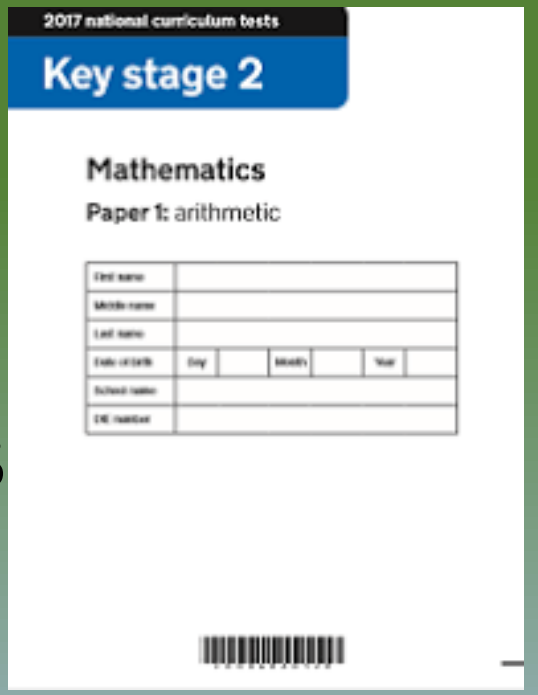
Maths workshop

KS2

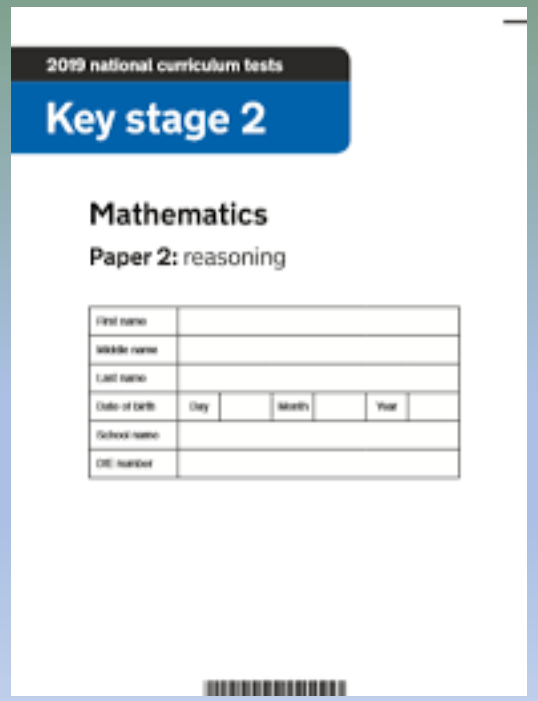
What are the children expected to be able to do?

Let’s have a look at the Lower and Upper Key Stage Two National Curriculum…

How is maths formally assessed?



- Multiplication Check in Year 4 – to ensure the times tables knowledge is at the expected level. It is a statutory assessment. The times tables check is an online test where pupils are asked 25 questions on times table 2-12. For every question, they will have six seconds to answer and in between the questions, there is a three second rest. Questions about the 6, 7, 8, 9 and 12 times tables come up more often.
- Key Stage 2 SATS- formal assessment at the end of Year 6. Involves one arithmetic paper (36 questions) and two reasoning papers (26 questions each paper).



16 A box of 24 chocolate eggs has a mass of **870 grams**.

The empty box has a mass of **30 grams**.

What is the mass of **one** chocolate egg?

Show your method

g

2 marks

17 The manager of a flower shop orders 4 boxes of red roses.

There are 50 roses in each box.

The manager makes bunches with 6 roses in each bunch.

What is the **greatest** number of bunches that can be made?

Show your method

2 marks

2 Write these temperatures in order, starting with the **lowest**.

6°C −4°C 1°C −10°C 3°C

°C °C °C °C °C

1 mark

lowest

14 $\frac{2}{7} \times \frac{5}{9} =$

1 mark

2 ☐ = 6,138 + 456

1 mark

10 Ken thinks of a number.

He divides it by 3

The answer is 72

What number was Ken thinking of?

1 mark

20

$$\begin{array}{r} 5\,0\,8 \\ \times \quad 7\,4 \\ \hline \end{array}$$

Show your method

2 marks

6 ☐ = 10 × 96

1 mark

11 Write the number that is **one thousand more** than 19,039

1 mark

16 One day last year, the rate of rainfall from 6:30 am until 9:00 am was 2 millimetres per hour.

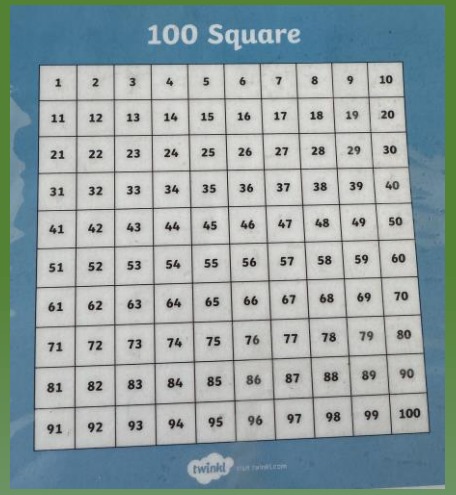
What was the **total** rainfall from 6:30 am until 9:00 am?

mm

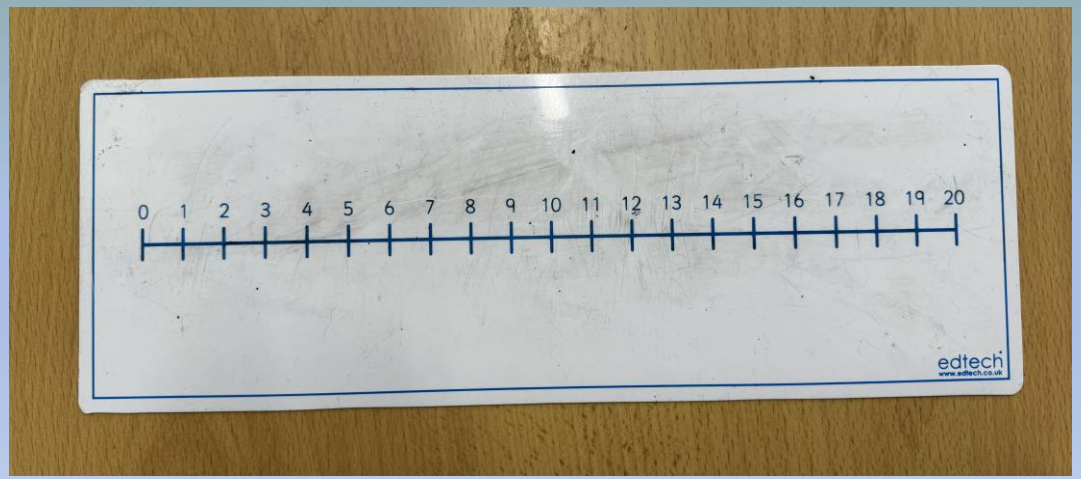
1 mark

Manipulatives we use in school…

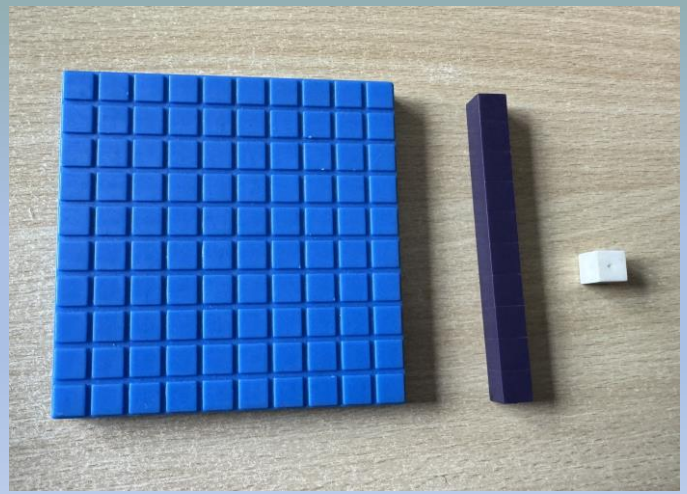
- Place value grid
- Numberline (including negative)
- Multiplication square
- Place value counters etc



Hundred square



Numberline



Dienes/ base 10

The calculations policies

- Set out how we will teach the calculations specifically.
- It explains what manipulatives we will use when, and what strategies we will teach the children so that they understand what process is going on within the calculation.
- These can be found on our website- we'll walk through these in a moment.

Concrete, Pictorial and Abstract

- Concrete objects help children to make sense of the concept or problem; this could be anything from cubes, counters, straws or anything else meaningful. These objects can be moved, grouped and rearranged to illustrate and support the child's growing understanding of the concept involved.
- As the child's mathematical confidence grows, they are able to draw symbols or simple pictures to represent the problem rather than needing physical objects to move around.
- The final step is to move to an abstract representation of the problem. It could involve giving values to rectangular bars (bar model), using a symbol or numbers themselves.
- These stages are a continuum and are not always worked through in a sequence. At times, children may use all three representations at once, other times they may need to recap the concrete in order to move onto the pictorial or abstract.
- At Hollingbourne we will ensure that a variety of representations are available for children in our lessons at all times. As they move through their mathematical journey our children will be directed less as to which representation they must use, it will be up to them to make their own choice as to how they represent their work.

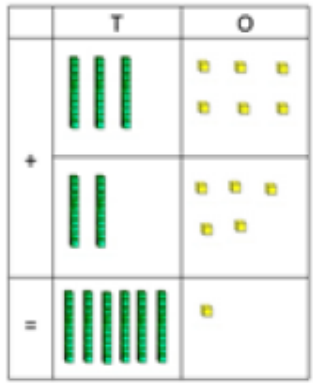
What does this look like in reality?

Lets look at a couple of examples:

TO + TO using base 10

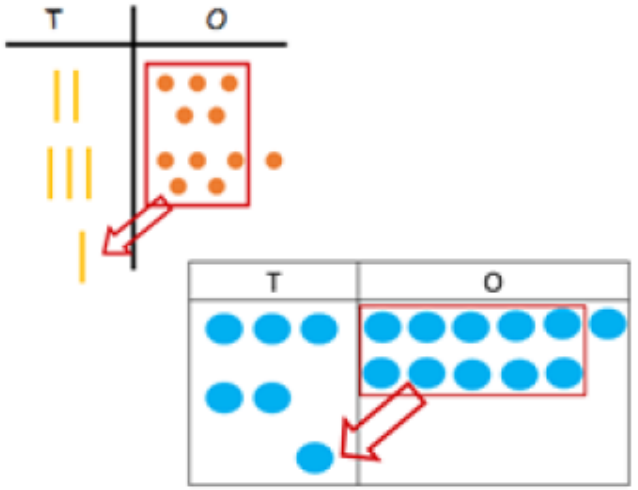
Continue to develop understanding of partitioning and place value and use this to support addition. Begin with no exchanging.

36 + 25



Children find their own way of recording their practical work

(photographs can also be used)



Looking for ways to make 10

36 + 25 =

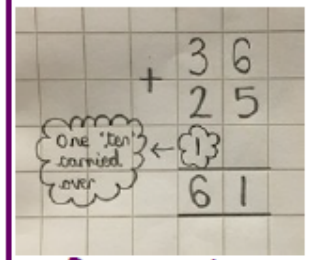
1 5

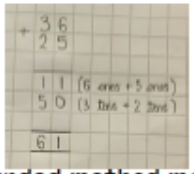
30 + 20 = 50

5 + 5 = 10

50 + 10 + 1 = 61

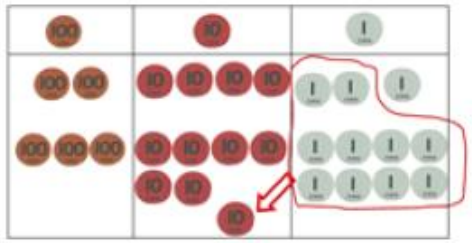
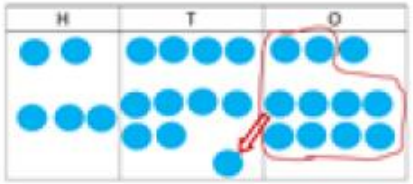
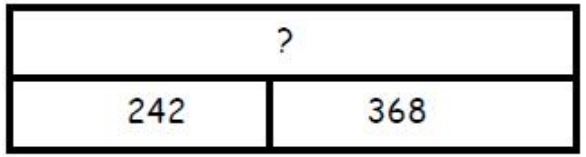
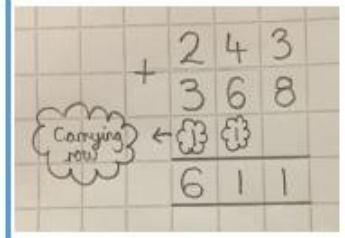
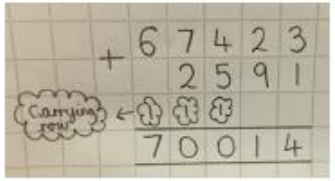
Formal method

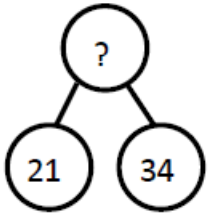
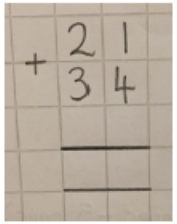
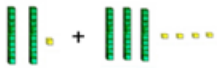
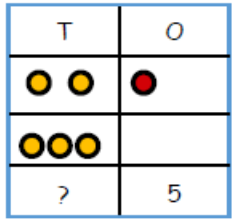




Expanded method may be used as an extra step to support children.

Progression to this through Years 3/4

Concrete	Pictorial	Abstract
Use of place value counters to add **HTO + TO, HTO + HTO etc** once well practised with this, children can apply to larger numbers and the abstract **243 + 368** 	Children draw models of their counters  If completing a word problem, they can draw a bar model to represent what it is asking them to do  	   Progression to this through Years 5/6

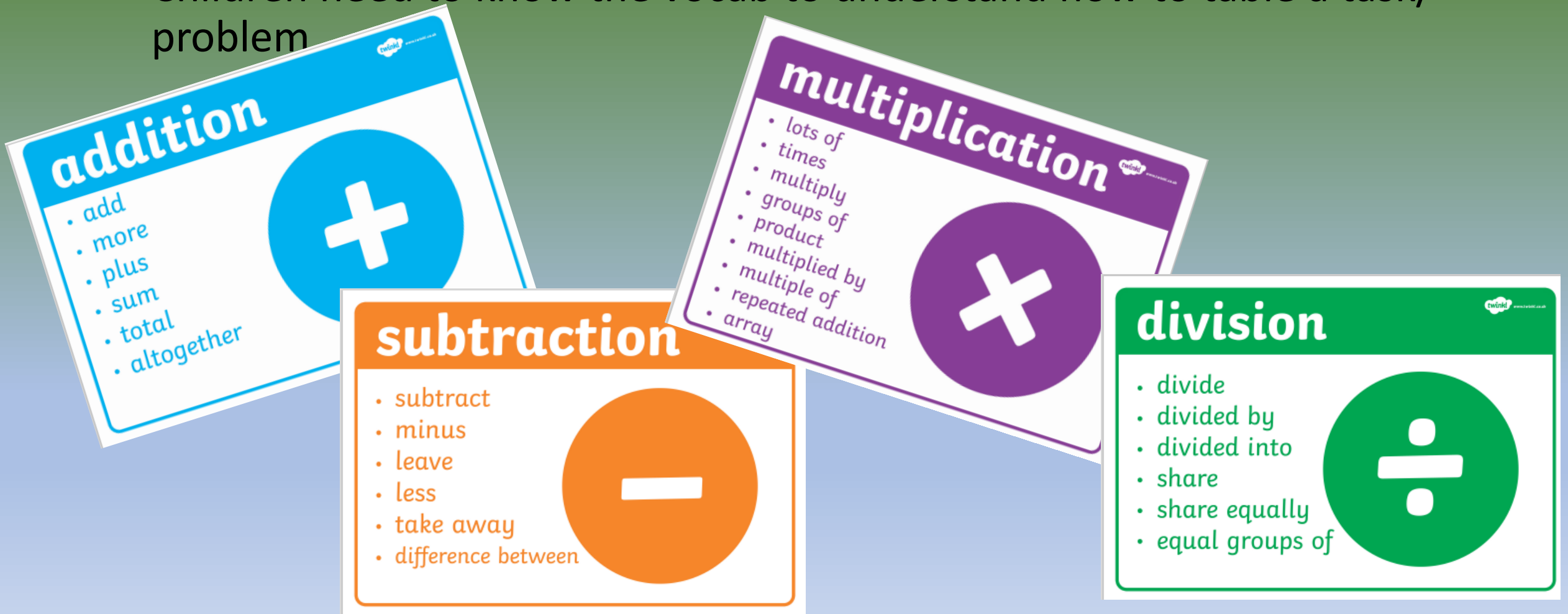
Fluency variation, different ways to ask children to solve 21 + 34:			
  	Sam saved £21 one week and £34 another. How much did he save in total? 21 + 34 = 55 Prove it! (reasoning but the children need to be fluent in representing this)	 **21 + 34 =** **□ = 21 + 34** What's the sum of twenty one and thirty four?	 Always use missing digit problems too: 

Fluency and problem solving

We use these terms a lot, but what do they mean?

The importance of vocabulary

- Children need to know the vocab to understand how to table a task/ problem



Let’s have a look at the progression in calculations…

Children are taught place value to ensure they are able to recognise the value of each number:

162 + 159 =

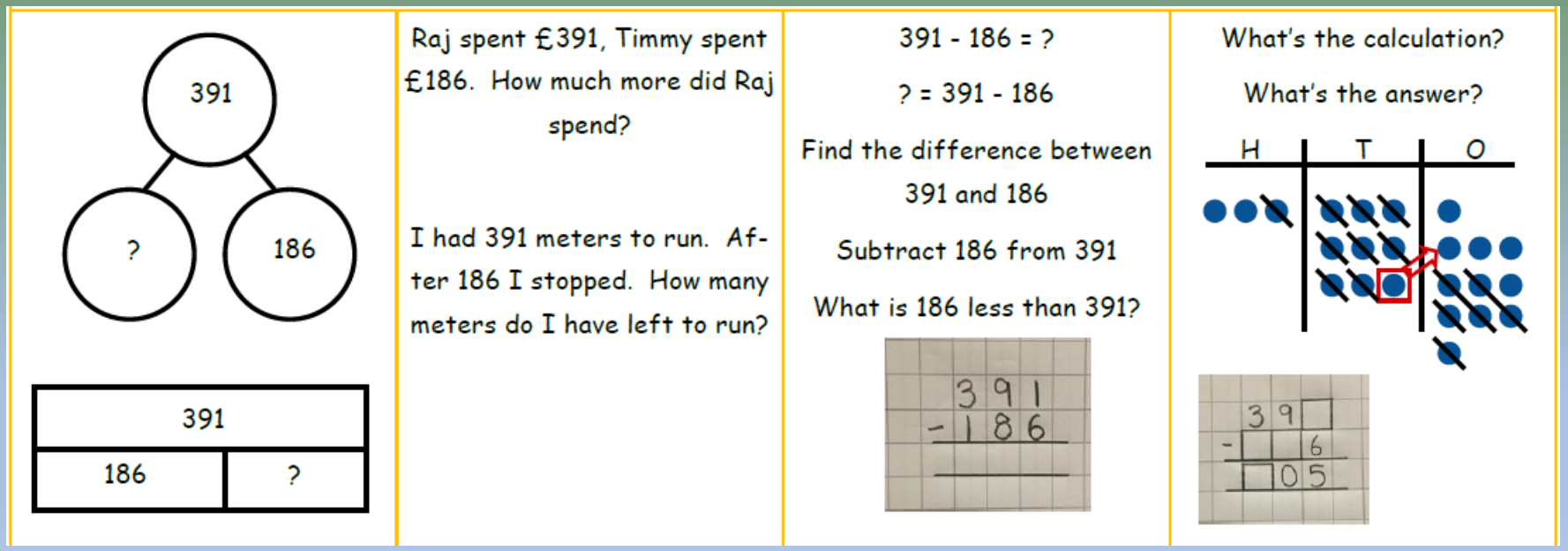
This enables them to partition (chunk) the number even if they are not sure at this stage how to use column method.

Children can also use a numberline to help them with their calculations.

Children then move on to the formal column method and as they have used manipulatives, this helps them with exchanging.

391 - 186 =

To enable children to move on to calculations like this one more efficiently, we teach children different ways in which this can be represented. For example:



How about _____ - 368 = 242

How might you use logic to help you solve this?

2,563 – 990 = What is the most efficient way of calculating this answer? What would you use?

4,786 + 1,999 =

What is the most efficient method you might use?

I think of a number. I add 15, then multiply by 2, then subtract 6. My answer is 76. What number was I thinking of?

Showing children the relationship between inverse operations

7.8 + 6.953 =

How would you tackle this? What method might you use?

Teaching the children how to lay out and present their calculations carefully.

Please calculate 35 x 10 =

How did you do it? What method did you use?

In school, we use place value whiteboards lots to help the children understand this concept.

2.7 x 10 =

How might you use the resource given to help you?

Any questions?