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20

20

24

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64

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68

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76

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This tells you which page you need.



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The first page of a lesson is a maths problem. Don't look at the next page until you have had a go! The third and fourth pages give you practice, so you can check your understanding.



# Lesson 1

## Solving equations 2

### Discover

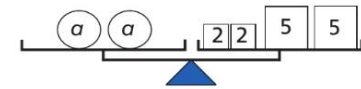


- 1 a) Represent Kate's number as  $a$ .  
Write down an equation that you can use to find Kate's number.
- b) What was Kate's number?

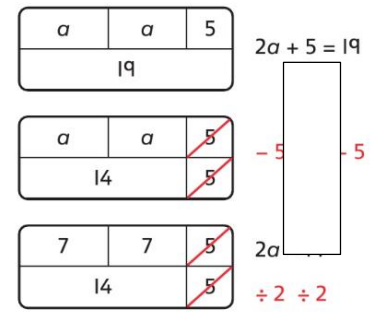
### Share

- a) Start with Kate's number.  $a$   
Double  $a$ , which is the same as multiplying by 2.  $2a$   
Now add 5.  $2a + 5$   
The answer is 19, which can be written  $2a + 5 = 19$ .  
This is the equation that needs to be solved.

- b)  $2a + 5 = 19$   
 $- 5 \quad - 5$   
 $2a = 14$   
So  $a$  must be 7, because  $2 \times 7 = 14$ .



I used the balance model.



I solved the equation using a bar model.



Kate's number was 7.

# Lesson 1

## Solving equations 2

1 Complete and solve the equation for each mystery number problem.

a) I am thinking of a number. I multiply it by 3 and then add 2. Now I have 17.

Isla



$$\begin{aligned}
 3a + \square &= \square \\
 - \square &- \square \\
 3a &= \square \\
 \div \square &\div \square \\
 a &= \square
 \end{aligned}$$

b) I am thinking of a number. I multiply it by 4 and then add 80. Now I have 100.

Ebo



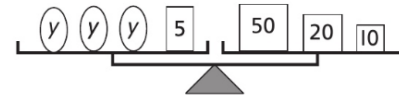
$b$	$b$	$b$	$b$	$80$
$100$				

$$\begin{aligned}
 \square b + \square &= \square \\
 b &= \square
 \end{aligned}$$

2 Solve  $50 = 15 + 5c$ .

$15$	$\square$
$50$	

3 Write an equation for the balance scales and solve it.



4 Bella has 50 stickers. Max has 6 packets of stickers and 3 more stickers. He has 1 more sticker than Bella.

Use  $n$  to represent the number of stickers in a packet.

Write an equation and solve  $n$ .

5 Solve each equation.

a)  $4a - 30 = 50$

c)  $30 = 3b - 12$

b)  $2c - 50 = 80$

d)  $80 - 2d = 50$

# Lesson 2

## Solving equations 3

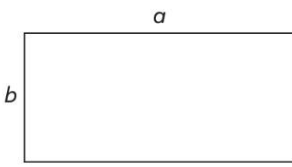
### Discover



We need 20 metres of fencing to make a rectangular alpaca enclosure.

Holly

- 1 a) The perimeter of the enclosure is 20 m.  
Write an equation for the perimeter of the enclosure. Find different solutions for  $a$  and  $b$ .
- b) Which solution has the greatest area?



### Share

a)

The formula is  
 perimeter =  $2a + 2b$  or  
 perimeter =  $(a + b) \times 2$ .  
 So  $a + b$  must be equal to 10.

Perimeter of rectangle	$a = ?$	$b = ?$
20	1	9
20	2	8
20	3	7
20	4	6
20	5	5
20	6	4

- b) Area is  $a \times b$ .
- The greatest area for this enclosure is  $5 \times 5 = 25 \text{ m}^2$ . That is a square enclosure.

I will think in order. If  $a = 1$ , then  $b = 9$ . I will continue until I start to repeat numbers.

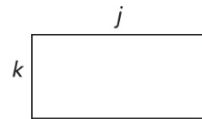


# Lesson 2

## Solving equations 3

- 1 a) A rectangle has a perimeter of 12 cm. Each side is a whole number of centimetres. Find all of the solutions.

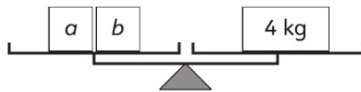
Perimeter	$j = ?$	$k = ?$
12 cm		
12 cm		
12 cm		



- b) Which solution has the greatest area?



- 2 Write an equation to show the balance, and then find five different solutions.



$a = ?$	$b = ?$

- 3 A rectangular playground has an area of 100 m<sup>2</sup>. Each side is a whole number of metres.

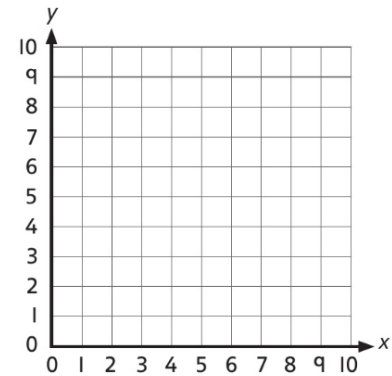
Write an equation and find all the possible measurements.





- 4 Plot solutions to each equation on the grid. Use a different colour for each equation.

- a)  $x + y = 9$
- b)  $x + y = 6$
- c)  $y - x = 2$



## Converting metric measures

### Discover



- 1** a) How could you label the cement and the bucket using different units of measurement?  
 b) How many centimetres long could the piece of wood be?

### Share

- a) To **convert** between units of measurement, you need to know what one unit is worth.

To convert from a larger unit to a smaller unit, you multiply.  
 To convert from a smaller unit to a larger unit, you divide.

grams > kilograms

$$40,500 \div 1,000 = 40.5$$

grams is a smaller unit of measure than kilograms, so divide  
 1 kg = 1,000 g, so divide by 1,000

litres > millilitres

$$9.25 \times 1,000 = 9,250$$

litres is a larger unit of measure than millilitres, so multiply  
 1 l = 1,000 ml, so multiply by 1,000



40,500 g can be written as 40.5 kg.      9.25 l can be written as 9,250 ml.

TTh	Th	H	T	O	.	Tth	Hth
4	0	5	0	0	.		
			4	0	.	5	

TTh	Th	H	T	O	.	Tth	Hth
				9	.	2	5
	9	2	5	0	.		

- b) metres  $\longrightarrow$  centimetres

larger unit  $\longrightarrow$  smaller unit, so multiply

$$1.2 \times 100 = 120$$

$$1.3 \times 100 = 130$$

The piece of wood is between 120 cm and 130 cm long.

It could be 123 cm long.

# Lesson 3

## Converting metric measures

1 Complete the calculations.

a) Convert 8.5 kilograms into grams.

kilograms → grams

larger unit → smaller unit, so multiply

grams = 1 kg, so  $\times$  by .

8.5  $\times$   =

8.5 kg =  g

b) Convert 4,200 metres into kilometres.

metres → kilometres

\_\_\_\_\_ unit → \_\_\_\_\_ unit, so  $\div$

m = 1 km, so  $\div$  by .

4,200  $\div$   =

4,200 m =  km

Use a place value grid to help with the calculations.



2 a) Convert from litres to millilitres.

2 l =  ml

3 l =  ml

3.5 l =  ml

3.54 l =  ml

35.4 l =  ml

b) Convert from grams to kilograms.

5,000 g =  kg

6,000 g =  kg

6,500 g =  kg

6,580 g =  kg

65,800 g =  kg

3 Fill in the missing measurements.

a) 5 m =  cm      e) 0.03 km =  m

b) 7.5 kg =  g      f) 12 l 50 ml =  ml

c)  l = 650 ml      g) 8 km 400 m =  m

d)  mm = 3.4 cm      h) 1 kg 5 g =  g



4 Lexi has tried to convert two measurements but she has made a different mistake each time.

Find Lexi's mistakes and write the correct answers.

a) 2.6 kg → grams       $2.6 \times 100 = 260$  g

Mistake: \_\_\_\_\_

Correct answer: \_\_\_\_\_

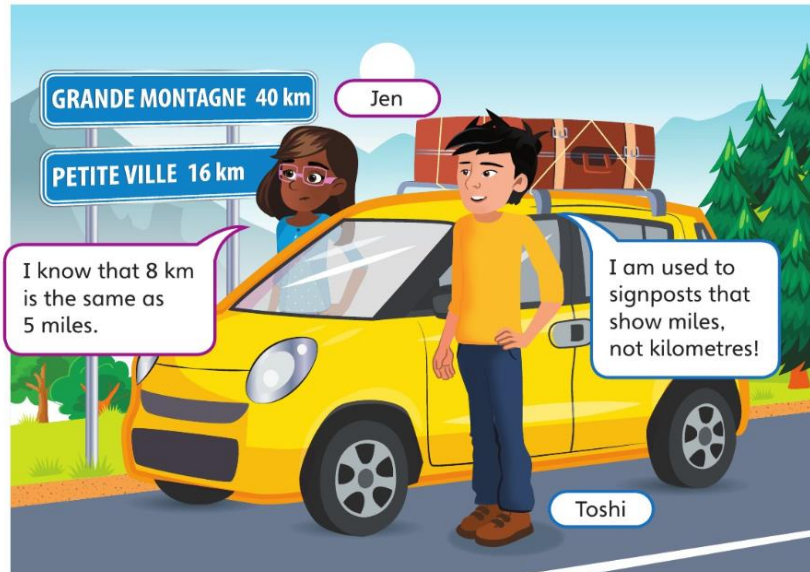
b) 4.9 m → cm       $4.9 \div 100 = 0.049$  cm

Mistake: \_\_\_\_\_

Correct answer: \_\_\_\_\_

## Miles and km

### Discover



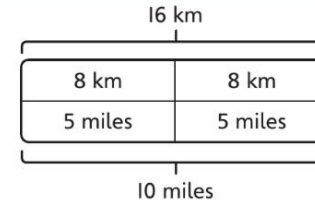
- 1 a) What are the distances to Petite Ville and Grande Montagne in miles?  
 b) What other facts about miles and kilometres can you work out?  
 How could a graph help you to find more facts?

### Share

a)

8 km
5 miles

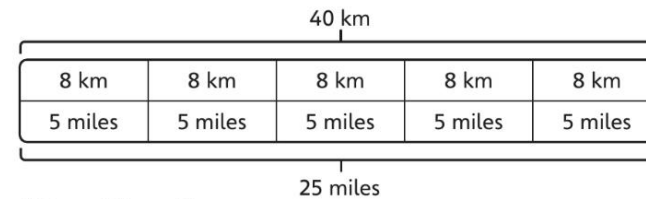
So



$$16 \text{ km} \div 8 \text{ km} = 2$$

$$2 \times 5 \text{ miles} = 10 \text{ miles}$$

Petite Ville is 10 miles away.



$$40 \text{ km} \div 8 \text{ km} = 5$$

$$5 \times 5 \text{ miles} = 25 \text{ miles}$$

Grande Montagne is 25 miles away.

b)



I am going to use the fact that 5 miles is about 8 km to make a **conversion table**. Then I can find lots of new facts.

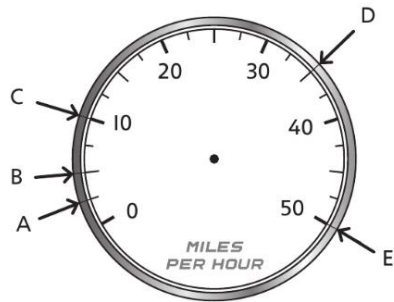
Miles	km
5	8
10	16
15	24
20	32
25	40
30	48



# Lesson 4

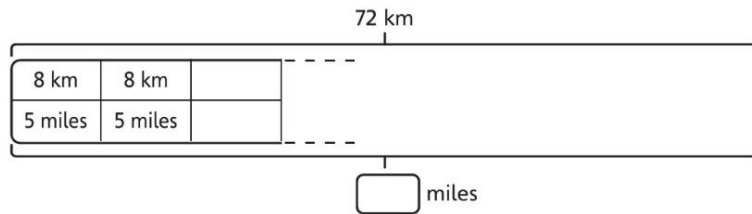
## Miles and km

- 1 A speedometer shows a car's speed in miles per hour (mph).  
5 miles is about the same as 8 kilometres.  
Convert each speed into kilometres per hour (km/h).  
The first one has been done for you.



	Speed (mph)	Speed (km/h)
A	2.5	4
B		
C		
D		
E		

- 2 How many miles are the same as 72 km?  
Complete the bar model to work out the answer.



$72 \text{ km} \div 8 \text{ km} = \text{[ ]}$

$\text{[ ]} \times \text{[ ]} \text{ miles} = \text{[ ]} \text{ miles}$

- 3 Complete the table of lengths and use it to find the longest river.

Name of river	Length (miles)	Length (km)
River Mersey	70	
River Tamar		80
River Severn	220	
River Clyde		176

The longest river is the \_\_\_\_\_.

- 4 Aki and Ambika are working out what 100 miles is in kilometres.



Aki

I know that 1 mile is about 1.6 km, so I am going to work out  $100 \times 1.6$ .

5 miles are about 8 km. I am going to find out how many 5s are in 100 and then multiply by 8.

Ambika



Whose method will give the correct answer? Circle your choice:

Aki      Ambika      Both

What is the correct answer? 100 miles is about  km.