Monday 27.4.2020 Y6 Modelled Example Unit 12 Lesson 7

Similar shapes

Discover

1 a) The two rectangles are **similar**, but the triangles are not.

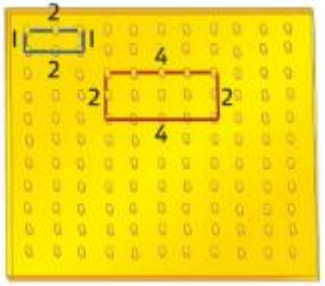
What do you think it means for two shapes to be similar?

b) How could you make the two triangles similar?

Unit 12: Ratio and proportion, Lesson 7

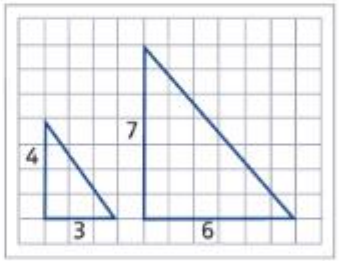
Share

a) Zac has made two rectangles.



Each side of the larger rectangle is two times bigger than the corresponding side of the smaller rectangle.

So, the rectangles are similar.



These triangles look similar, as they both have a right angle. I am not sure why they are not similar.

If two shapes are **similar**, all of their sides have to be the same times as big.

$3 \times 2 = 6$

4×2 does not equal 7.

Lexi has drawn two triangles. One of the sides of the big triangle is two times bigger than the corresponding side of the small triangle, but another side is not.

So, Lexi's triangles are not similar.

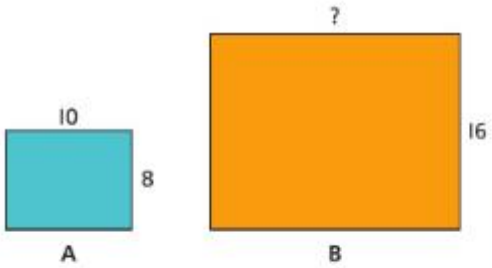
Discuss with your carer and then complete the lesson in your book 6B p171

b) You could make the two triangles similar by making the big triangle 8 units high not 7.

The two triangles are now similar.

Think together

1 These two rectangles are similar.



a) What is the scale factor of enlargement?

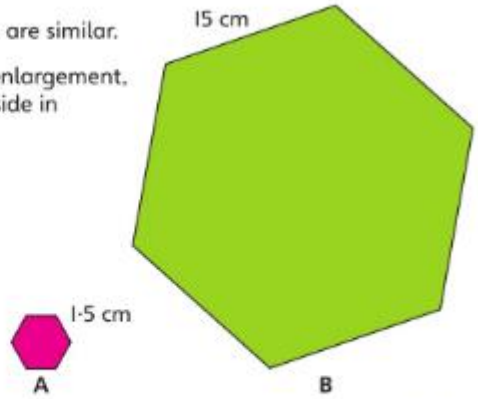
b) What is the length of rectangle B?

c) What do you think it means to enlarge rectangle A by a scale factor of 3?

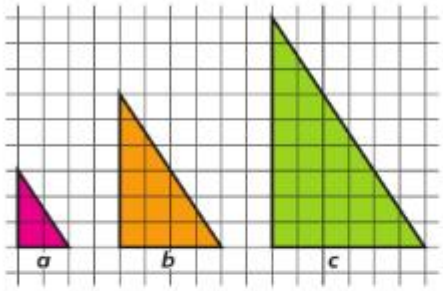
2 These two regular hexagons are similar.

What is the scale factor, or enlargement, of a side in hexagon A to a side in hexagon B?

Explain how you know.



3 These triangles are **similar**.



a) What is the ratio of side *a* to side *b*? ☐ : ☐

b) What is the ratio of side *b* to side *c*? ☐ : ☐

c) Describe or draw two shapes with sides that have the ratio 1 : 5.

Do the same for two shapes that are in the ratio 2 : 1.

→ Practice book 6B p171

Tuesday 28.4.2020 Y6 Modelled Example Unit 12 Lesson 8

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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.

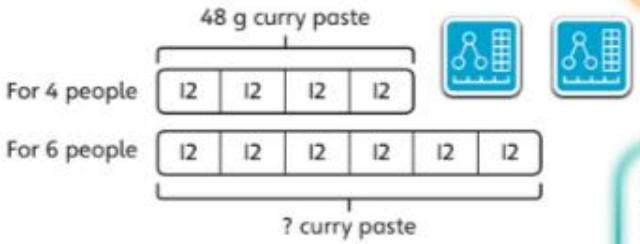
Does he have enough peppers to make the curry for 6 people?

Share

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

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

He is making the recipe for 6 people.



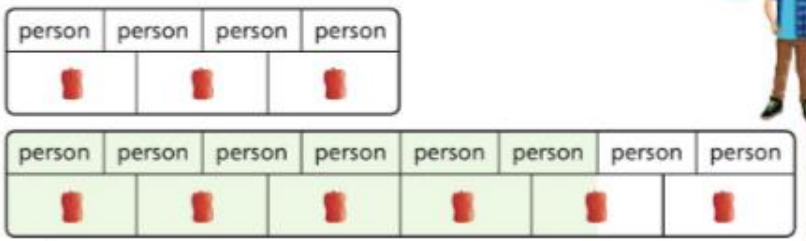
I noticed that what Toshi needs for 6 people is the amount for 4 people, plus half.

For 1 person, Toshi needs 48 ÷ 4 = 12 g of curry paste.

For 6 people, Toshi needs 6 × 12 = 72 g of curry paste.

Toshi needs 72 g of curry paste for 6 people.

b) The recipe uses 3 peppers for 4 people.



$\frac{1}{2}$ of 3 peppers is 1·5 peppers.

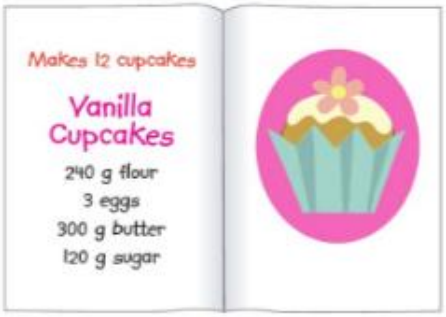
3 + 1·5 = 4·5 peppers

Toshi needs 4·5 (4 and a half) peppers. He does not have enough to make the curry for 6 people.

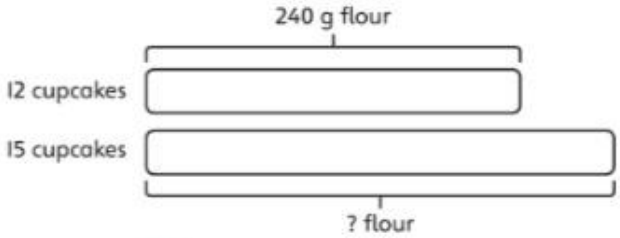
Discuss with your carer and then complete the lesson in your book 6B p174

Think together

1 Olivia is following this recipe.

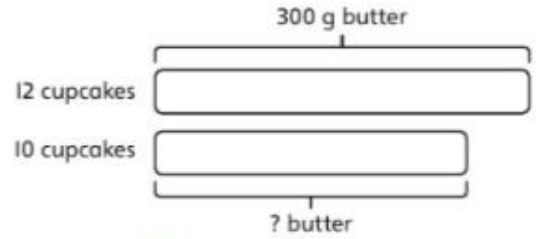


a) How much flour does she need to make 15 cupcakes?



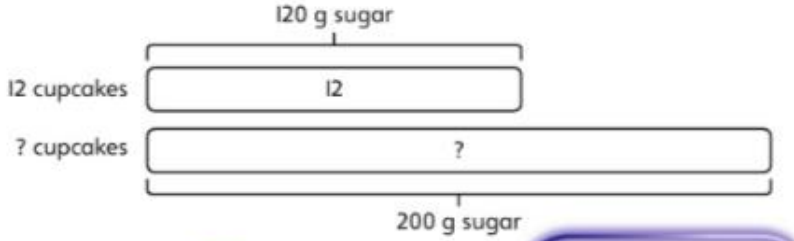
Olivia needs ☐ g of flour.

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

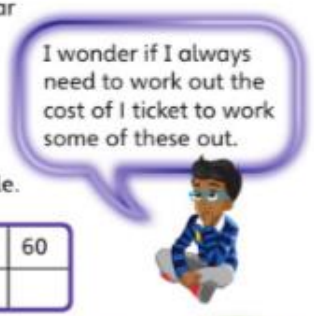


Olivia needs ☐ g of butter.

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



Olivia could make ☐ cupcakes.



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?

Wednesday 297.4.2020 Y6 Modelled Example Unit 12 Lesson

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.

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

Sofia needs to add 1,400 ml of water.

Water : Feed

800 : 200 (÷ 200) → 4 : 1 (÷ 200)

Water : Feed

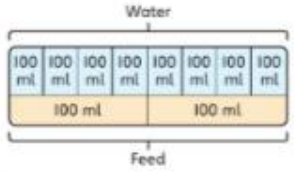
4 : 1 (× 350) → 1,400 : 350 (× 350)

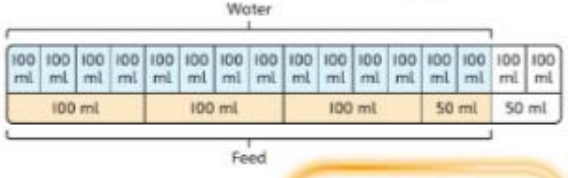
Method 2

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:

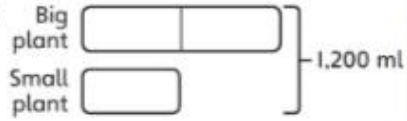
800 + 400 + 200 = 1,400 ml of water

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.

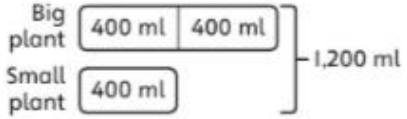
Discuss with your carer and then complete the lesson in your book 6B p177

b)



1,200 ml ÷ 3 = 400 ml

400 ml × 2 = 800 ml



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.

The big plant gets 800 ml of feed.

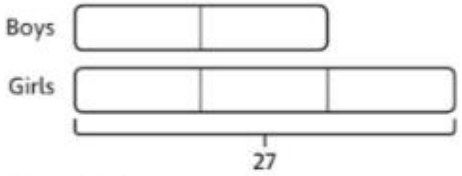
400 ml × 1 = 400 ml

The small plant gets 400 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

2 : 3

? : 27

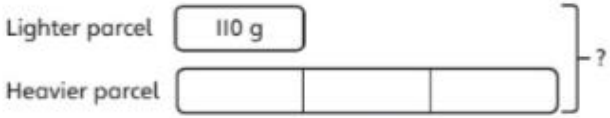
There are ☐ boys at the club.

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

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?



The total weight of the parcels is ☐ g.

CHALLENGE

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.

Thursday 30.4.2020 Y6 Modelled Example Unit 12 Unit Check

Discuss with your carer and then complete the lesson in your book 6B p180

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?

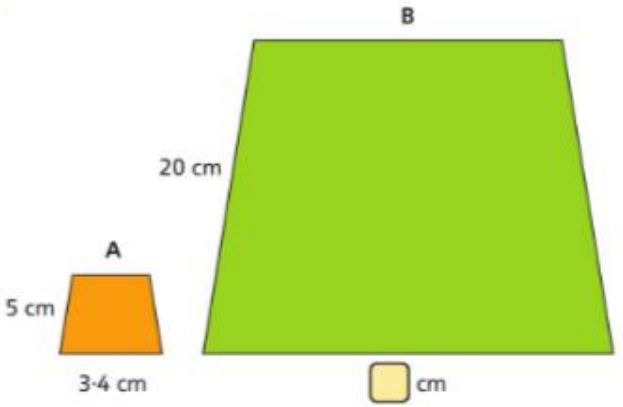
A A distance of 5 cm on the map is equal to 10 m in real life.

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?

We've made it to the final book – 6C
Unit 13 requires protractors and compasses for almost all the lessons so I will save this unit for later in the term for if we come back to school. If not, I'll give you lots of time to get protractors and compasses.
Skip to Unit 14

Unit 14
Problem solving

In this unit we will ...

- Solve problems about number, including fractions and ratio
- Use representations to help make sense of problems
- Use the four operations flexibly
- Reason about problems with a context and without a context
- Apply understanding of measurement and geometry to solve problems

We will need some maths words. Which ones do you remember?

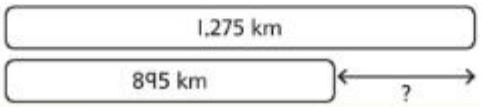
partition estimate round
compare equivalent percentage
ratio proportion convert
common denominator coordinates
translation reflection vertex
scaling isosceles triangle

In previous units, we used the four operations to solve calculations. Which operations do you need to find the value of the triangle?

▲ + ▲ − 120 = 300

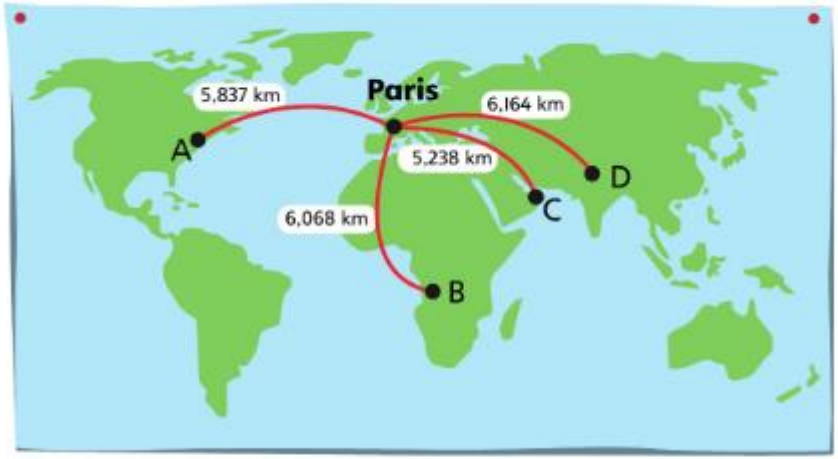
We will also use bar models and number lines.

What values do the question marks represent in the number line and bar model?

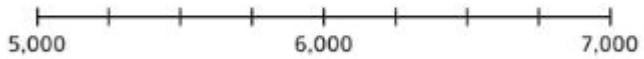


Problem solving – place value

Discover



1 a) Place each distance shown on the map on this number line.

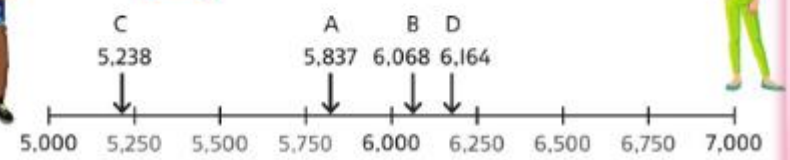


b) The distance from Paris to three of the cities rounds to the same multiple of 1,000 km. What is the multiple, and which are the cities?

Share

a) I can work out the scale on the number line. There are four intervals for each 1,000. Each interval is 1,000 ÷ 4 = 250.

I can estimate the position of each number. 5,837 is closer to 5,750 than to 6,000.



b) I am going to round each number to the nearest 1,000. I need to check the hundreds digit.

I can round each number by looking at the number line.

City A: 5,837 rounds up to 6,000.

City B: 6,068 rounds down to 6,000.

City C: 5,238 rounds down to 5,000.

City D: 6,164 rounds down to 6,000.

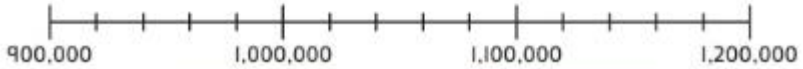
The distance from Paris to cities A, B and D rounds to 6,000 km.

Discuss with your carer and then complete the lesson in your book 6C p45

Think together

1 The approximate population of four cities is shown here.

Where will each number be positioned on this number line?



I wonder what intervals the number line is going up in.

Do you think that the next interval after 900,000 is 900,001?

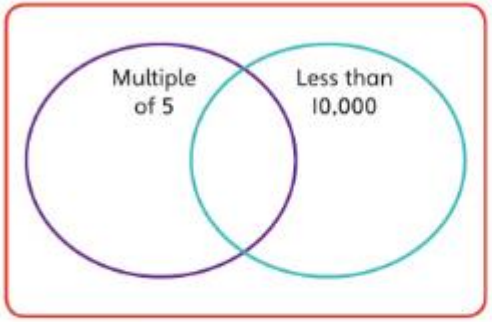
2 The populations of the cities in question 1 are compared. Complete the statements to make them true.

a) 942,000 > ☐

b) 924,500 < ☐ < 1,025,000

You can use the number line from question 1 to help you.

3 Put each number in the correct place in the sorting circles.



6,551 4,000
12,750 500
10,001 20,615

CHALLENGE

4 Luis makes three different 4-digit numbers using these cards.

He places each number in a different section on the number line.

- He places an odd number in section B. It rounds up to the nearest 1,000.
- The number in section D is a multiple of 10 but not a multiple of 50.
- The last number has an even number of hundreds.

Find three numbers that Luis could have made.

I wonder if I can find more than one solution to this problem.