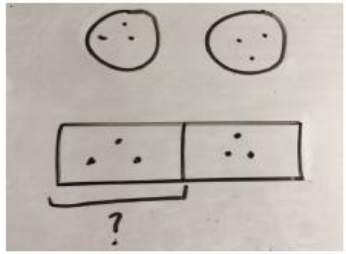
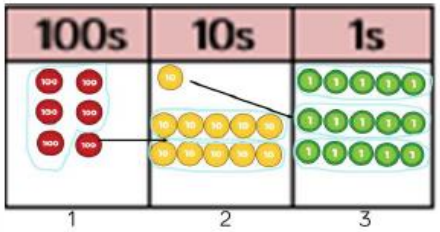
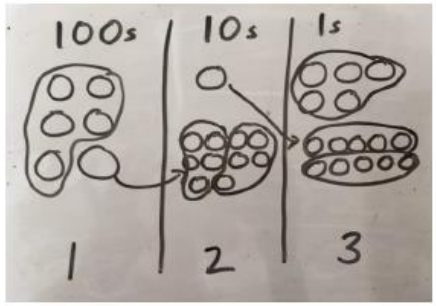
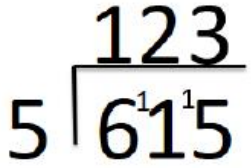
HOW WE TEACH ACROSS KS1 & KS2

Multiplication:

Concrete	Pictorial	Abstract
Repeated grouping/repeated addition 3 × 4 4 + 4 + 4 There are 3 equal groups, with 4 in each group. 	Children to represent the practical resources in a picture and use a bar model. 	3 × 4 = 12 4 + 4 + 4 = 12
Formal column method with place value counters (base 10 can also be used.) 3 × 23 	Children to represent the counters pictorially. 	Children to record what it is they are doing to show understanding. 3 × 23 20 3 3 × 20 = 60 3 × 3 = 9 60 + 9 = 69 23 × 3 69

HOW WE TEACH ACROSS KS1 & KS2

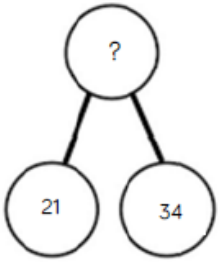
Division:

Concrete	Pictorial	Abstract
Sharing using a range of objects. 6 ÷ 2 	Represent the sharing pictorially. 	6 ÷ 2 = 3 3 | 3 Children should also be encouraged to use their 2 times tables facts.
Short division using place value counters to group. 615 ÷ 5  1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters? 5. Exchange 1 ten for 10 ones. 6. How many groups of 5 ones can you make with 15 ones?	Represent the place value counters pictorially. 	Children to the calculation using the short division scaffold. 

HOW WE TEACH ACROSS KS1 & KS2

Presenting questions in different ways:

Conceptual variation; different ways to ask children to solve 21 + 34



?	
21	34

Word problems:
In year 3, there are 21 children and in year 4, there are 34 children.
How many children in total?

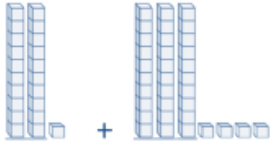
21 + 34 = 55. Prove it

21
+34
——

21 + 34 =

☐ = 21 + 34

Calculate the sum of twenty-one and thirty-four.



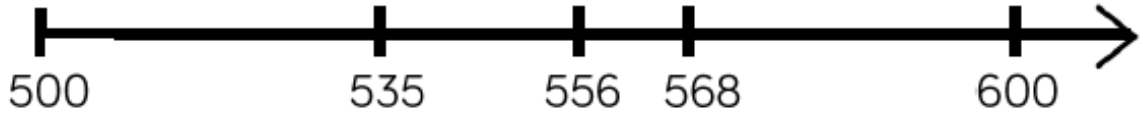
Missing digit problems:

10s	1s
10 10	1
10 10 10	?
?	5

HOW WE TEACH ACROSS KS1 & KS2

- **Language and Communication**
  - Teachers use stem sentences to encourage use of mathematical vocabulary
  - Supports **all** children
  - An example from the Year 4 curriculum:

Say whether each number on the number line is closer to 500 or 600.



Round 535, 556 and 568 to the nearest 100

Use the stem sentence: _____ rounded to the nearest 100 is _____.

HOW WE TEACH ACROSS KS1 & KS2

- **Mathematical Thinking**
  - Looking for patterns, answering questions by giving examples, sorting/comparing

- e.g. Which of these numbers is the odd one out? Explain why.

  5 10 12

- What mistake has been made in the following sequence:

  -1, -2, -4, -6, -8, -10

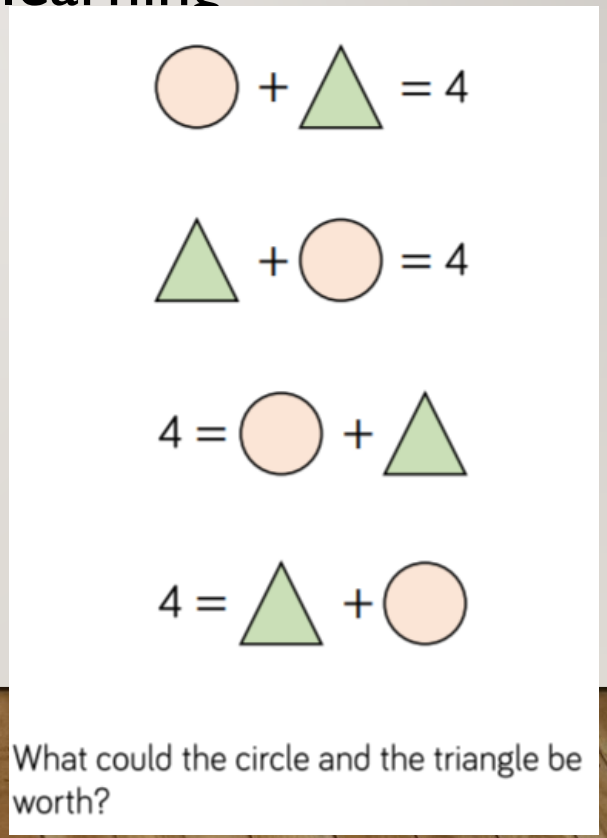
HOW WE TEACH ACROSS KS1 & KS2

- **Mathematical Problem Solving**
  - An essential component of learning mathematical concepts

_____ + _____ = 800

Each of the missing numbers are multiples of 100

Find all the possible missing numbers.

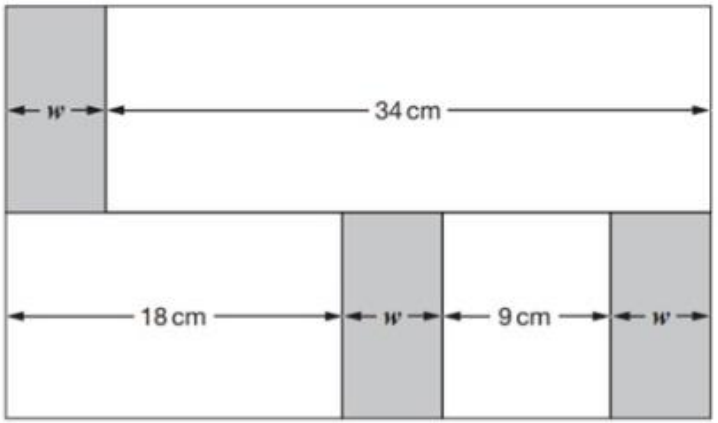


HOW WE TEACH ACROSS KS1 & KS2

- Year 6 SATs exa

- 18 + 9 + 2 widths = 34
- 18 + 9 + 1 width = 34
- 27 + 1 width = 34
- 34 – 27 = 7cm
- Therefore, 1 width = 7c

22 In this diagram, the shaded rectangles are all of equal width (w).



Not to scale

Calculate the width (w) of one shaded rectangle.

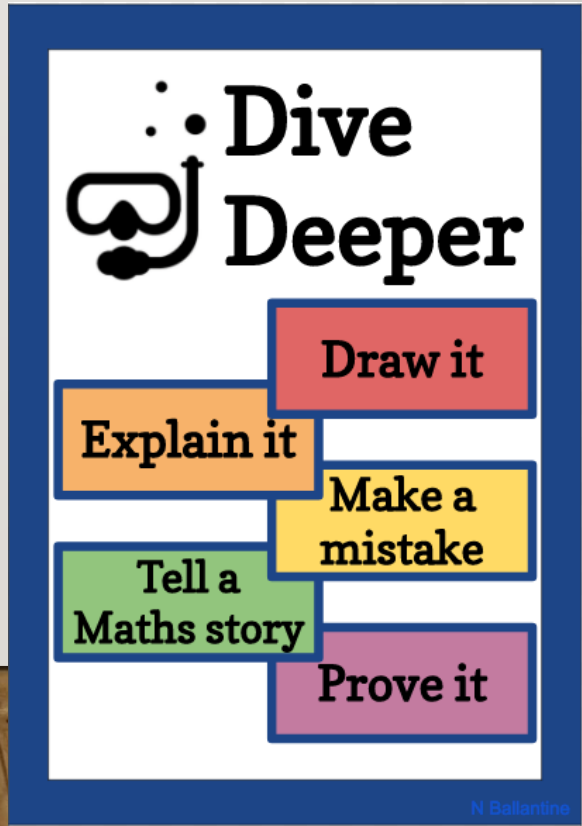
Show your method

cm

2 marks

WHAT DO WE MEAN BY 'DEPTH'?

- Everyone is looking at the same mathematical concept. Rather than 'climbing higher', we '**dive deeper**'.
- The benefits of this include:
  - Learning becomes embedded (and more likely to be remembered)
  - Slower but richer pace of learning (more children can keep up with this learning)
  - Reasoning focus (children will be able to apply their mathematical skills to a variety of problems)
  - Children are able to make more connections (which further embeds their learning)



THE IMPORTANCE OF **FLUENCY**

- **Fluency** is how fast a child can retrieve correct mathematical facts from their memory.
- For these facts to be stored in our long term memory, we need to practise regularly and repeatedly.
- **Rehearse, repeat, retrieve!**
- Examples of fluency:
  - Number bonds, including subtraction
  - Doubles & halves
  - Times tables
  - Skip counting
  - Number formation
  - Matching words to numbers

THE IMPORTANCE OF **FLUENCY**

- When a child is fluent in a mathematical concept, they will be able to:
  - Choose **efficient** methods and strategies that they understand
  - Use known facts to check their answers and therefore improve **accuracy**
  - Choose appropriate skills and strategies to solve problems and be **flexible** in their mathematical thinking.

HOW DO WE ACHIEVE THIS?

- In school:
  - Short, regular practise of skills that have already been taught 3-5 times a week.
- At home:
  - Completing Mathletics and Times Tables Rockstars tasks/games.
  - Short, regular practise of skills that have already been taught **daily**. Focus on number bonds, times tables, doubles/halves, skip counting, number formation etc. depending on the needs of your child.
  - Securing these maths skills as young as possible, makes "maths life" much easier later on.

THINGS YOU CAN DO AT HOME:

- **Follow a recipe:** find out the quantities of ingredients needed, ask your child to weigh out ingredients, discuss how you'd halve or double the recipe and discuss the ratio of ingredients. How would you share out the recipe between your family equally?
- **Talk about the weather forecast:** is today's temperature higher or lower than yesterday's? Compare it to another city or country.
- **Going shopping:** talk about the cost of different items and that it increases if you buy more than one item. Support your child to understand that if you pay more than the total, you will get change. Encourage your child to use coins.
- **Planning an outing:** What time did you leave? What time did you arrive? How long did it take? If we want to be there at *x* time tomorrow, what time would we have to leave? Discuss this with your child and support with telling the time.

RESOURCES ON OUR WEBSITE:

- Calculation Policy and Guidance
- Our Mathematics Scheme (White Rose)
- Mathematical vocabulary

- Anything else that you feel that you need to support children at home?

ANY QUESTIONS?