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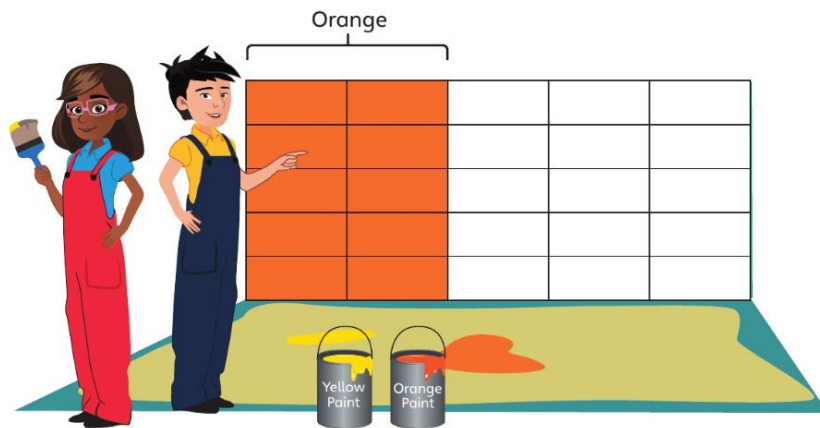
The first page of a lesson is a maths problem. Don't look at the next page until you have had a go! The third and fourth pages give you practice, so you can check your understanding.



# Lesson 1

## Converting fractions to percentages

### Discover



Jen

Toshi

- 1** a) What percentage of the wall is painted orange?
- b) Jen and Toshi want to paint 30% of the wall yellow.  
How many rectangles do they need to paint yellow?

### Share

- a) The whole wall is 100%.

There are 25 rectangles on the wall.

$$100 \div 25 = 4$$

4%	4%	4%	4%	4%
4%	4%	4%	4%	4%
4%	4%	4%	4%	4%
4%	4%	4%	4%	4%
4%	4%	4%	4%	4%

Each rectangle represents 4% of the whole wall.

10 rectangles are painted orange.

$$10 \times 4 = 40$$

40% of the wall is painted orange.

I found an equivalent fraction with 100 as the denominator.

$$\frac{10}{25} = \frac{40}{100}$$

× 4

$$\frac{40}{100} = 40\%$$

40% of the wall is painted orange.



- b) The whole wall has 25 rectangles. We need to find 30% of 25.

$$25 \div 10 = 2.5$$

$$\text{So, } 10\% = 2.5$$

$$3 \times 2.5 = 7.5$$

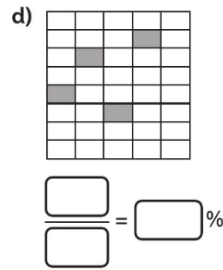
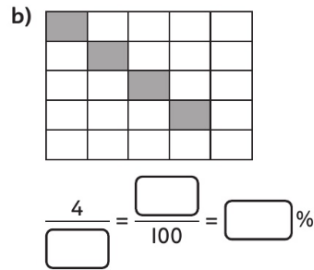
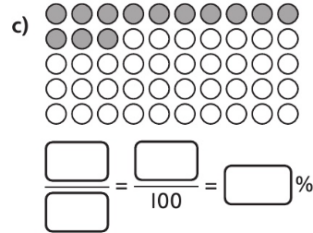
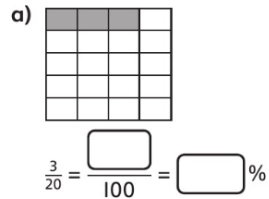
○	○		Y	Y
○	○		Y	Y
○	○		Y	Y
○	○			Y
○	○			Y

Jen and Toshi need to paint 7.5 rectangles yellow.

# Lesson 1

## Converting fractions to percentages

1 What percentage is shaded?



2 Complete each equivalent fraction and then draw a line to its matching percentage.

$\frac{19}{20} = \frac{\boxed{\phantom{00}}}{100}$

$\frac{19}{25} = \frac{\boxed{\phantom{00}}}{100}$

$\frac{19}{50} = \frac{\boxed{\phantom{00}}}{100}$

38%

95%

76%

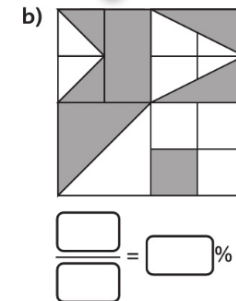
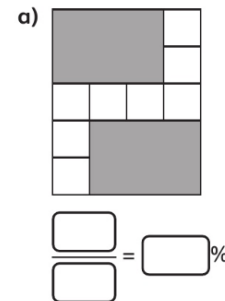
3 Luis and Kate practised penalty kicks. Luis scored 14 out of 20. Kate scored 28 out of 40. What percentage of their penalties did they each score?



4 Reena keeps a record of her hens' eggs. Complete the table.

Week	Number of eggs laid	Number of eggs that hatched	Percentage of eggs hatched
Week 1	10	6	$\frac{6}{10} = 60\%$
Week 2	20	6	$\frac{6}{20} = \boxed{\phantom{00}}\%$
Week 3	8	6	$\frac{6}{\boxed{\phantom{00}}} = \boxed{\phantom{00}}\%$
Week 4	12	6	

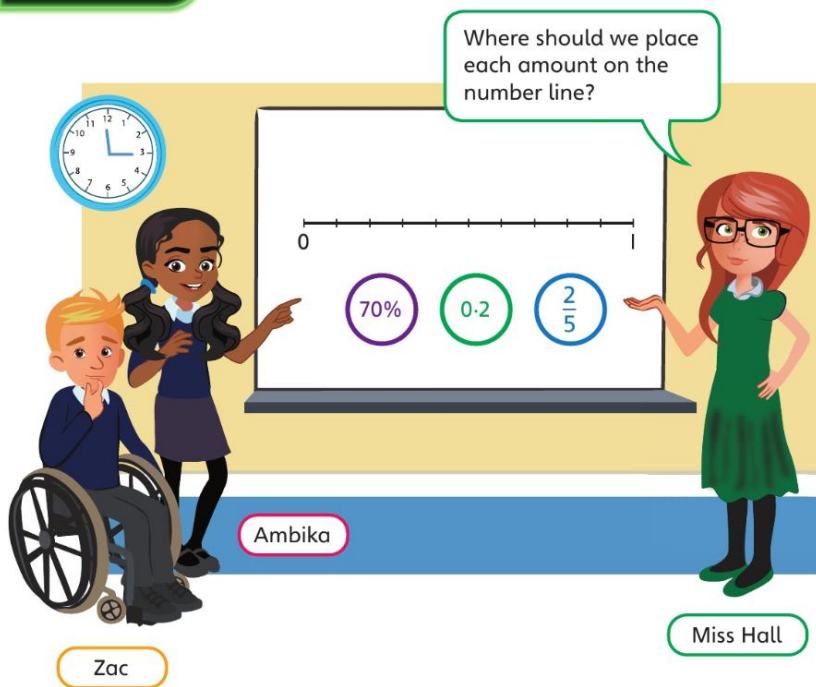
5 What percentage of each picture is shaded?



# Lesson 2

## Equivalent fractions, decimals and percentages 1

### Discover



- Help Ambika and Zac to place the amounts on the number line.
- Where would  $\frac{19}{20}$  go on the number line?

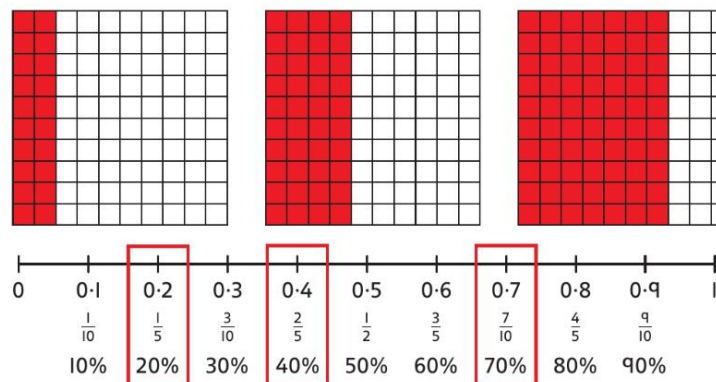
### Share

Each fraction is in its simplest form.



- Decimals, fractions and percentages can all represent equivalent numbers or amounts.

Ambika and Zac should place the numbers as shown below.



- $\frac{19}{20}$  is equivalent to  $\frac{95}{100}$ .

$$\frac{19}{20} = 0.95 = 95\%$$

$\frac{19}{20}$  should be placed as shown below.

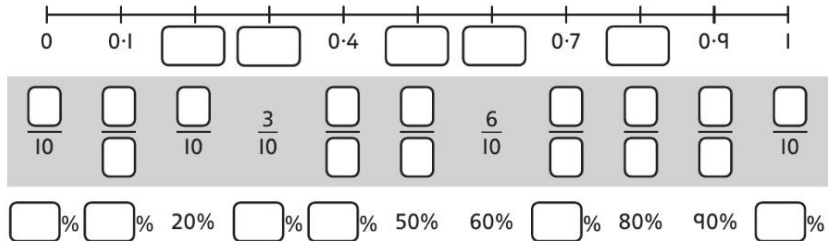
$$\frac{19}{20} \times 5 = \frac{95}{100}$$



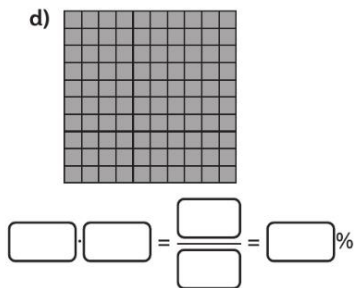
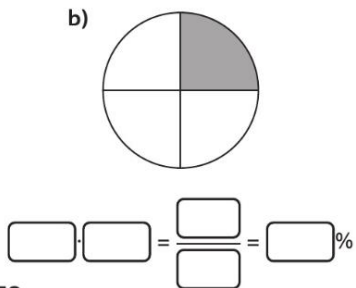
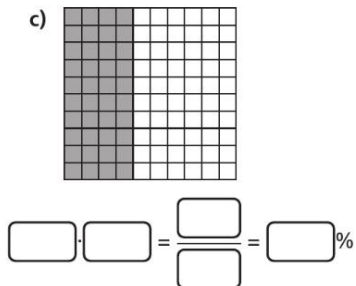
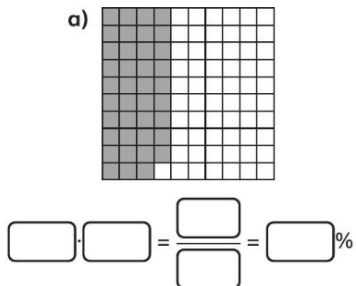
# Lesson 2

## Equivalent fractions, decimals and percentages 1

1 Complete the equivalent decimals, fractions and percentages for this number line.



2 Write the fraction, decimal and percentage represented in each diagram.



3 Match the equivalent amounts.

$\frac{17}{100}$	$\frac{7}{100}$	70%	71%
0.07	0.71	0.17	0.7

4 Complete the table.

Percentage	Decimal	Fraction
66%		
	0.6	
0%		$\frac{9}{100}$
	0.9	

5 Jamie says that to convert a decimal to a percentage, all you have to do is remove the '0' and add '%' to the end. For example, 0.43 = 43%.

So, 0.4 = 4%      and 0.125 = 125%  
Jamie

Explain Jamie's mistakes.

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# Lesson 3

## Equivalent fractions, decimals and percentages 2

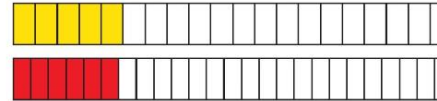
### Discover



- Write Lee's score and Kate's score as fractions. Who was more accurate at the coconut shy?
- Write a fraction that can be found between both scores.

### Share

- Lee's score is  $\frac{5}{20}$ . Kate's score is  $\frac{6}{25}$ . Compare the two fractions  $\frac{5}{20}$  and  $\frac{6}{25}$ .



$$\frac{5}{20} = \frac{5 \times 5}{20 \times 5} = \frac{25}{100}$$

$$\frac{6}{25} = \frac{6 \times 4}{25 \times 4} = \frac{24}{100}$$

Converting fractions into percentages is a good way to compare them.

5 out of 20 is 25%. 6 out of 25 is 24%.

Lee was more accurate at the coconut shy.

- To find a fraction between 24% and 25%, use equivalent fractions.



I chose  $\frac{247}{1,000}$ . I can also write this as a decimal: 0.247.

Any fraction between  $\frac{240}{1,000}$  and  $\frac{250}{1,000}$  can be found between Lee's and Kate's scores, for example  $\frac{247}{1,000}$ .

I wonder if I can find equivalent fractions for 24% and 25% other than thousandths.

I know that  $\frac{5}{20}$  is equivalent to  $\frac{1}{4}$ , but I cannot simplify  $\frac{6}{25}$ .



# Lesson 3

## Equivalent fractions, decimals and percentages 2

1 Fill in the blanks with a < or > sign.

a)  $\frac{4}{5}$  ○ 85%

b) 0.404 ○  $\frac{100}{250}$

c) 99% ○  $\frac{199}{200}$



2 Which two amounts are equal?

$\frac{7}{8}$  90%  $\frac{88}{1,000}$  88%  $\frac{9}{100}$  0.009 0.088 0.7 0.78



=

3 Order these amounts from smallest to greatest.

57%  $\frac{3}{10}$   $\frac{17}{25}$  61% 0.55 0.62  $\frac{41}{50}$

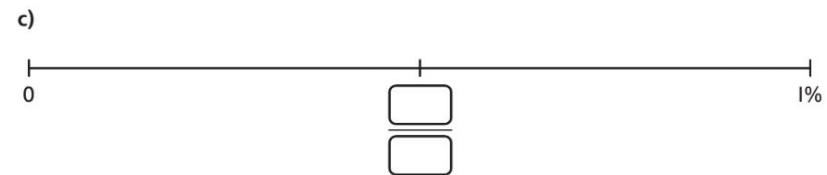
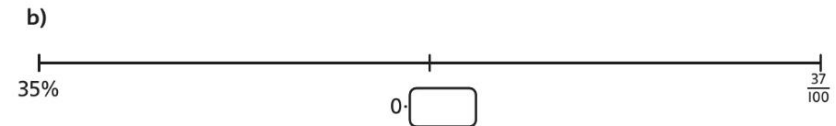
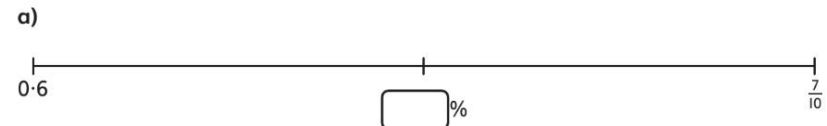


<  <  <  <  <  <

4 Is 1.8 more than  $1\frac{17}{20}$ ? Explain your answer.



5 Find the mid-point between the two amounts on each number line.



# Lesson 4

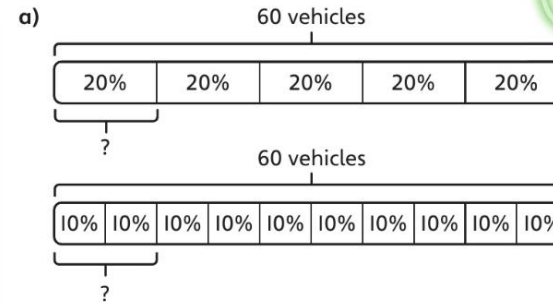
## Percentage of

### Discover



- 1** a) How many motorbikes are on the ferry?  
 b) 25% of the vehicles on the ferry are vans.  
 How many more vans than motorbikes are there?

### Share



There are 5 equal parts of 20% in 100%, so I divided by 5.



**Method 1**

$$\frac{20}{100} = \frac{1}{5}$$

$$60 \div 5 = 12$$

**Method 2**

20% is  $2 \times 10\%$ .  
 10% of 60 is 6.

So, 20% of 60 is 12.

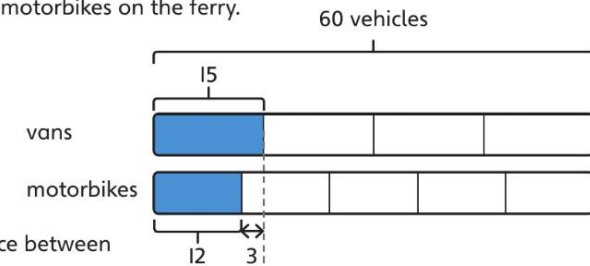
There are 12 motorbikes on the ferry.

I found 10% of the total and then doubled it to find 20%.



- b) 25% of 60 is 15. There are 15 vans on the ferry.

There are 12 motorbikes on the ferry.



The difference between 12 and 15 is 3.

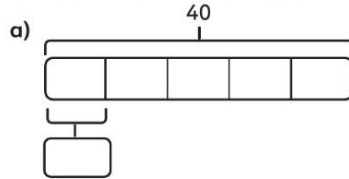
There are 3 more vans than motorbikes on the ferry.



# Lesson 4

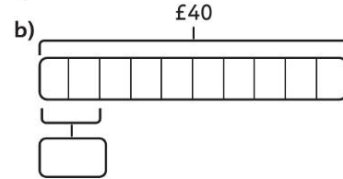
## Percentage of

1 Complete the two methods for finding 20% of £40.



$40 \div 5 = \square$

20% of £40 is £  $\square$ .

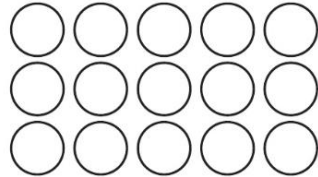


10% of £40 = £  $\square$

20% of £40 = £  $\square$  + £  $\square$   
= £  $\square$

2 Shade 20% of the circles.

20% of  $\square = \square$



3 Explain Zac's mistake. Use diagrams to support your explanation.



Zac

To find 10% of a number, I divide by 10. So, to find 20% of a number, I divide by 20.

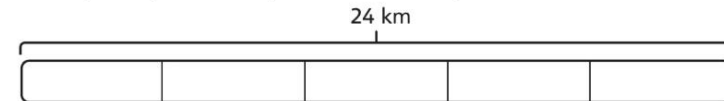
\_\_\_\_\_

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4 Complete the table.

Starting number	10% of the number	20% of the number
400		
410		
41		
401		
	1.4	
		4.1

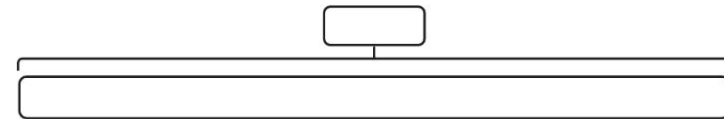
5 a) Ambika takes part in a 24 km cycle ride. She has completed 20% of the journey. How many metres has she cycled?



20% of 24 km =  $\square$  km

Ambika has cycled  $\square$  m.

b) A football crowd is made up of 52,000 fans. 20% support the away team. How many fans support the away team?



20% of  $\square$  is  $\square$ .

$\square$  fans support the away team.