

Monday 30th March

Learning focus: In these lessons, you will be solving problems involving proportion where the scale is not a whole number. You will need to use your knowledge of fractions and multiples and will compare and discuss different methods to solve the same question. Two possible methods are suggested for question 1 a). Decide which method is more effective and why. (Flo's method will work for any number of people.)

Problem solving – ratio and proportion 1

Discover

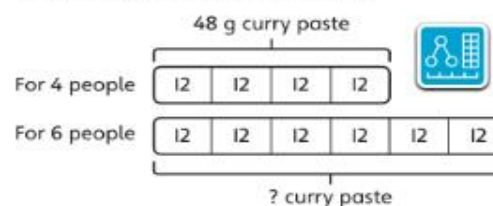


- 1 a) How many grams of curry paste does Toshi need for 6 people?
 b) Toshi has 4 peppers.
 Does he have enough peppers to make the curry for 6 people?

Share

- a) Toshi needs 48 g of curry paste for 4 people.

He is making the recipe for 6 people.

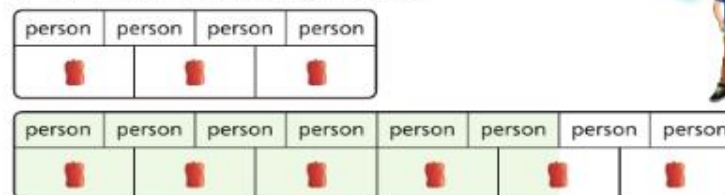


- For 1 person, Toshi needs $48 \div 4 = 12$ g of curry paste.
 For 6 people, Toshi needs $6 \times 12 = 72$ g of curry paste.
 Toshi needs 72 g of curry paste for 6 people.

I will find out how much I need for one person and then multiply by 6.

I noticed that what Toshi needs for 6 people is the amount for 4 people, plus half.

- b) The recipe uses 3 peppers for 4 people.



$\frac{1}{2}$ of 3 peppers is 1.5 peppers.

$$3 + 1.5 = 4.5 \text{ peppers}$$

Toshi needs 4.5 (4 and a half) peppers. He does not have enough to make the curry for 6 people.

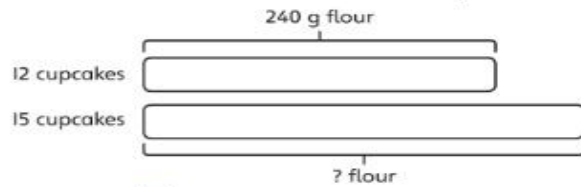
Extension: Rewrite the recipe to serve 10/12/25 people.

Think together

1 Olivia is following this recipe.

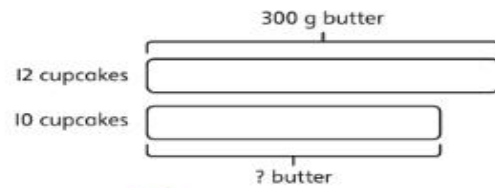


a) How much flour does she need to make 15 cupcakes?



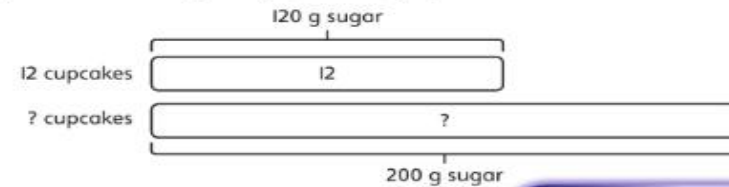
Olivia needs g of flour.

b) How much butter should Olivia use to make 10 cupcakes?



Olivia needs g of butter.

c) If Olivia has 200 g of sugar, how many cupcakes could she make?



Olivia could make cupcakes.

I wonder if I always need to work out the cost of 1 ticket to work some of these out.

2 It costs £7.50 for 3 people to visit an art gallery.

Fill in the missing numbers to complete the table.

Number of people	3	6	15	30	60
Total cost					

3 A club has booked a tennis court for a set amount of time.

There are 6 pairs of players that need to play.

This means each pair gets 20 minutes on the court.

a) If there were 3 pairs, how long would they each get on the court?

b) If there were 8 pairs, how long would they each get on the court?

I think the answer to part a) is 10 minutes because 3 is half of 6 and 10 is half of 20.

I think you need to think differently for this question. I am going to work out the total time they have booked the court for.

CHALLENGE

Extension:

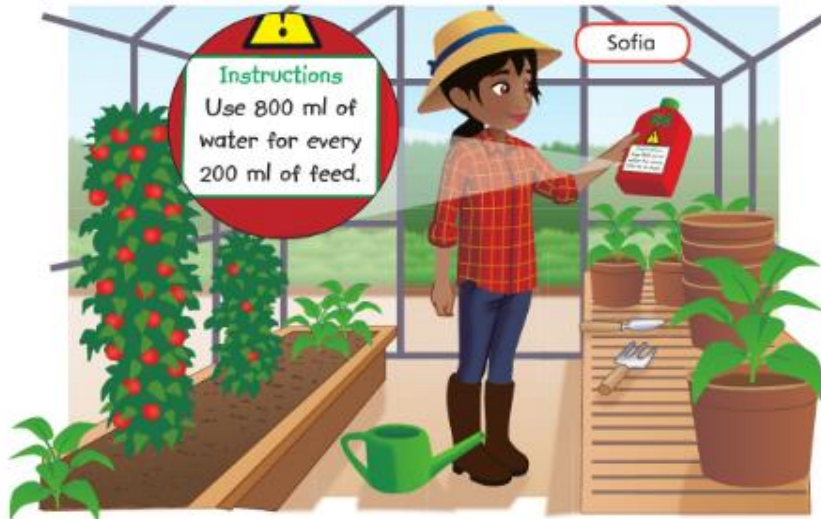
- Use the recipe in question 1 to create a table showing how much flour is needed for different numbers of cupcakes (3/9/30).
- Find a basic takeaway menu. Write and solve some questions based on the menu. For example:
Lexi bought 3 coffees and 2 pieces of cake. It cost £13.60 in total. How much did each piece of cake cost if 1 coffee costs £2.20?

Tuesday 31st March

Learning focus: In these lessons, you will be solving problems involving proportion where the scale is not a whole number. You will need to use your knowledge of fractions and multiples and compare and discuss different methods to solve the same question.

Problem solving – ratio and proportion 2

Discover



- 1 a) How much water does Sofia need to add to 350 ml of tomato feed?
- b) Sofia gives the large tomato plant twice as much feed as the small plant.
If she gives the two plants 1,200 ml of feed in total, how much feed does each plant get?

Share



I wrote it as a ratio and simplified by dividing.

- a) 200 ml of tomato feed is needed for every 800 ml of water.

Method 1

This means that for every 1 ml of plant feed, Sofia needs 4 ml of water.

$$\begin{array}{c} \text{Water : Feed} \\ 800 : 200 \\ \div 200 \quad \leftarrow \quad \rightarrow \quad \div 200 \\ 4 : 1 \end{array}$$

To work out how much water Sofia must add to 350 ml of feed, we multiply by 350.

$$\begin{array}{c} \text{Water : Feed} \\ 4 : 1 \\ \times 350 \quad \leftarrow \quad \rightarrow \quad \times 350 \\ 1,400 : 350 \end{array}$$

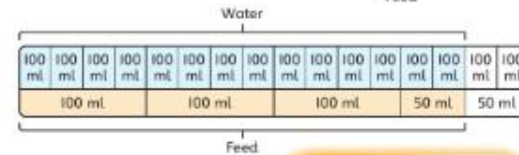
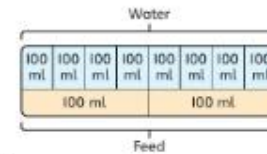
Sofia needs to add 1,400 ml of water.

Method 2

800 ml water for 200 ml of plant feed.

400 ml water for 100 ml of plant feed.

200 ml water for 50 ml of plant feed.



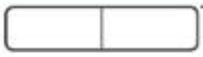

So, for 350 ml of plant feed we add these up:

$$800 + 400 + 200 = 1,400 \text{ ml of water}$$

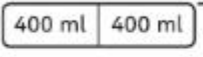

Sofia needs to add 1,400 ml of water to 350 ml of tomato feed.

I drew a bar model to show the comparison and scaled it up.




b) Big plant  } 1,200 ml
 Small plant  }

$1,200 \text{ ml} \div 3 = 400 \text{ ml}$
 $400 \text{ ml} \times 2 = 800 \text{ ml}$

Big plant  } 1,200 ml
 Small plant 


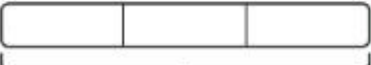
The big plant gets 800 ml of feed.
 $400 \text{ ml} \times 2 = 800 \text{ ml}$
 The small plant gets 400 ml of feed.

I drew a bar model where the bar for the big plant was twice as long as the bar for the small plant. I know in total Sofia uses 1,200 ml of feed.



Think together


1 At a holiday club, the ratio of children is 2 boys for every 3 girls.
 There are 27 girls at the club. How many boys are there?

Boys 
 Girls 

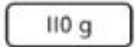

Choose your method or try both. Which one do you prefer? Can you see the connection?

Boys : Girls
 2 : 3
 ? : 27

There are boys at the club.



2 Amelia has two parcels to post.
 One weighs three times as much as the other.
 If the lighter parcel weighs 110 g, how much do the parcels weigh in total?



Lighter parcel  }
 Heavier parcel  }

The total weight of the parcels is g.

3 It takes a lorry driver 3 days to travel 784 km.
 She drives twice as far on the second day as she did on the first day.
 On the third day, she drives twice as far as she did on the second day.
 How far does she drive on the second day?

I will draw a bar model with three bars.

I wonder how many equal parts there will be in your bar model once you have drawn it.

CHALLENGE

Wednesday 1st April

This is the end of unit assessment for ratio and proportion. You can use practical resources, such as counters, to represent the problems, if that helps. Draw bar models and diagrams to show what calculations are needed. Read and re-read the questions carefully:

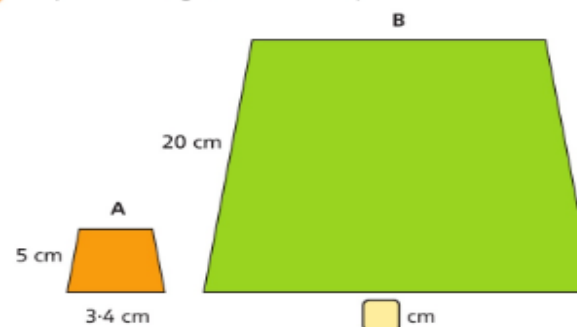
- What is the key information you need to take from the question?
- What do you need to work out?

End of unit check



- 1 On a farm, for every 1 cow there are 4 sheep.
There are 24 cows. How many more sheep than cows are there?
A 4 B 72 C 24 D 96
- 2 Max measures his goldfish. It is 12.5 cm long.
It is five times bigger than when he bought it.
How big was the goldfish when Max bought it?
A 2.5 cm B 7.5 cm C 17.5 cm D 62.5 cm
- 3 In a school, the ratio of children having a school dinner to children having a packed lunch is 2 : 3.
There are 240 children in the school. How many have a packed lunch?
A 48 B 96 C 144 D 160
- 4 On a map scale, 1 cm represents 2 m.
Which of these statements is not true?
A A distance of 5 cm on the map is equal to 10 m in real life.
B A distance of 1 cm on the map is equal to 200 cm in real life.
C This is the same as the scale 1 : 200.
D A distance of 50 m in real life is equal to 100 cm on the map.

- 5 Shape A is enlarged to create shape B.



- What is the missing measurement?
A 5.5 cm B 6.8 cm C 13.6 cm D 34 cm

- 6 8 identical cubes and 5 identical spheres have a total mass of 200 g.
The mass of 4 cubes is 80 g.
What is the mass of 7 cubes and 2 spheres?

- 7 In a pattern, for every 7 circles there are 3 squares and 2 diamonds.



- There are 63 circles in the pattern.
How many shapes are there altogether?