Year 2

Stay and Share

November 2016

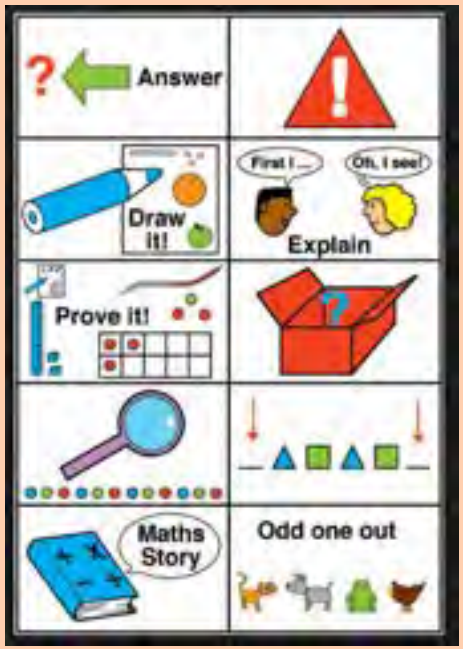
Welcome to Year 2…

Class 2 – At the end of the year your children will take their SATs. They will sit 2 maths papers; an arithmetic paper and a reasoning paper. They are not allowed any visual resources other than what they can draw, so it's really important they are confident using and applying an appropriate method to the 4 operations in different situations and contexts.

Maths in Year 2…

- The expectation of children at the end of Year 2 in maths has increased significantly with the introduction of the new curriculum. While there is an emphasis on children using visual resources in lessons to make abstract maths concepts more concrete for children to understand, at the end of the year they are assessed without being able to access any of these resources.
- The school's main priority in maths this year is to develop the children's ability to reason, explain and master their own curriculum to have secure subject knowledge.
- Weekly recap, consolidation and mastery lessons have so far enabled the children to develop their reasoning skills and fully understand the topics we have been exploring.

Recap, Consolidation and Mastery



Maths is not always about the answer. It is about the journey. The children are encouraged to explain how they approached a problem; what worked and what didn't and apply their reasoning skills to really demonstrate their understanding. Maths is no longer just learning a method and sticking to it.

mastering MATHS

Maths in Year 2…

- Here is an example of a recap, consolidation and mastery question that we have already explored:

Use the number cards below to make as many additions and subtractions as you can? How many can you make?

To do this children have to understand the inverse relationship between addition and subtraction, the commutative law (that is applies to addition, but not subtraction) and number bonds to 10.

Maths in Year 2…

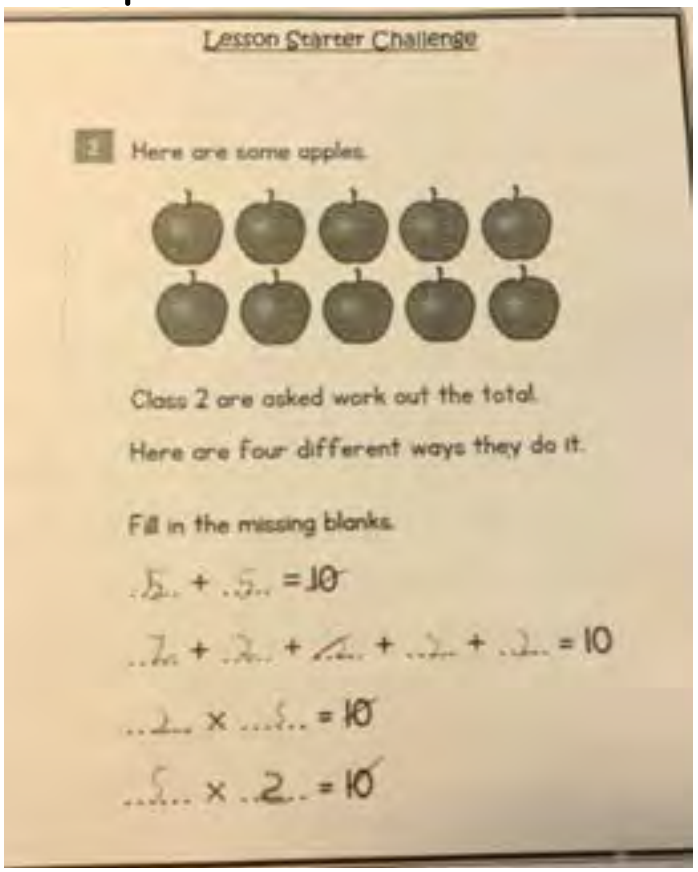
- Here is an example of a recap, consolidation and mastery question that we have already explored:

True or False?
When you add two odd numbers together you always get an even number.
Convince me.

To do this children have to understand the concept of odd and even numbers. They have to be able to add and understand that completing a single example does not prove a theory and be able to explain their results.

Maths in Year 2…

- Here is an example of a recap, consolidation and mastery question that we have already explored:


Lesson Starter Challenge

1 Here are some apples.

Class 2 are asked work out the total.

Here are four different ways they do it.

Fill in the missing blanks.

5 + 5 = 10

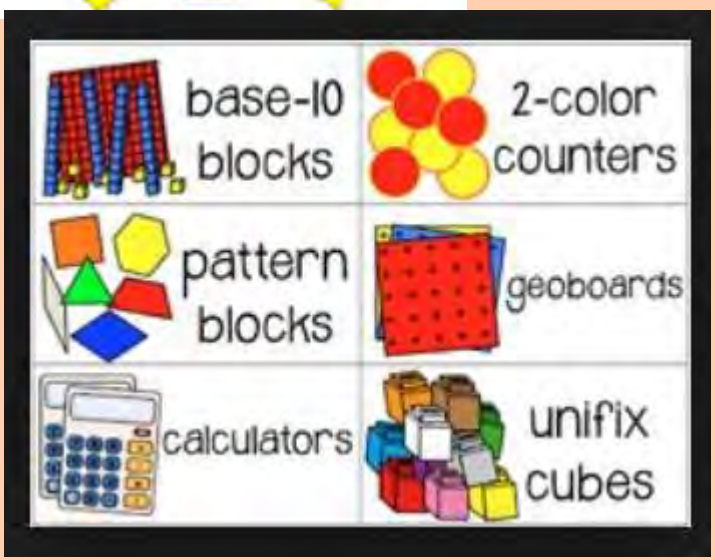
2 + 2 + 2 + 2 + 2 = 10

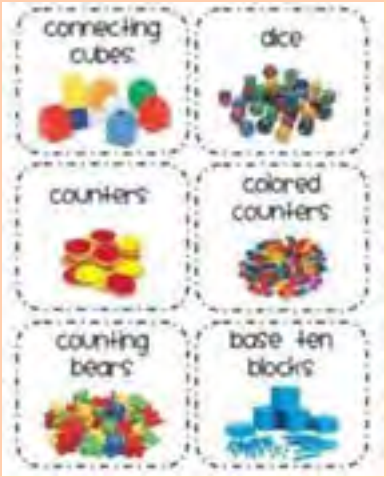
2 x 5 = 10

5 x 2 = 10

To do this children have to understand the concept of multiplication, that it is commutative (completed in any order) and that it can also be read as repeated addition.

Visual Images…





Visual Images…

- Visual images have become a main focus when introducing new concepts to the children to enable them to actually see their learning in picture formation.

- With every new concept introduced, the children will explore it in the following way:

  - *Using real life contexts*
  - *Visual images to provide a visual aid*
  - *Application to a range of different questions*

The Bar Model

The Bar Model is a tool the children use to support their maths learning in problem solving situations to help interpret the questions they are exploring. It is not in itself a calculation tool, in that it will not give the answer.

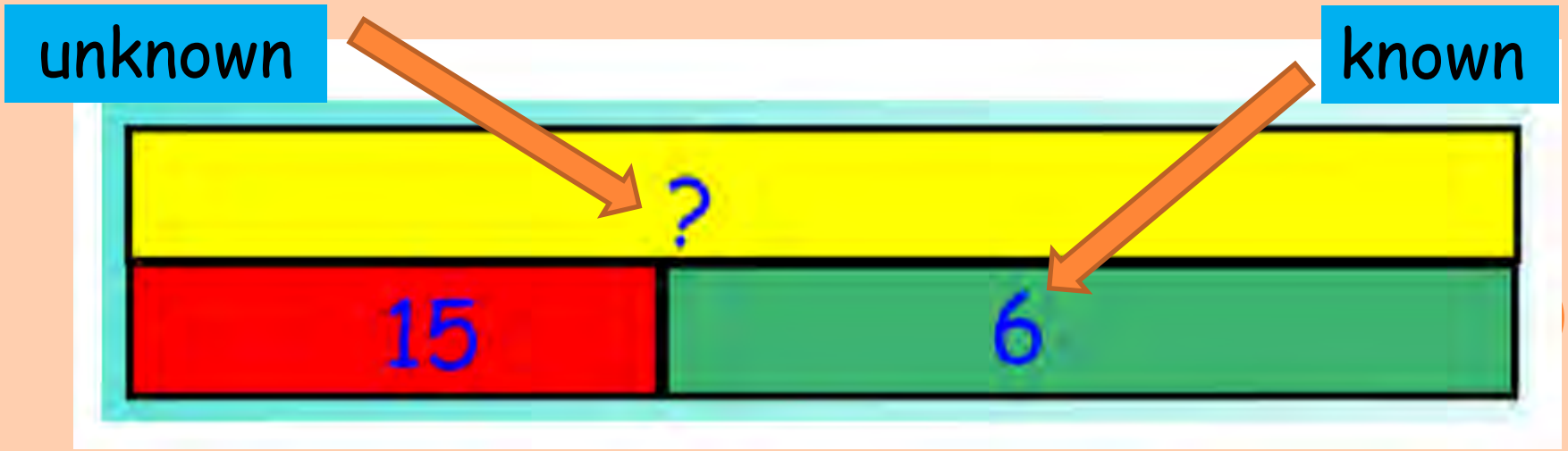
unknown

known

The Bar Model

This example shows addition. Adding the two known parts together on the bottom equals the unknown whole on the top.

15 + 6 = ?



The Bar Model

This example shows subtraction. Subtracting the known parts from each other equals the unknown part on the bottom.

15 - 9 = ?

unknown

known

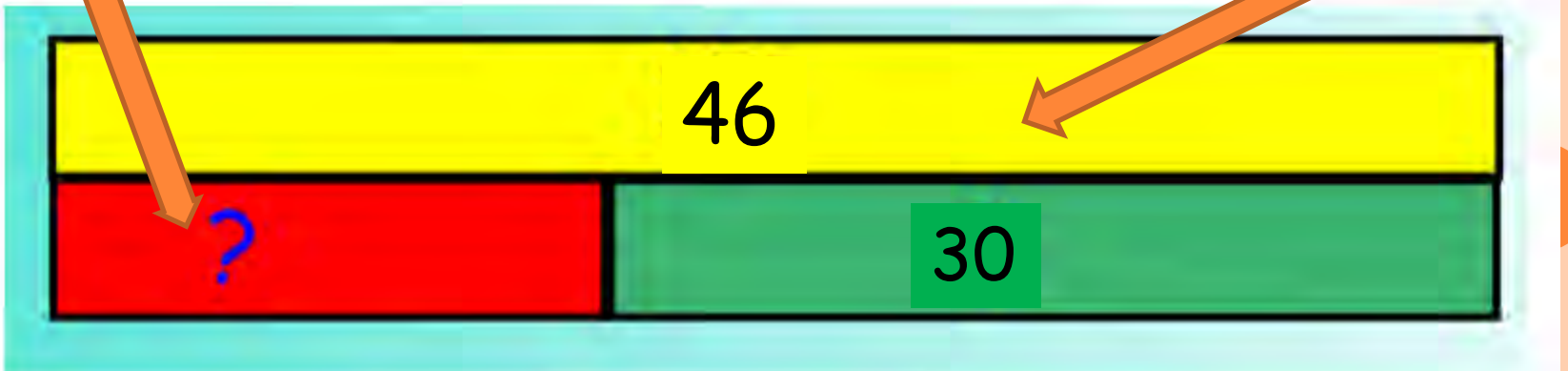
The Bar Model

The bar model is brilliant for solving missing number problems as if children can plot the known information on the Bar Model they can quickly interpret the problem to see which operation they need to apply.

30 + ☐ = 46

unknown

known



The Bar Model

Try to apply this problem to the Bar Model yourself.

There are 92 children in Key Stage 1. 55 are boys, how many are girls?

What is unknown?

What is known?

The Bar Model

We also use the bar model to help us find a fraction of a number. For instance to find half of a number as below. Children can use counters and share them equally to halve the number.

Half of 6 is 3

$6 \div 2 = 3$

The Bar Model

We also use the bar model to help us interpret multiplication problems

On apple cost 4p. How much do 4 apples cost?

4 lots of 4 or 4 x 4 = ?

Methods explored…

Addition

We are now using the `**Partitioning Method**' to add together two 2-digit numbers. This method requires a solid understanding of place value and allows children to solve and access quite difficult calculations without the need for 100 squares.

Try this yourself: 37 + 49 = ?

Introduction of more formal method

The children will be introduced to more formal methods, building on their ability to partition effectively.

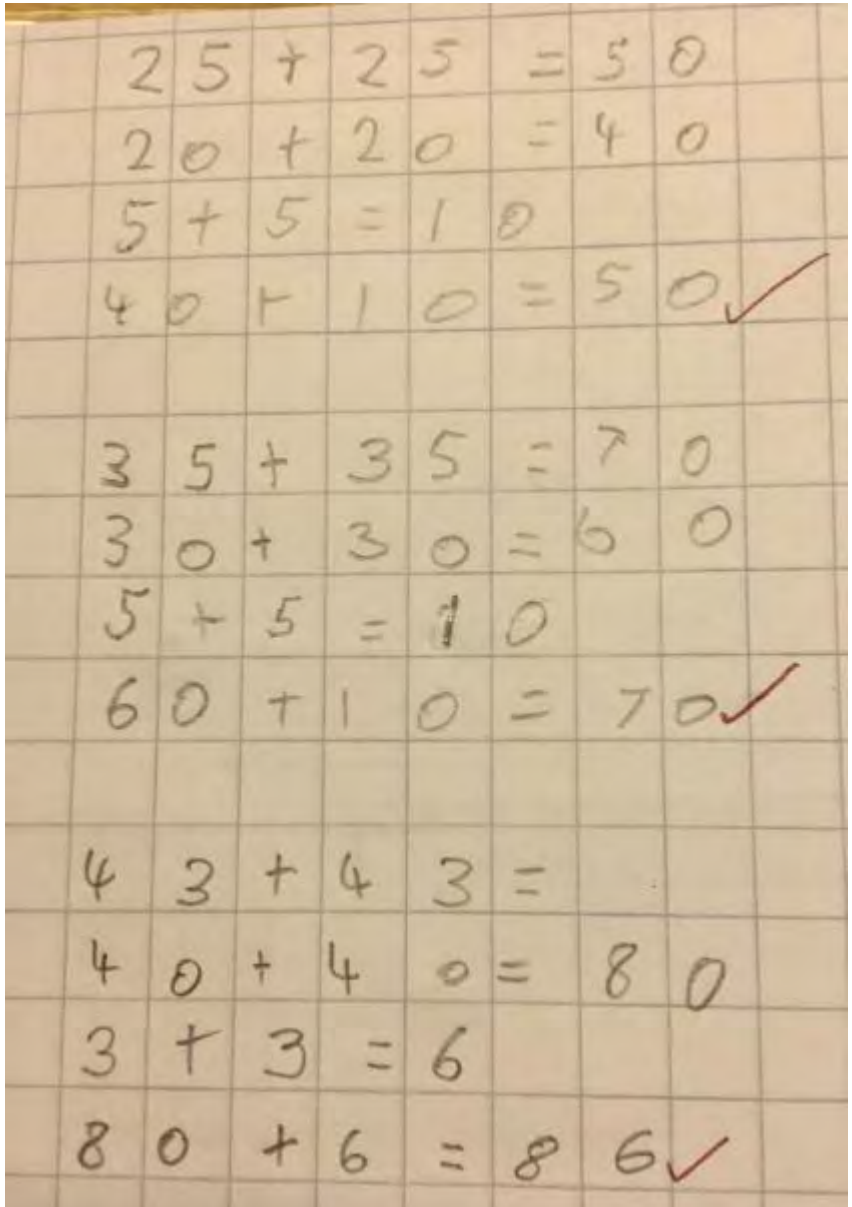
Example	***Example***
23 + 12 = ☐	28 + 15 = ☐
20 + 10 = 30	20 + 10 = 30
3 + 2 = 5	8 + 5 = 13
= 35	= 43

The method on the left is then built upon as the children consider addition calculations which involve the ones/units value totaling more than ten.

Children will be taught written methods for those calculations they cannot do 'in their heads'.

These methods encourage pupils to think about the value of digits, but the addition of the numbers is still done mentally.

Working example…



Subtraction

We use a `**Blank Number Line**' to find the difference to subtract 2-digit numbers. This method requires a solid understanding of counting on in 10s and 1s and allows children to solve and access quite difficult calculations without the need for 100 squares.

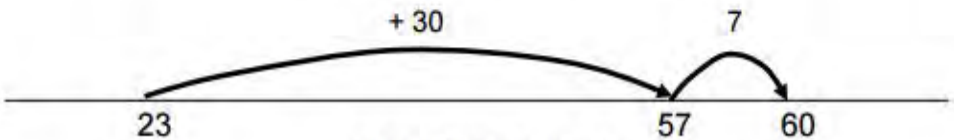
Try this yourself: 82 – 39 = ?

Counting on using a blank number line to find the difference

The children will use a blank number line to count on larger amounts, much like the strategies above. They will record significant numbers along the number line, and think carefully about how best to utilise their understanding of multiples of ten to help them when calculating.

Example

What is the difference between 23 and 60?

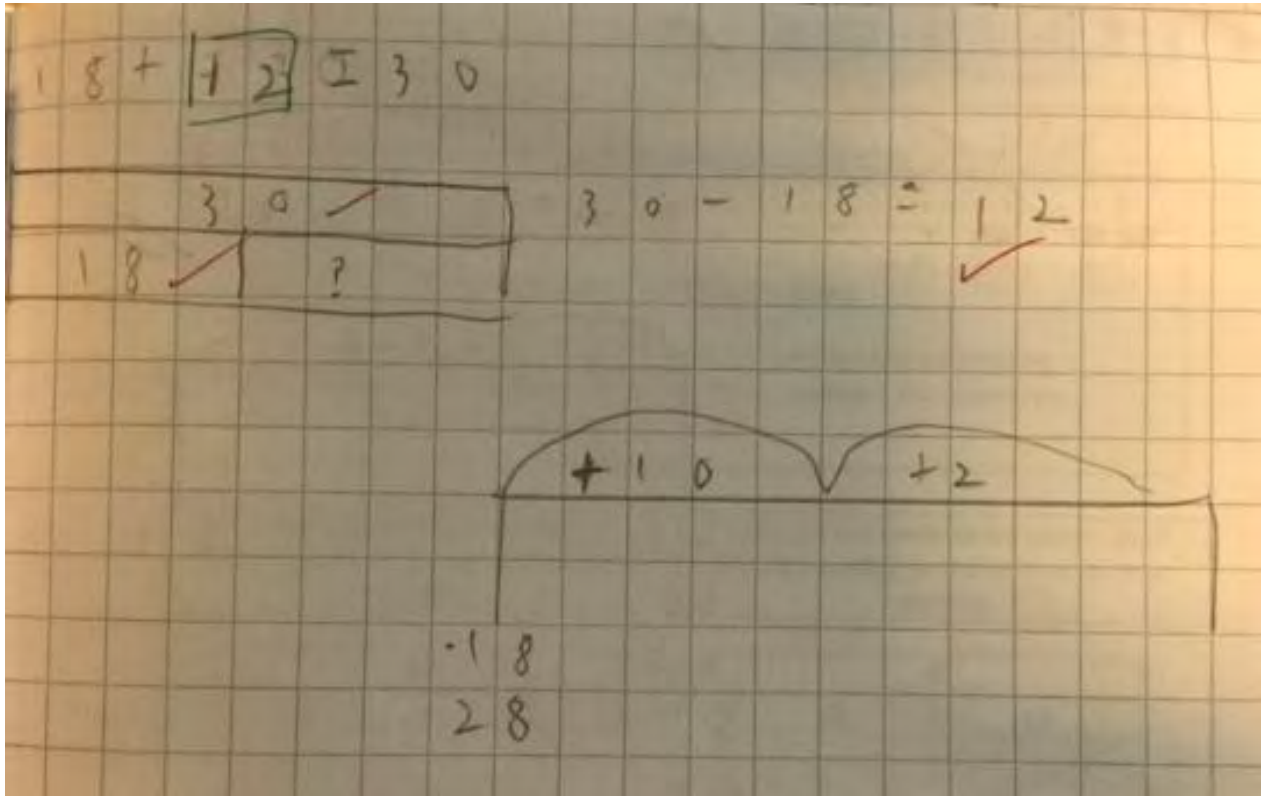


so the difference is 37.

It is important for the children to display the number of 'jumps' they have made above the number line, so that these can easily be translated into a number sentence afterwards.

This blank number line strategy will be used to underpin the relationships between addition and subtraction.

Working example…



Multiplication

Before children have a solid understanding of their times tables `**Arrays**' are invaluable to work out the answer to multiplication problems. Children can use counters or draw their own representation using the concept of `lots of = x'.

Try this yourself:

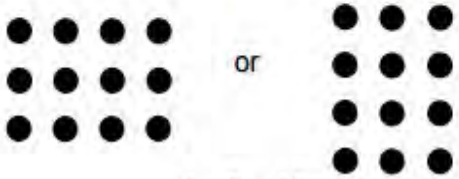
5 x 7 = ? or 5 lots of 7

Representing multiplication with arrays

The product of two numbers will be shown using an array.
In doing so the children will identify the commutatively of multiplication.

Example

4 x 3 = ?
A chew costs 4p. How much do 3 chews cost?



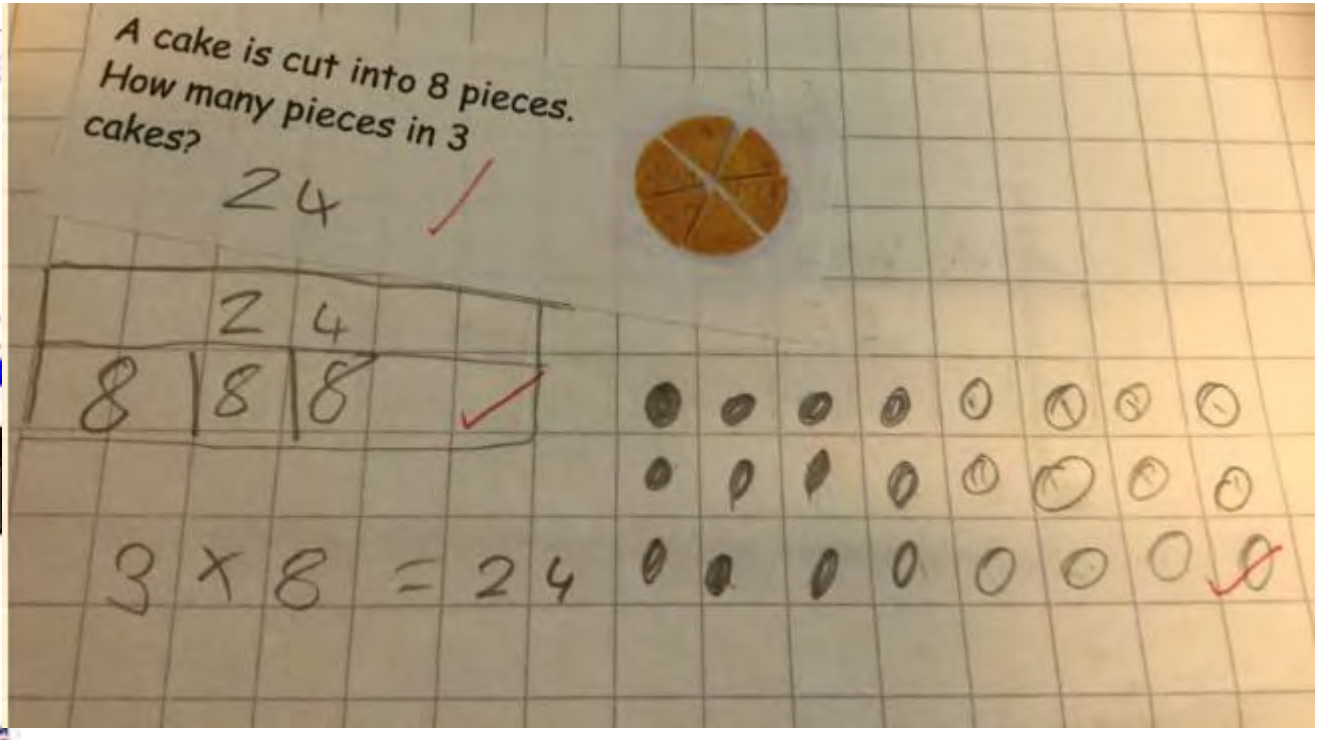
4 x 3 = 12
and 3 x 4 = 12

Drawing sets gives the children an image of the answer. It also helps them to see that the numbers are reversible (commutative).

Children creating these arrays and then physically turning it help to move towards recording this more abstractly.

This stage begins to showcase how jottings are essential in mathematical problems.

Working example…



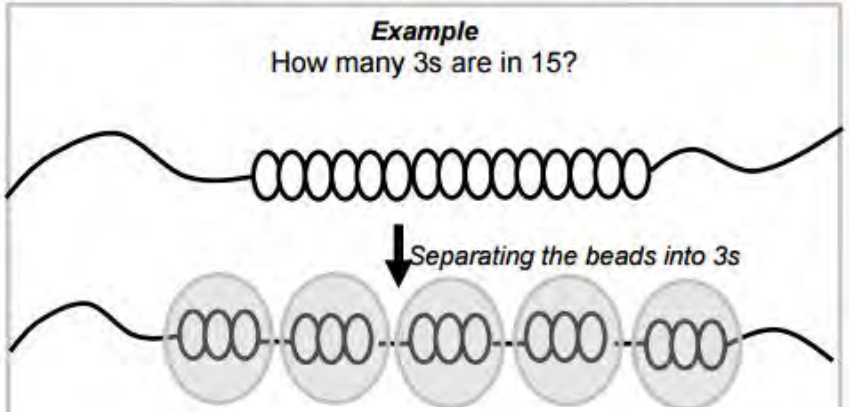
Division

More grouping using bead strings

2

Example

How many 3s are in 15?



Initially sharing is a powerful image for the children to use. However, when numbers increase this can no longer be carried out practically.

It is important that when grouping is used the children make links with counting in groups using a number line.

The children are also encouraged to count up using multiplication facts (repeated addition) linking to the inverse As confidence grows the

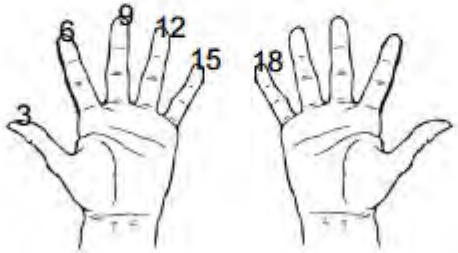
Use of times table facts

2

Example

18 ÷ 3 = ?

How many 3s are in 18?



There are six 3s in 18 (since I used six fingers)

SATs paper examples….

18 $\frac{1}{4}$ of 20 = ☐

20 86 – 21 = ☐

23 65 + ☐ = 93

25 $\frac{3}{4}$ of 40 = ☐

SATs paper examples….

27 Sita has **50** raisins.

She gives **23** to Ben.

She gives **15** to Amy.

How many raisins does Sita have left?

Show your working

raisins

Any questions?