

The Bar Model in Practice

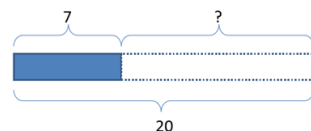
Omar bakes 10 biscuits.
Ruby bakes 12 biscuits.
How many biscuits to they bake altogether?



They bake altogether 22 biscuits altogether.



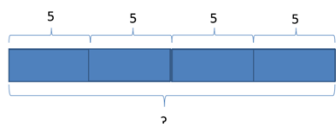
Hardeep buys large eggs and small eggs.
Altogether he buys 20 eggs
There are 7 small eggs.
How many large eggs are there?



There are 13 large eggs.



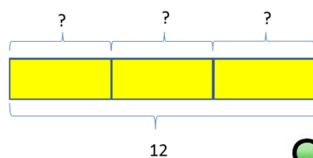
Peter puts 5 bread rolls into each packet.
He has 4 packets.
How many bread rolls does he put into the 4 packets altogether?



There are 20 bread rolls altogether.



Hardeep buys 12 pears.
He puts an equal number of pears into 3 boxes.
How many pears are there in each box?



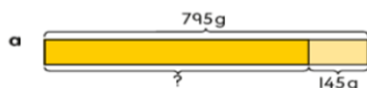
There are 4 pears in each box.



Muti-step Problem Solving:

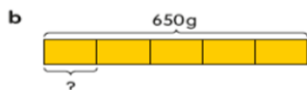
Sam the baker has 795 g of flour.
He uses 145g of it to make biscuits.
He puts the remaining flour into 5 equal bags.

- How much flour is left?
- What is the mass of each bag of flour?



$$795 - 145 = 650$$

There is 650 g of flour left.



$$650 \div 5 = 130$$

The mass of each bag of flour is 130g.

More info/useful links:

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

This online resource provides a way in which students can model and solve maths word problems. It can be used on a whiteboard to demonstrate the technique. It contains a section on addition and subtraction, multiplication and division, fractions, ratio and proportion.

<https://mathsnoproblem.com/en/parent-videos/>

<https://thirdspacelearning.com/blog/teach-bar-model-method-arithmetic->

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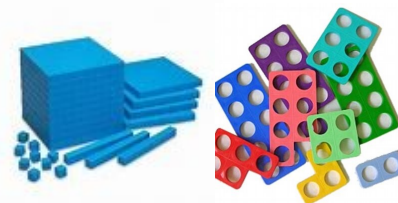
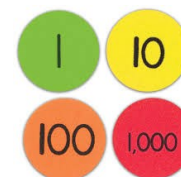
INSPIRING **LEARNING** THROUGH FAITH AND VALUES **TOGETHER** Autumn Term 2019

Welcome to our termly **Learning Together** - a newsletter which offers some suggestions, thoughts and ways into exploring the some of the common difficulties children are faced with as they travel along their learning journey. As a result of parent requests, and our own discussions in school, we hope that **Learning Together** will help provide a bank of resources to use at home to help all our children to succeed.

Our focus this term:

Representing Number

IV



As seen in the school calculation policy, the approach shows the way in which children progress in their mathematics.

The process starts with using real-world, tangible representations before moving onto showing the problem using pictorial diagrams, and then introducing the abstract algorithms and notations (such as the +, -, x and / symbols).

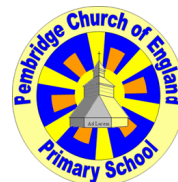
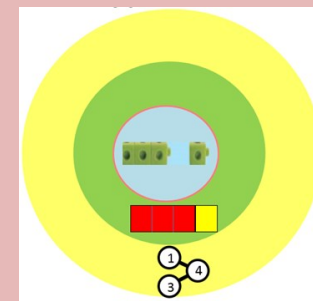
Concrete: Resources such as cubes, counters and shapes

Pictorial: Pictures, bar models, part-whole models, drawings

Abstract: Numbers and symbols

Here, for example, are different ways of representing 4.

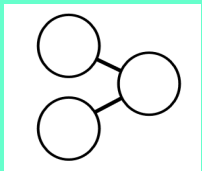
Please speak to your class teacher or Miss Evans for further support. Thank you.



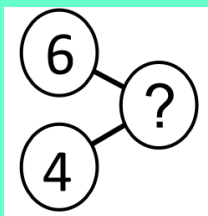
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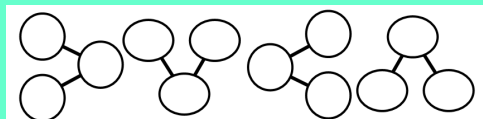
What is the part-whole model?



Here is the part-whole model, which is used in the mastery approach. It works on the principle that if you know two values out of three, you can calculate the missing value using addition or subtraction.

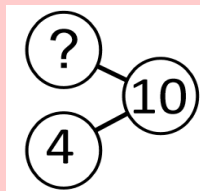


6 and 4 more makes?



The part-whole model can be orientated differently and can be used for addition and subtraction problems.

The Part-Whole Model in Practice



Something and 4 makes 10. This leads to a missing box calculation.

$$\quad + 4 = 10$$

In other words, algebra.

The National Curriculum insists children know their number families for all the operations

$$6 + 4 = 10$$

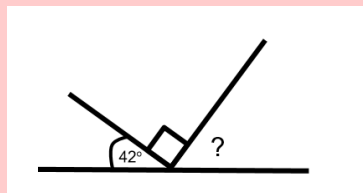
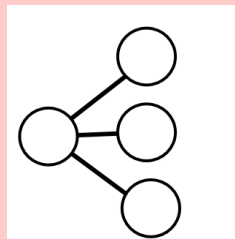
$$4 + 6 = 10$$

$$10 - 6 = 4$$

$$10 - 4 = 6$$

$$10 - 4 = 6$$

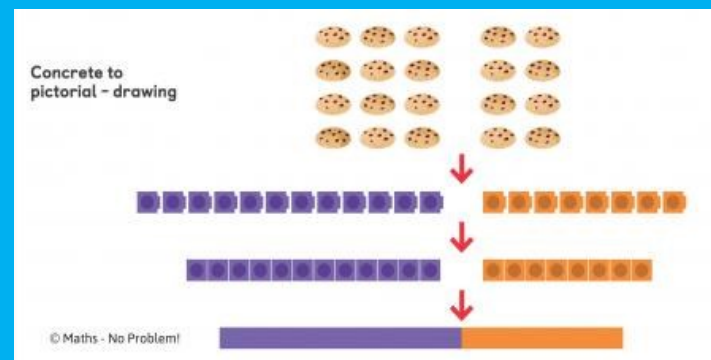
It can also be more than two parts:



Here is an example from a Year 6 geometry lesson.

What is the bar model?

The bar model method is pictorial, and develops from children handling actual objects to drawing pictures and then drawing boxes, each of which represents an individual unit, to represent objects. Eventually, they will no longer need to draw all the boxes; instead, they just draw one long bar and label it with a number.



A child might be given the following problem: *Sam bakes 20 cookies. If he gives away 8 cookies, how many would he have left?*

- In the **concrete** stage, children might use actual cookies (or, in a lesson, multi-link cubes like Numicon or counters to represent them!) to solve the problem.
- In the **pictorial** stage, instead of physical objects they use drawings to represent each cookie (they might draw cookies or blocks or counters or dots to represent them).
- In the **abstract** stage, they are able to solve the problem using conventional mathematical notation:

How can I help my child?

Help your child by finding mathematics in everyday situations, for example a shopping trip is rich in mathematical opportunities.

- Spending money, calculating change and working out what is the best value in store.
- Packets, once empty can provide your child will immediate access to 3D shapes and nets
- Packets and tins are also a great source of information, e.g. mass and volume
- Multi-packs of items such as drinks or yogurts are sold in pairs, fours and sixes which links well with work on multiples or times tables
- Knowledge of number, help them explain what comes before or after a given number, how the number is made, e.g. tens and ones.