Inspiring children to succeed

INSPIRE MATHS

Inspire Maths Parents' Evening

<Insert staff name here>

OXFORD

This parents' evening will explain:

- how maths will be taught
- why the children will not be in sets or ability groups
- how the textbooks will be used in class
- how the part-whole model works
- how the bar model works
- how you can help your child at home.

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What is *Inspire Maths*?

- Singapore is consistently ranked in the top three spots in international tests such as TIMSS and PISA.
- *Inspire Maths* is the UK version of the highly acclaimed Singapore maths programme *My Pals Are Here!*, which is used in almost 100% of state primary schools in Singapore.
- It is a mastery curriculum with an emphasis on deep conceptual understanding and problem solving.
- The spiral curriculum systematically develops skills and concepts.
- The programme is build around the CPA approach.
- There is an emphasis on the development of intellectual competence, such as the ability to visualise.

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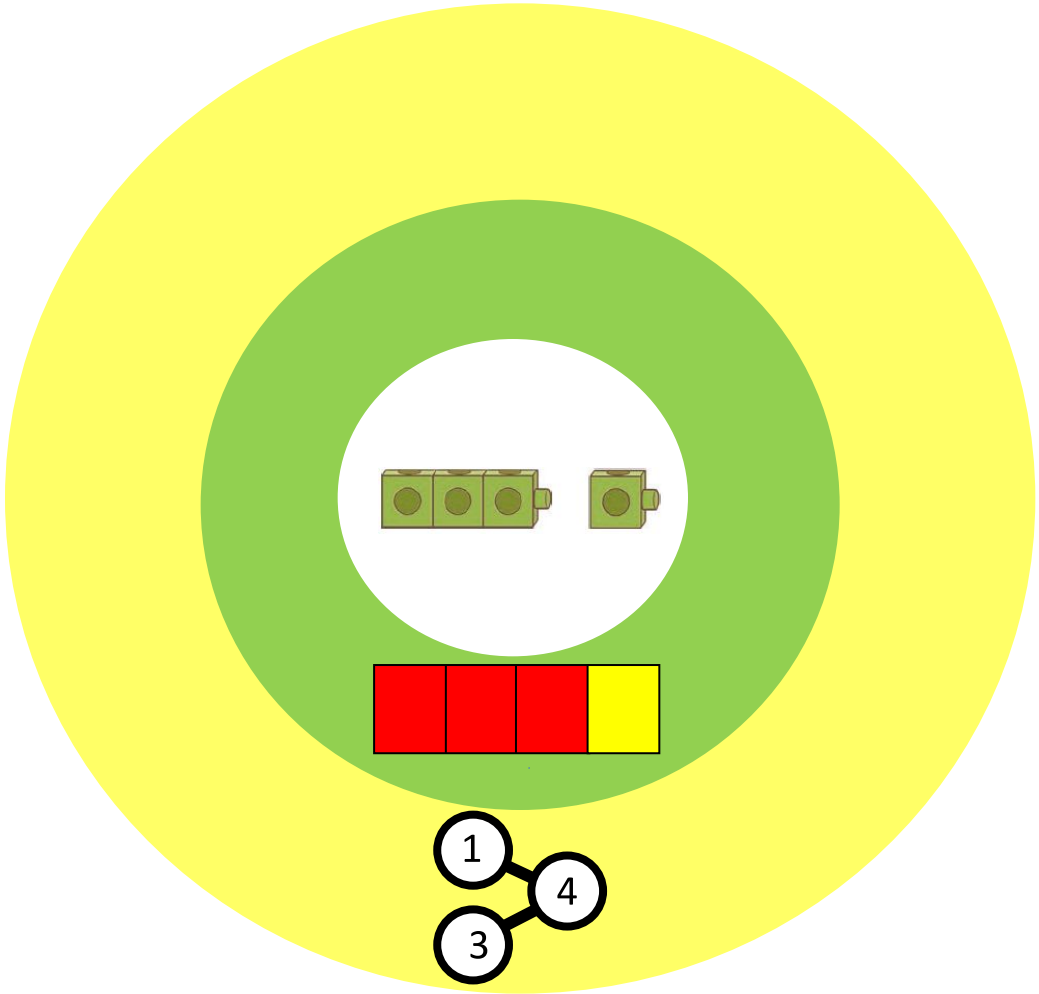
The CPA approach



Concrete:

resources such as cubes, counters and shapes

Pictorial:

pictures, drawings

Abstract:

numbers and symbols

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Textbooks

Your child will work from a Pupil Textbook, as well as from a Practice Book and Assessment Book.

The numbers on the books do not necessarily correspond with your child's year group.

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A mastery curriculum

Key features:

- The curriculum is highly-structured, based on a spiral approach to learning and learning theories.
- Each maths area or topic is covered in depth for the year group once, and is not repeated within the same year.
- Children are not grouped or put into ability sets.

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The beginning

Knowing everything there is to know about a number.

What do you know about 7?

It is an odd number.

It is a quarter of 28.

It is made up of a 3 and a 4.

It is two more than 5.

It is made up of a 3 twos and a one.

It is half of 14.

It is three fewer than 10.

It is a single digit number.

It is double three and a half.

It is a prime number.

It comes after 6 and before 8.

It is fewer than 10.

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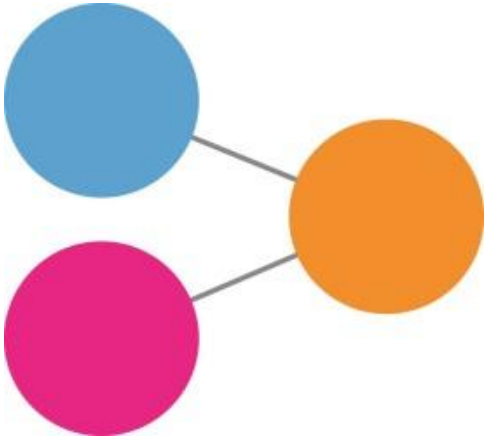
The part-whole model



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

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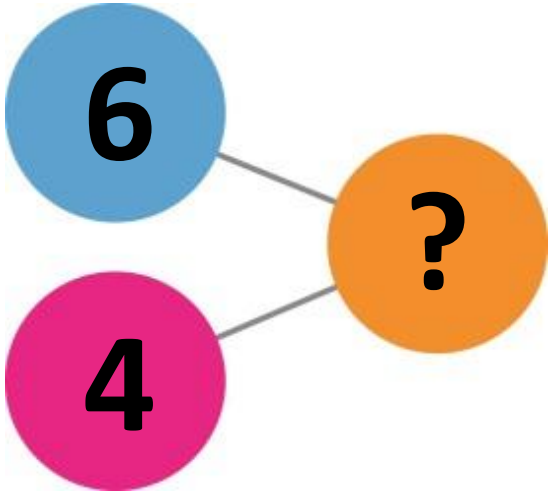
The part-whole model



6 and 4 more makes ?

The two parts (6 and 4) combine to make the whole (10).

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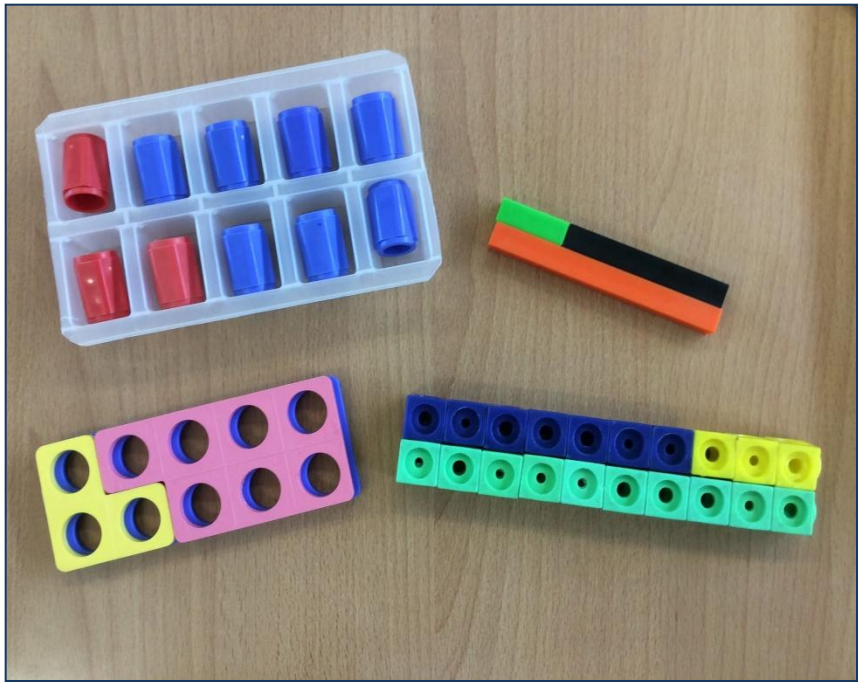
The part-whole model



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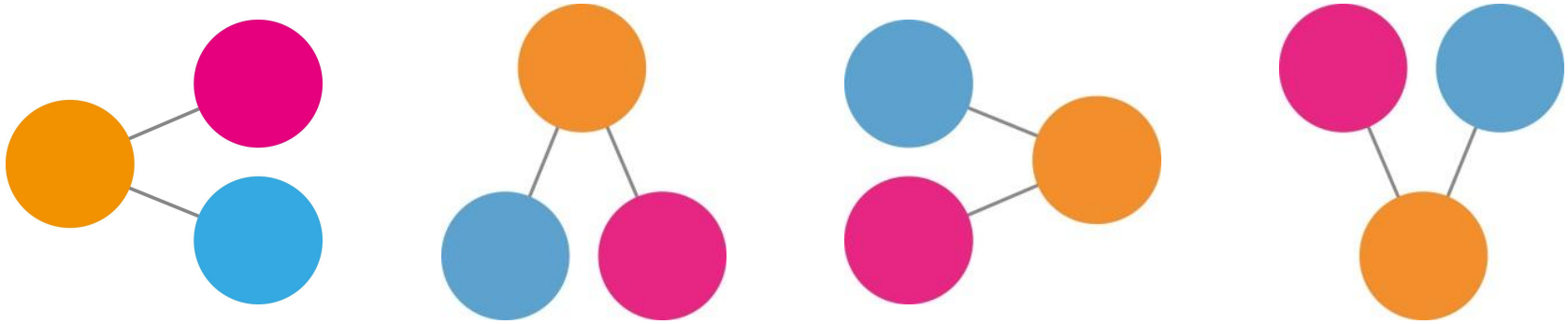
The part-whole model



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

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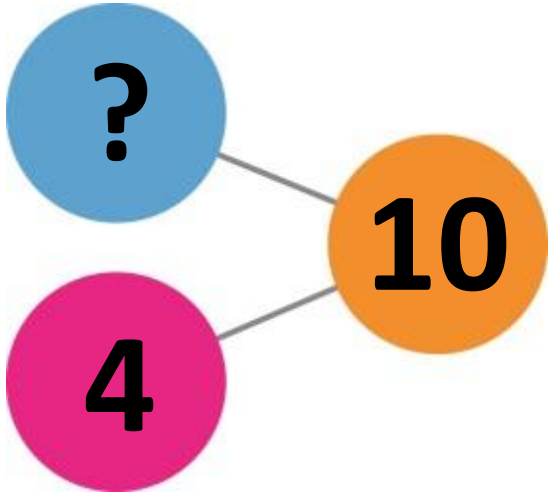
The part-whole model

An unknown number and 4 makes 10.
This leads to a missing box calculation:



□ + 4 = 10
In other words, algebra.

The National Curriculum requires that children know their number families for all the operations, for example:

6 + 4 = 10	3 × 7 = 21
4 + 6 = 10	7 × 3 = 21
10 – 6 = 4	21 ÷ 7 = 3
10 – 4 = 6	21 ÷ 3 = 7

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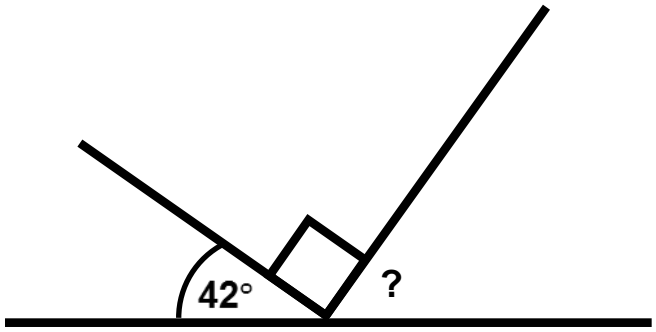
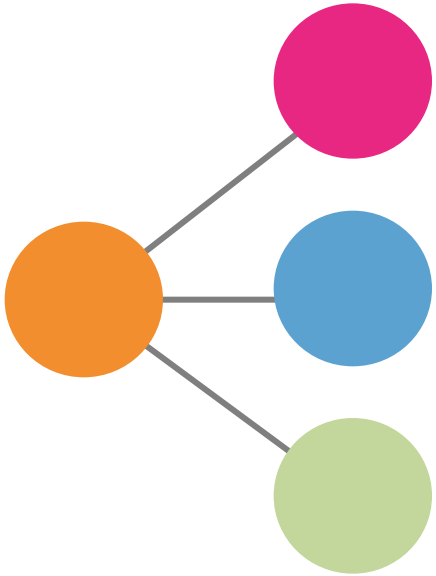
The part-whole model

The part-whole model can involve more than two parts.

Here is an example from a Year 6 geometry lesson:





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Activities and games

There are 7 cubes under the cups. You can only lift one cup up. Can you work out how many cubes are under the second cup?

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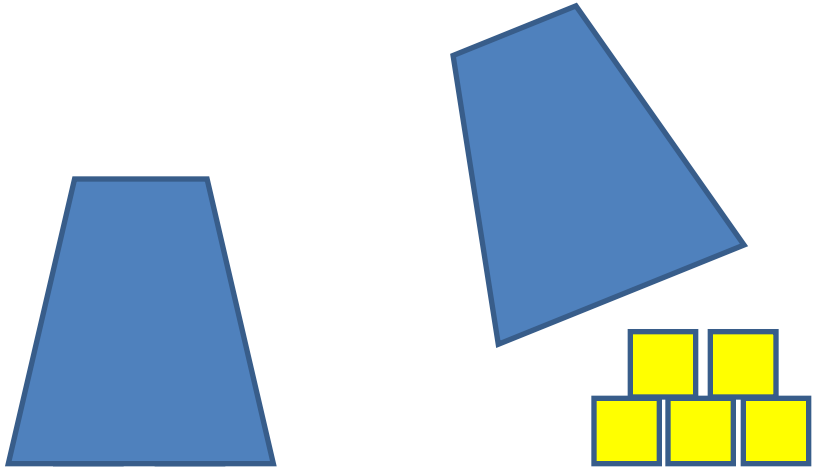
There are 5 cubes under this cup. There are 7 cubes altogether. 7 – 5 = 2. I know that there are 2 cubes under the other cup.



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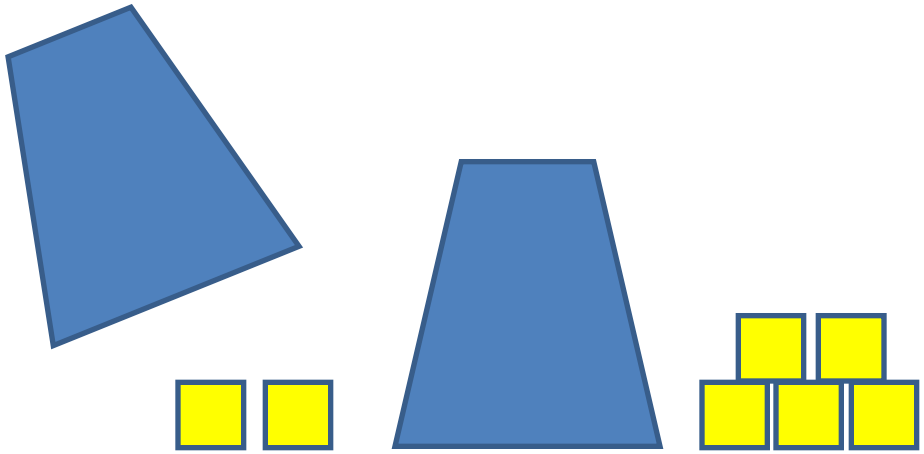
I solved the problem with a subtraction. 7 – 5 = 2
I can check my answer with an addition.
5 + 2 = 7 or 2 + 5 = 7



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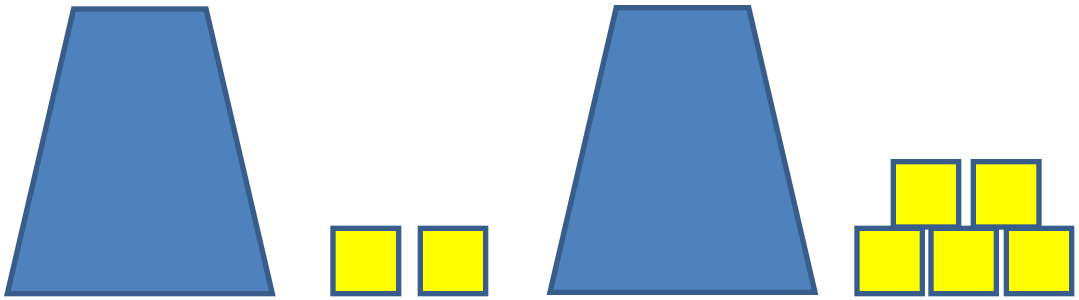
Now try this activity again taking turns to hide the cubes. Use different totals.



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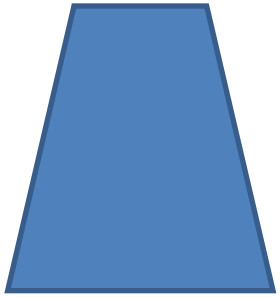
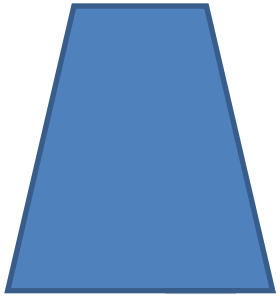
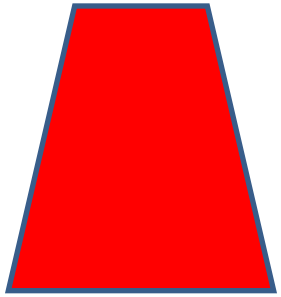
I have 3 cups and 10 cubes. I've hidden the same number of cubes under both blue cups and a different number under the red cup. You can only lift one cup.
Can you work out what is hiding under the other 2 cups without lifting them?

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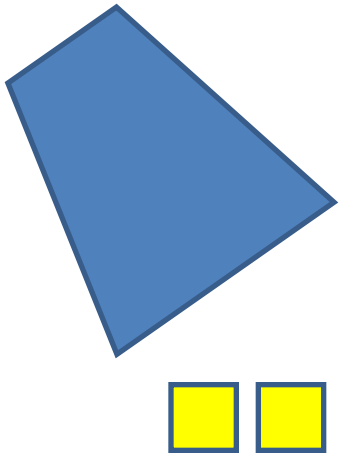
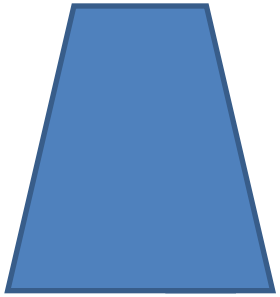
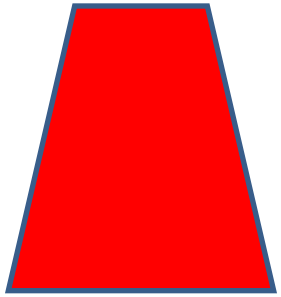
If I lift this cup, what maths do I need to solve the problem?







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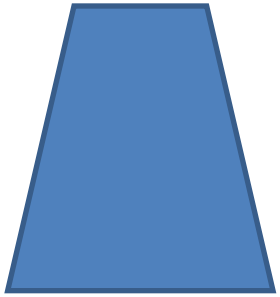

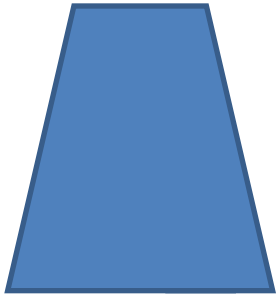

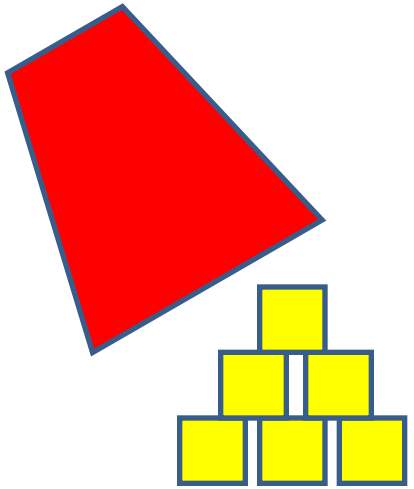

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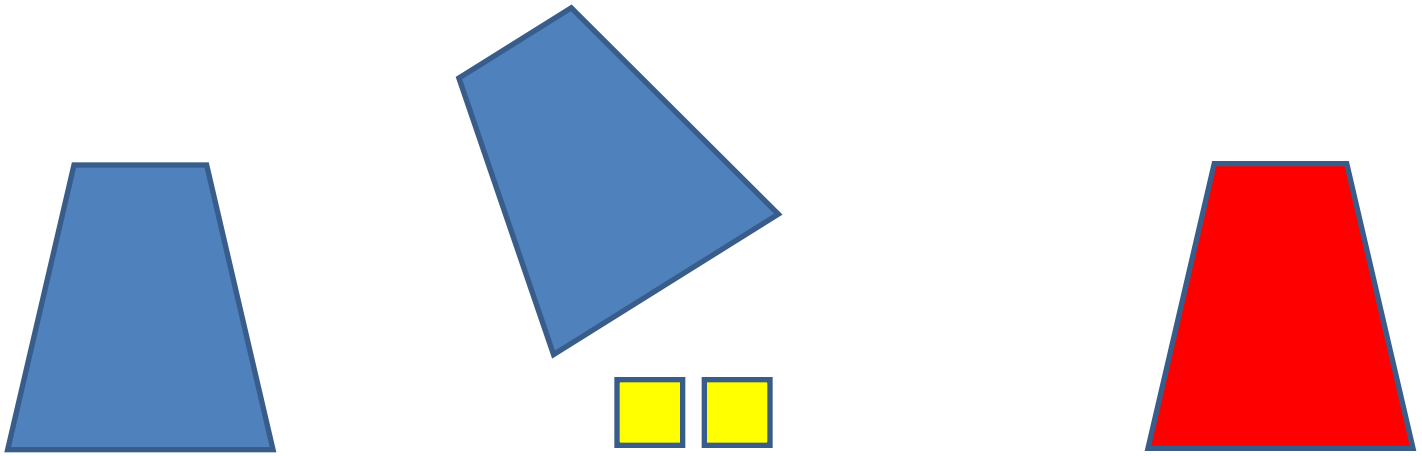

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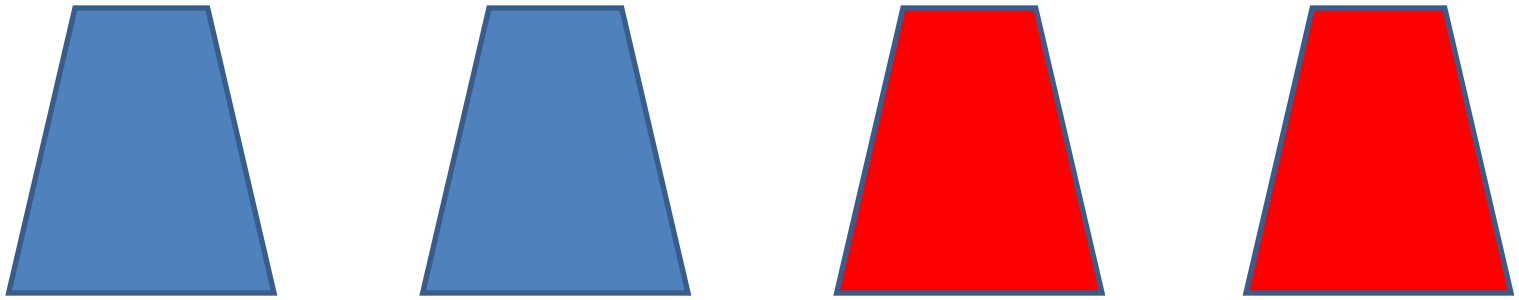
I have four cups and ten cubes. I've hidden the same number of cubes under both blue cups and a different number under the red cups. The number of cubes hidden under the red cups is the same. You can only lift one cup. Can you work out what is hiding under the other cups without lifting them?



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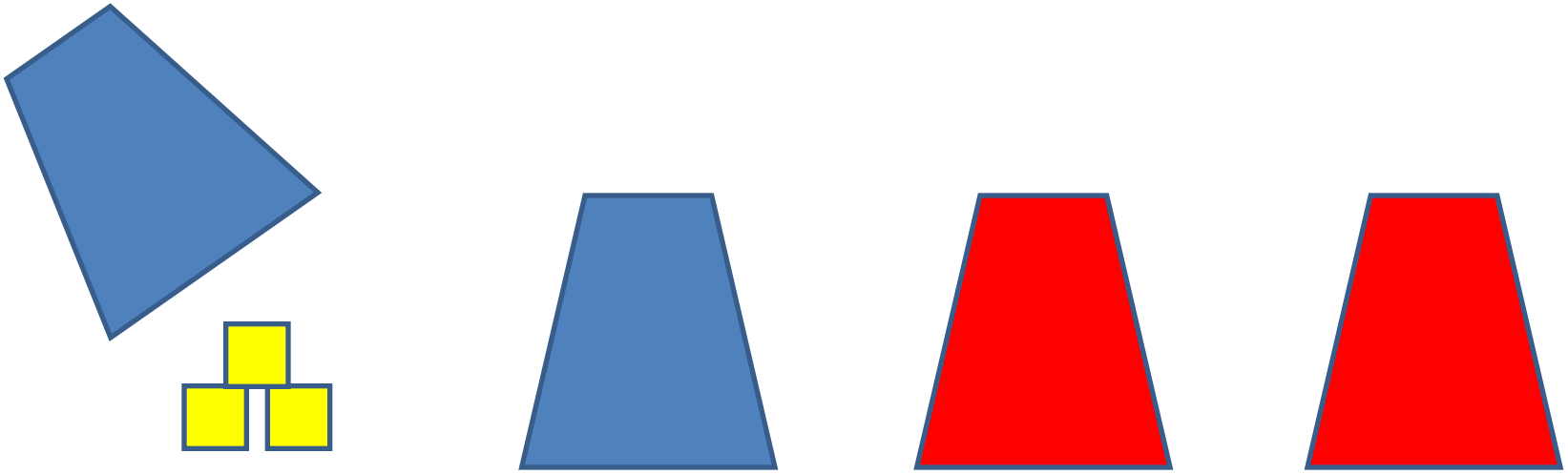

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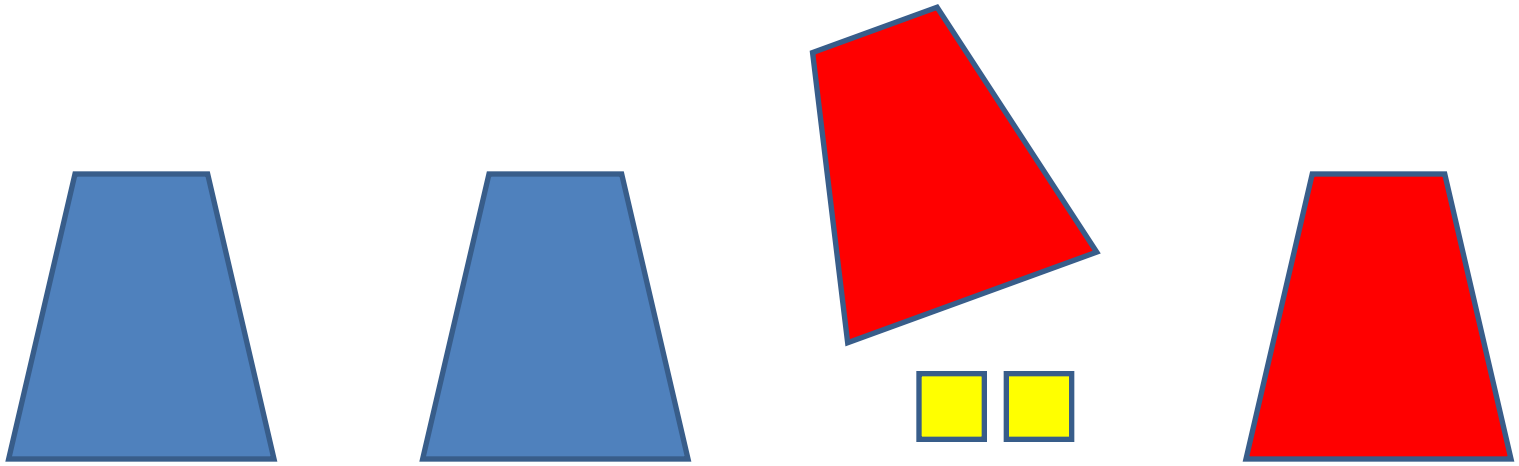

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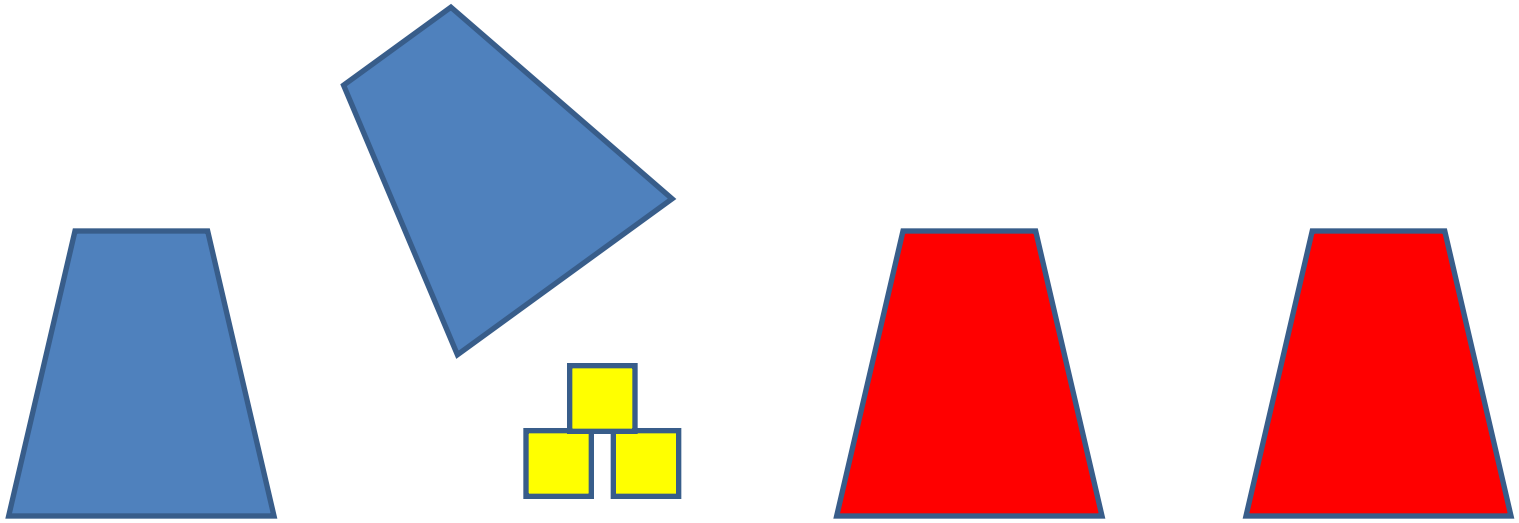

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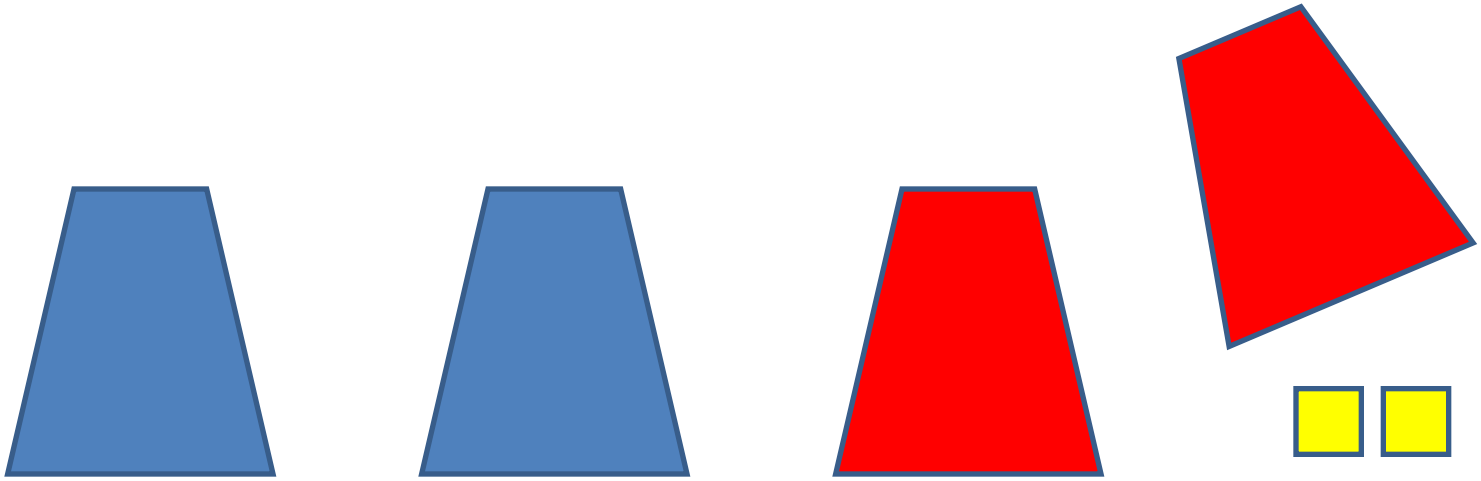

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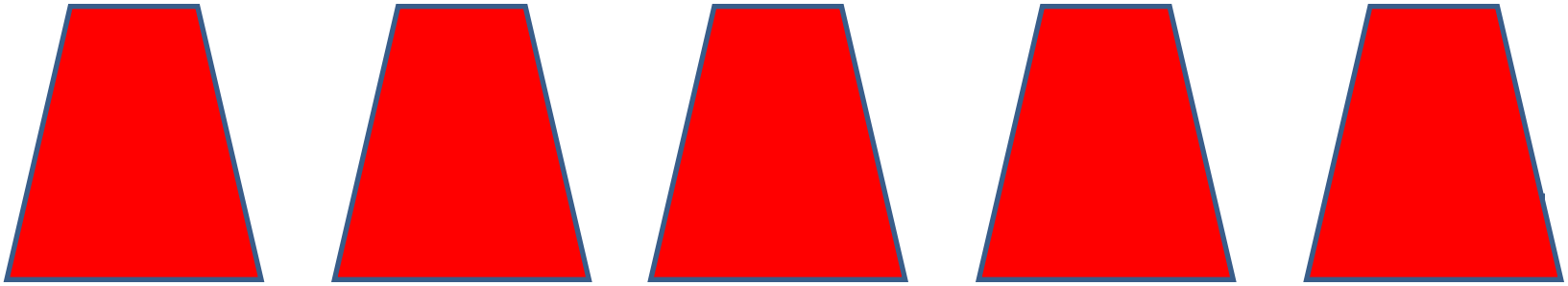
I have 5 cups. The total number of cubes I've used is 25. There is the same number of cubes under each cup. How many cubes are under each cup?



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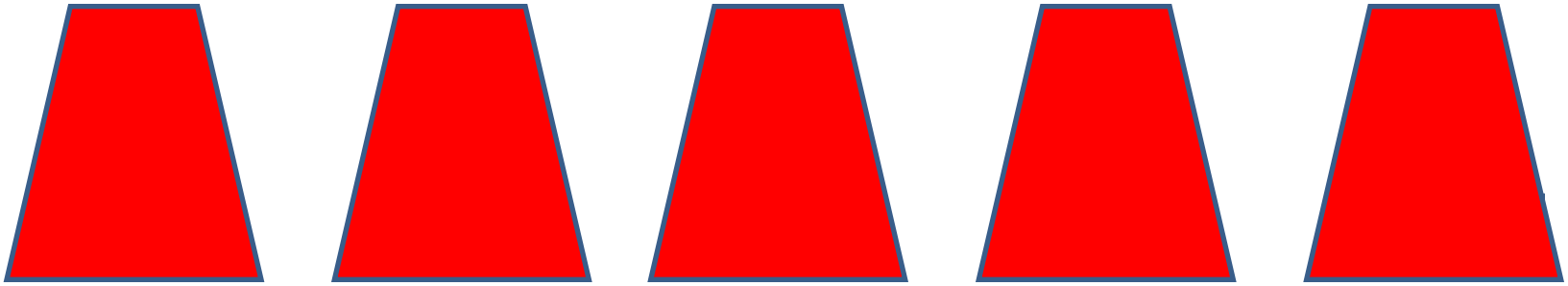
What maths do you need to solve this problem?
What number facts do you already know?



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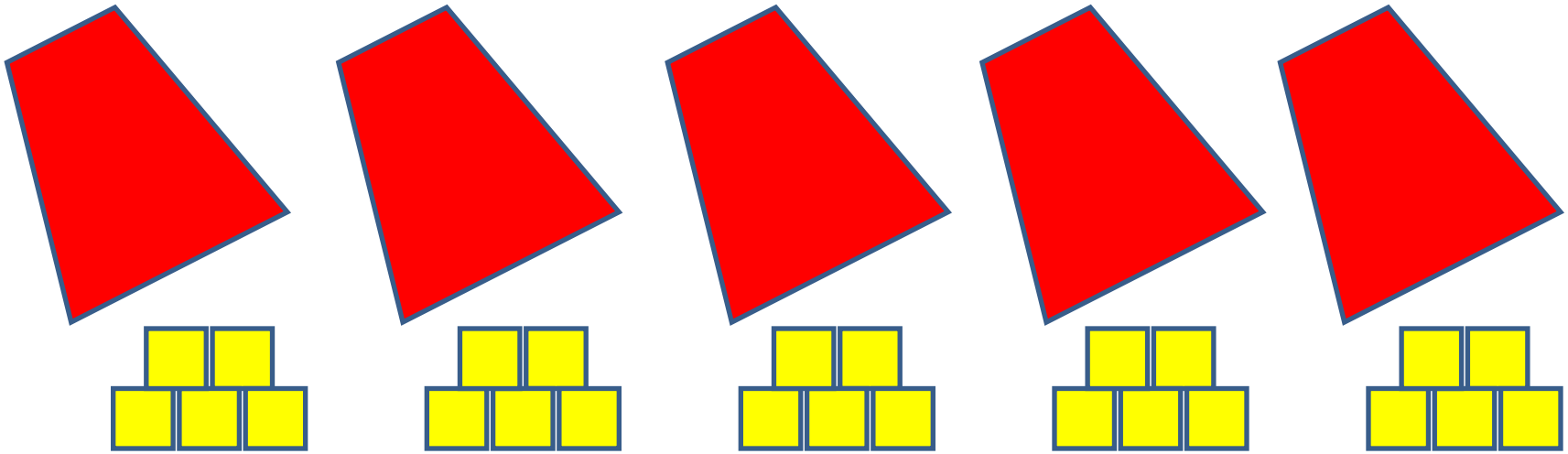

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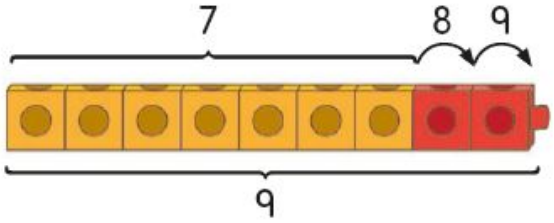
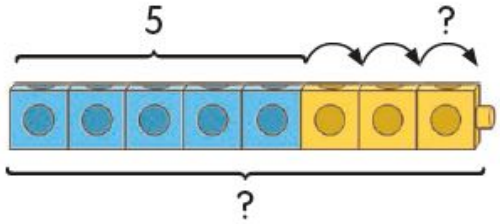
Introducing the bar model

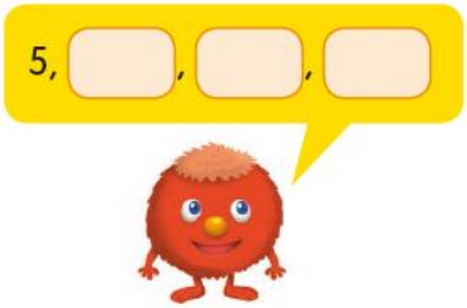
4 What is 2 more than 7?



2 more than 7 is 9.

5 What is 3 more than 5?





3 more than 5 is ☐.

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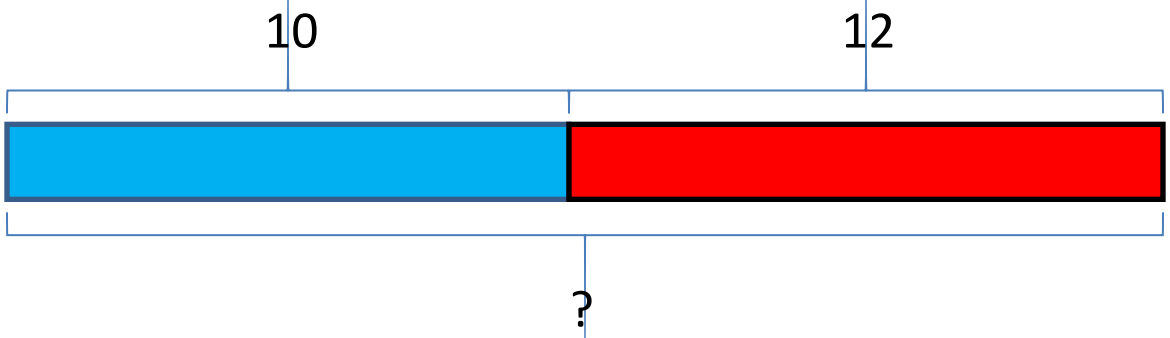
Introducing the bar model

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



They bake 22 biscuits altogether.

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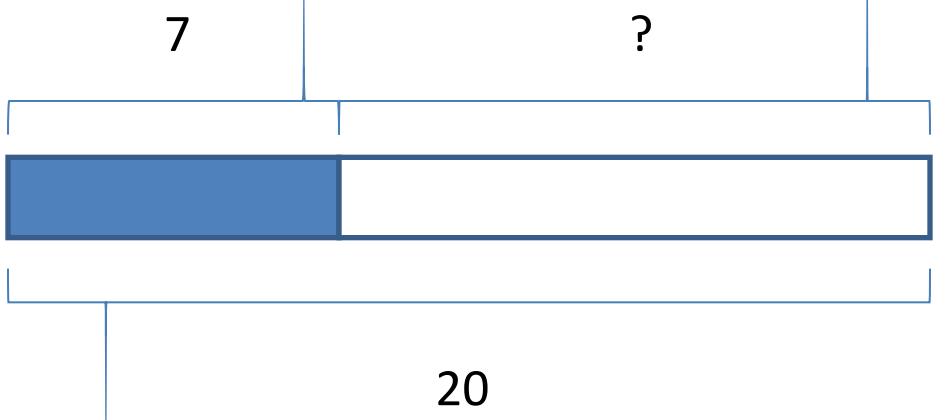
Introducing the bar model

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.

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Millie has a new fish tank.
She wants to put 21 fish in it.
Millie's mum gives her 15 fish.
She uses her pocket money to buy the rest.
How many fish does she buy?

305 children go to the park on Saturday.
278 more children go to the park on Sunday than on Saturday.
How many children go to the park on Sunday?

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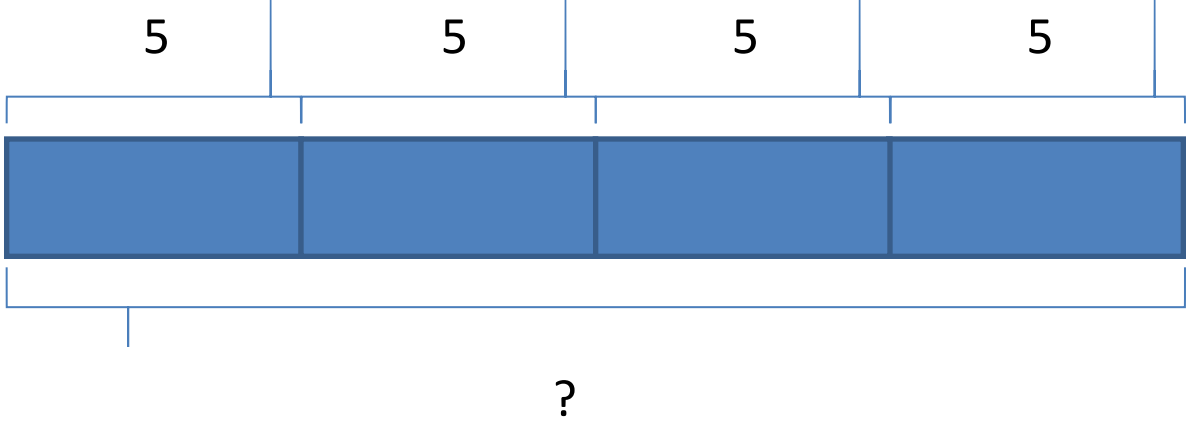
Developing the bar model

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.

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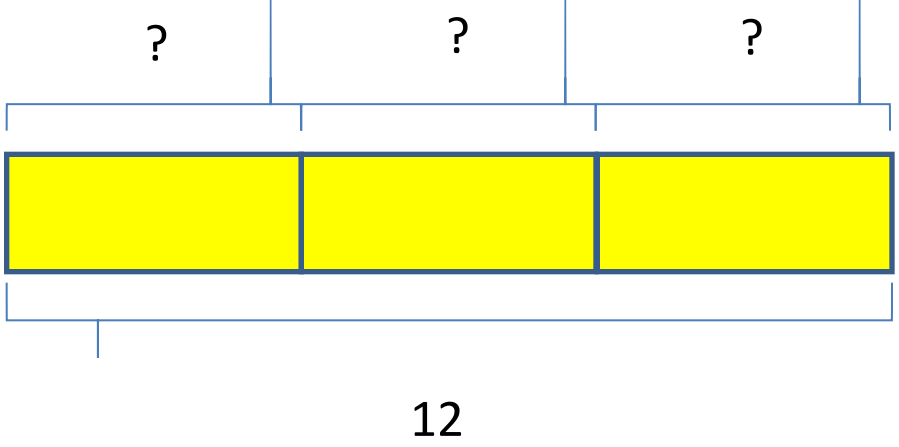
Developing the bar model

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.

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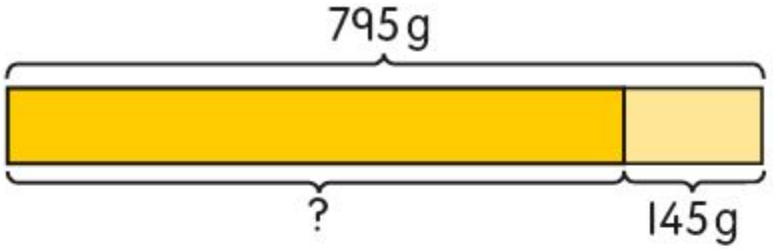
Developing the bar model

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

a How much flour is left?

b What is the mass of each bag of flour?

a



795 – 145 = 650

There is 650 g of flour left.

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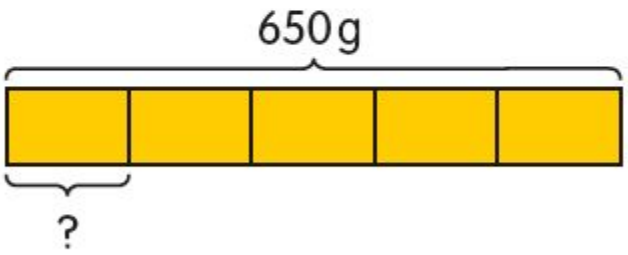
Developing the bar model

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

a How much flour is left?

b What is the mass of each bag of flour?

b



650 ÷ 5 = 130

The mass of each bag of flour is 130 g.

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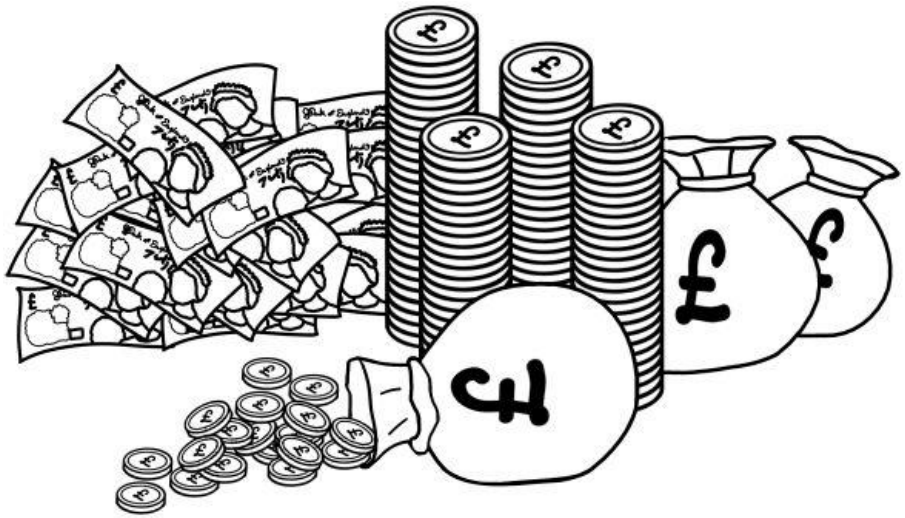
Further word problems

Tai saves 4 times as much money as Farha.
Ruby saves £12 less than Tai.
Farha saves £32.
How much money does Ruby save?



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Further word problems

Tai saves 4 times as much money as Farha.
Ruby saves £12 less than Tai.
Farha saves £32.
How much money does Ruby save?

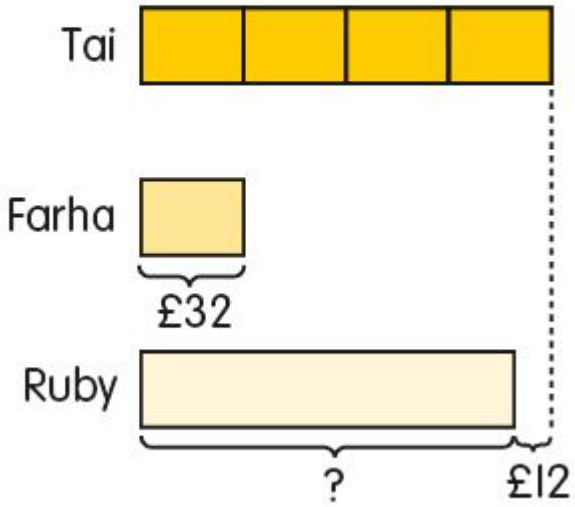
1 unit → £ 32

4 units → £ 32 × 4 = £ 128

Tai saves £ 128 .

£ 128 − £ 12 = £ 116

Ruby saves £ 116 .



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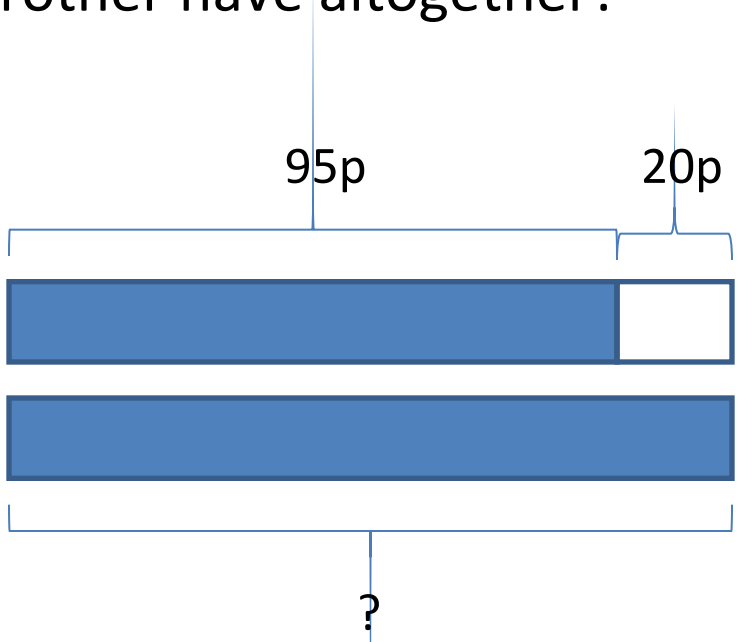
Further word problems

William has 95p

He has 20p less than his brother

How much money do William and his brother have altogether?

95p + 20p = 115p
William's brother has 115p
William's brother has £1.15
William has 95p
William and his brother have 210p altogether.
William and his brother have £2.10 altogether.



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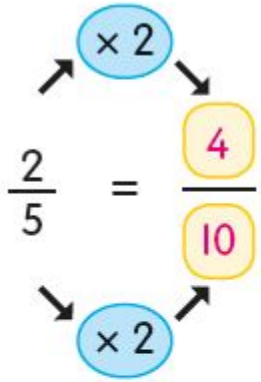
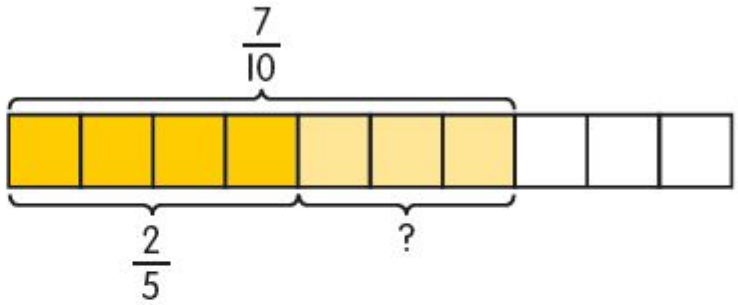
Bar models and fractions

Subtract $\frac{2}{5}$ from $\frac{7}{10}$.





$$\frac{7}{10} - \frac{2}{5} = \frac{7}{10} - \frac{4}{10}$$

$$= \frac{3}{10}$$

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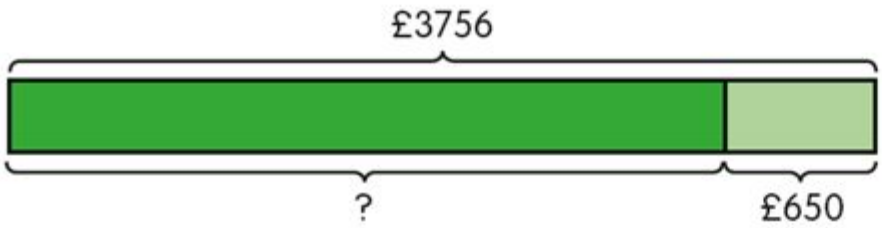
Further multi-step word problems

A youth group had £3756 for a camping trip. They saved £650 and spent the rest on 12 tents and some food for the trip. The tents cost £205 each. How much did they spend on food?



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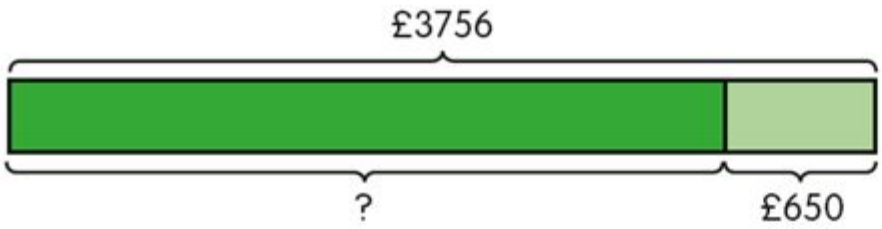

3756 – 650 = 3106

They spent £3106 altogether.

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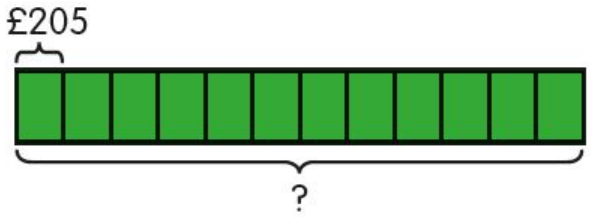

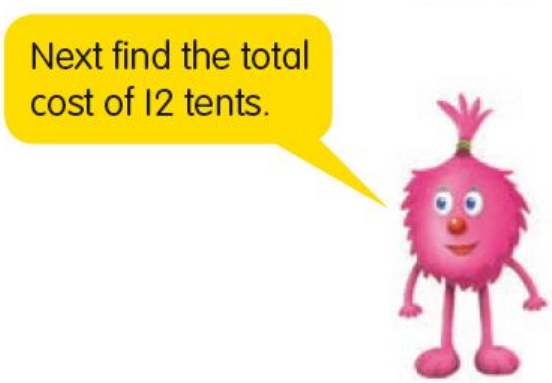

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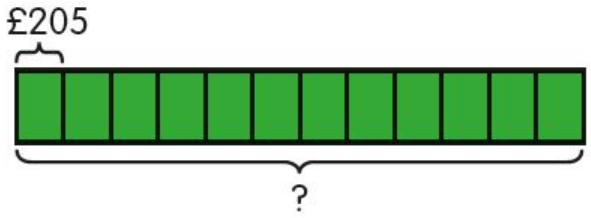
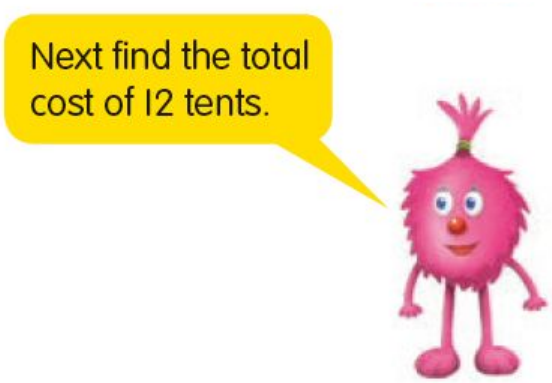


12 × £205 = £ 2460

The 12 tents cost £ 2460 .



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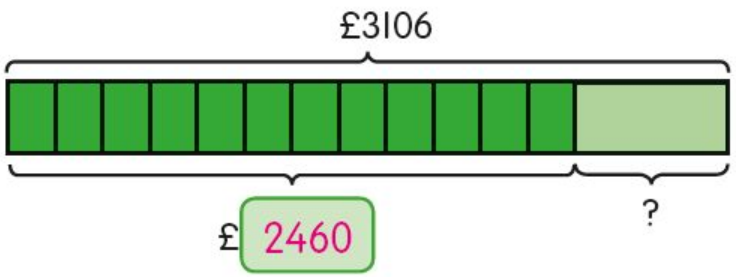
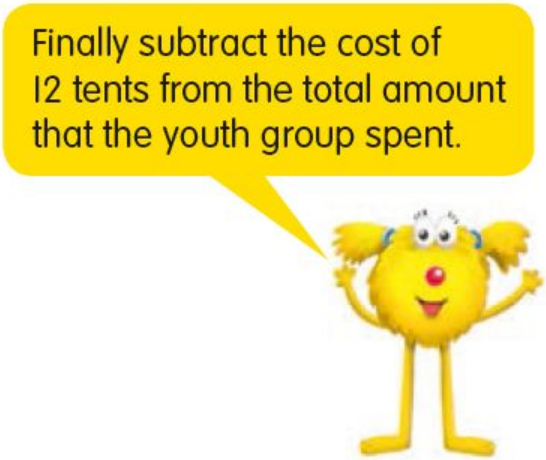


£3106 – £ 2460 = £ 646

They spent £ 646 on food.



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Home Maths

The *Inspire Maths* Pupil Textbooks include 'Home Maths' activities, which are indicated by a purple house icon. These give practical ideas for ways in which you can support your child at home.

Help your child to understand that numbers are a part of daily life. Make a list of all the places your child finds numbers being used at home. Ask them to write down the numbers.

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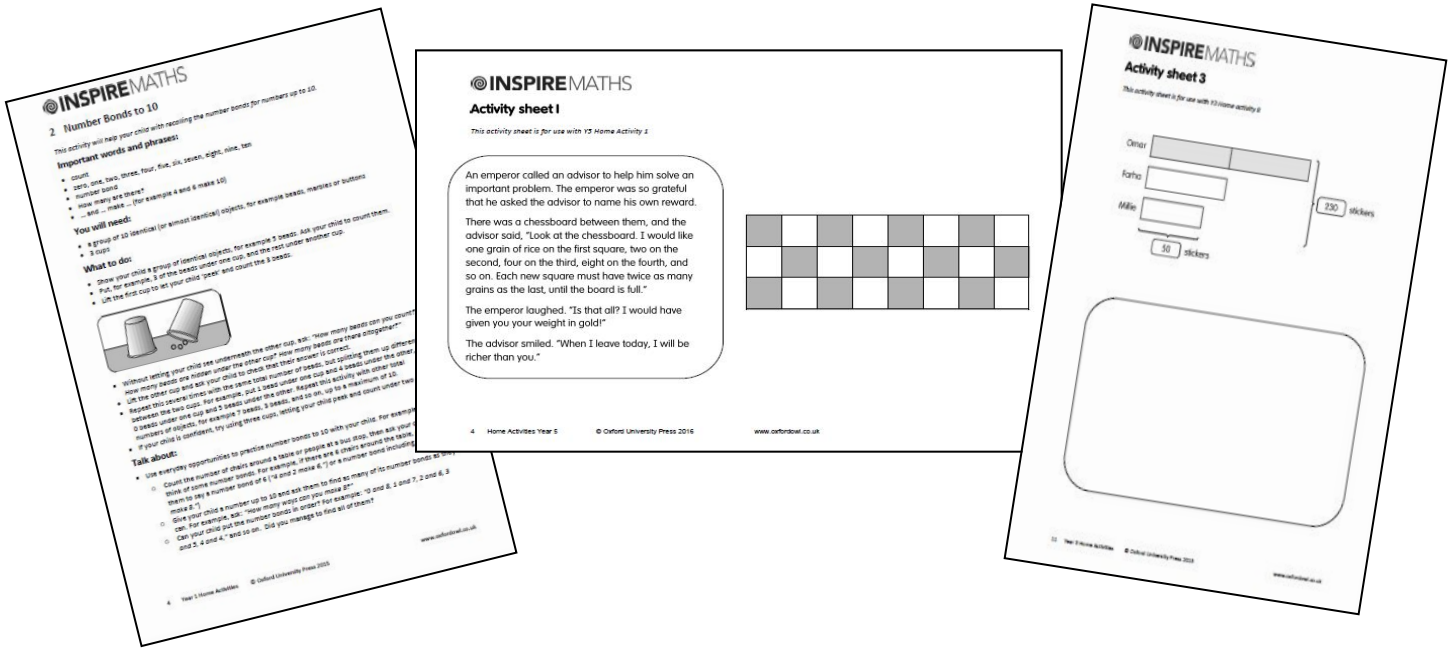
Home activities

From time to time, your child will be given *Inspire Maths* worksheets to complete at home.



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How can I help my child?

You can help your child by finding and talking about maths in everyday situations. For example, a shopping trip is rich in mathematical opportunities, such as:

- spending money, calculating change and working out which offers give the best value for money.
- empty packaging can provide your child will immediate access to 3D shapes and nets.
- using packets and tins as a source of mathematical information to discuss, such as mass and volume.
- using items often sold in pairs, fours and sixes (such as drinks or yogurts) to talk about multiples or times tables.

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How can I help my child?

You can also help your child in a number of other ways:

- Encourage a secure knowledge of number, by asking questions which help them explain what comes before or after a given number, or how the number is made, for example tens and ones.
- Encourage them to draw pictures and models such as part-whole and bar models to answer questions.
- Support them with home activities, and encourage them to answer questions in full sentences.

If you are unsure about any concepts, please ask your child's teacher to explain how it is taught and how you can support your child.

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