

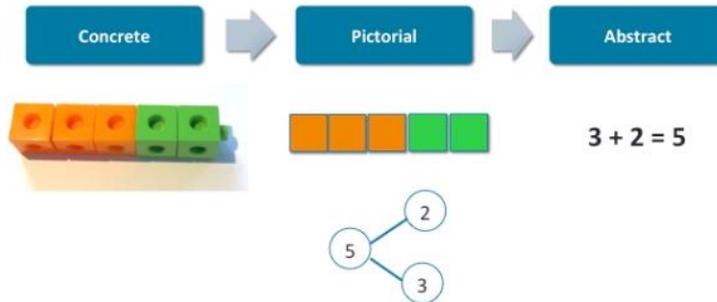
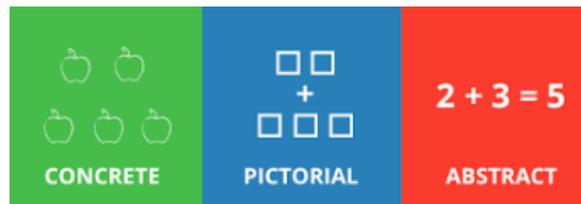
St Clement's Catholic Primary School

Maths Workshop

Spring 2017

A few reminders and 'top tips' for parents.

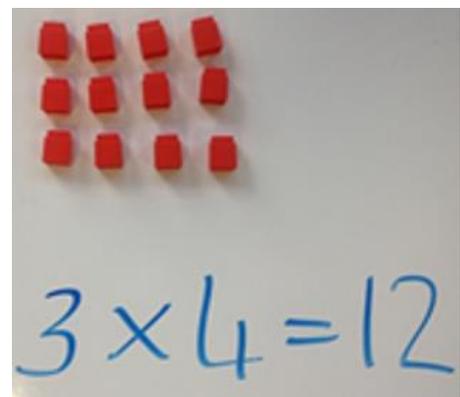
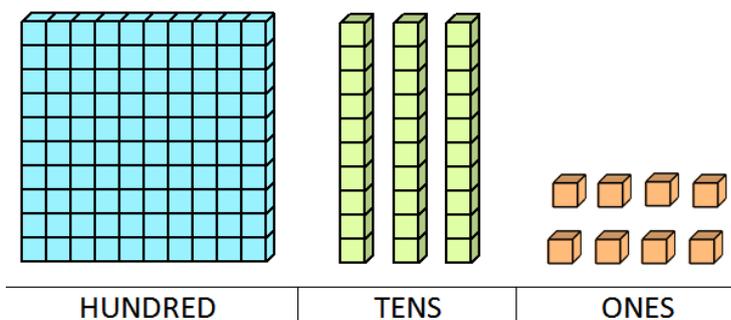
Concrete – Pictorial – Abstract



Concrete: Things you can pick up and move, for example dice, counters, straws, Base Ten (hundreds, tens, ones etc). The concrete (manipulatives) are used with ALL abilities of children in ALL year groups.

Pictorial: A picture to represent mathematics, such as a calculation printed in books or drawn.

Abstract: Numbers 1, 2, 3 etc and symbols +, -, x, ÷, <, >, = etc.



The Bar Model – Singapore Maths

This strategy has been adopted throughout the school – it is used to represent and solve number problems. The long term aim is for children to confidently ‘draw’ a model to solve a range of increasingly complex problems.

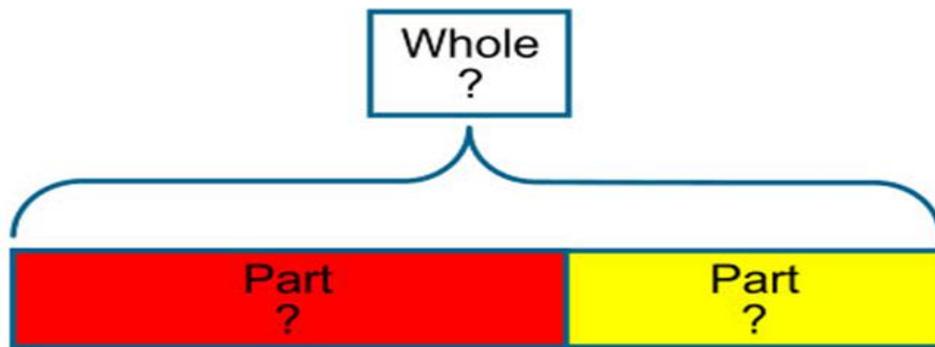
In its simplest form it is introduced to combine numbers and can be used to demonstrate number bonds and simple addition and subtraction.

Sam had 10 red marbles and 12 blue marbles. How many marbles did he have altogether?



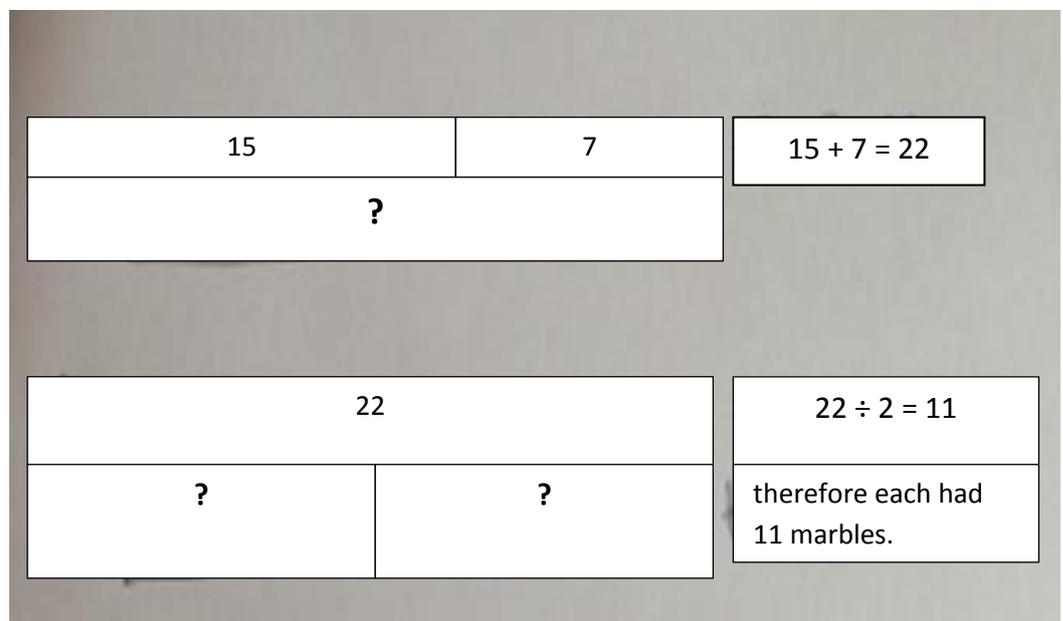
$$10 + 12 = 22$$

In problems involving addition and subtraction there are three possible unknowns as illustrated below and given the value of two of them the third can be found.

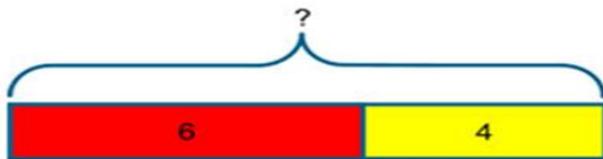


The examples below illustrate a variety of ways that the bar might be used for addition and subtraction problems. A question mark is used to indicate the part that is unknown.

Aiden has seven marbles and Harvey has fifteen. They decide to share them equally between them. How many do they get each?



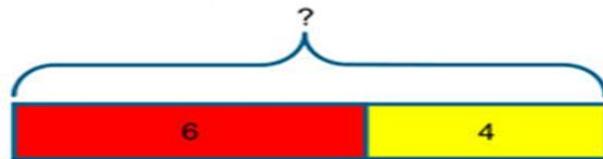
**Addition
Aggregation**
- two quantities combined



I have 6 red pencils and 4 yellow pencils. How many pencils do I have?

(I combine two quantities to form the whole)

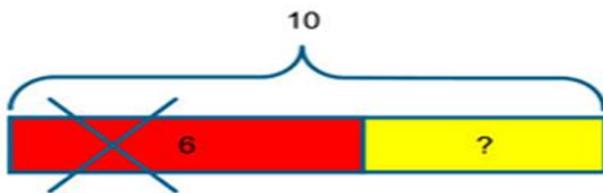
**Addition
Augmentation**
- a quantity is increased



I have 6 red pencils and I buy 4 yellow pencils. How many pencils do I have?

(The bar I started with increases in length)

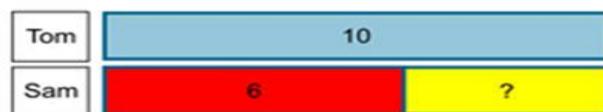
**Subtraction
- Take Away**



I had 10 pencils and I gave 6 away, how many do I have now?

(This time we know the whole but only one of the parts, so the whole is partitioned and one of the parts removed to identify the missing part)

**Subtraction
- Comparison or Difference**



Tom has 10 pencils and Sam has 6 pencils. How many more does Tom have?

(The bar is particularly valuable for seeing the difference between the two quantities)

There are many applications of the bar model across all areas of maths and many steps of teaching before children will be able to use the model confidently and independently. Some of the following examples demonstrate how the strategy can be applied in more challenging upper Key Stage 2 problems:

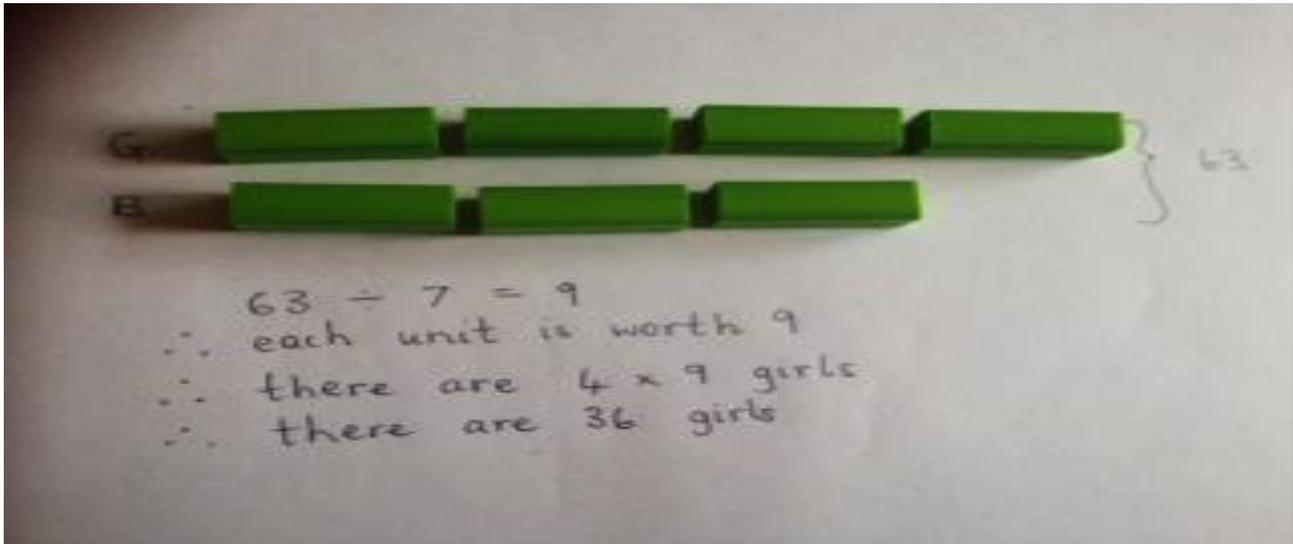
Peter has 4 books
Harry has five times as many books as Peter.
How many books has Harry?

4

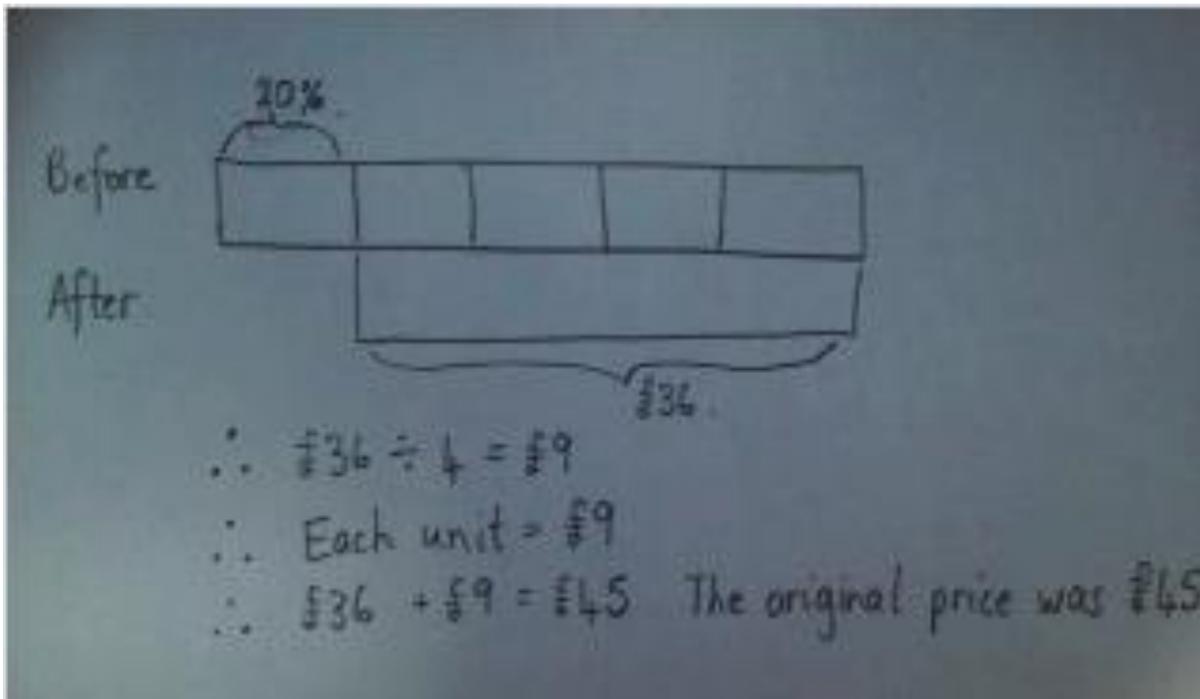
4 4 4 4 4

$4 \times 5 = 20$
Harry has 20 books

At a dance there are 4 girls to every 3 boys. There are 63 children altogether? How many girls are there?



There is 20% off in a sale. The reduced price of the jeans is £36. What was the original price?



Further reading and references:

Probably the best way to understand how to use these strategies is to try them out for yourself. Your child may be able to teach you or you can try the websites and references below – Math Playground is particularly useful.

Math Playground – Thinking Blocks

Thinking blocks are the same as the bar model. This website will give you a chance to try out the bar model yourself step by step.

<http://www.mathplayground.com/thinkingblocks.html>

<http://wces.tomballisd.net/ourpages/auto/2015/9/9/50640016/Bar%20Modeling%20-%20Math.pdf>

<http://www.scholastic.com.au/corporate/pl/assets/pdfs/Bar%20Model%20Method%20MAV%20Article.pdf>