

Mathletics

Fractions, Decimals & Percentages Worksheets



Student book

Year 5

Fractions, decimals and percentages – tenths

Decimal fractions also express parts of a whole. This strip has been divided into 10 equal parts. Three out of ten or $\frac{3}{10}$ is shaded.

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

We can also express this as 0.3. There are no whole ones and 3 tenths.

1 Write the shaded common fraction and its equivalent decimal fraction:

a

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

b

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

c

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

2 Shade the fraction strips to match the common fraction or decimal fraction:

a 0.8

--	--	--	--	--	--	--	--	--	--

b $\frac{5}{10}$

--	--	--	--	--	--	--	--	--	--

c 0.4

--	--	--	--	--	--	--	--	--	--

d 0.9

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3 Use a ruler and a pencil to divide the wholes into tenths. Shade the given amounts and express as decimals:

a

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$\frac{4}{10}$

b

--	--	--	--	--	--	--	--	--	--

$\frac{8}{10}$

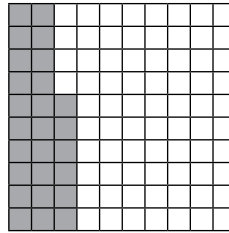
c

--	--	--	--	--	--	--	--	--	--

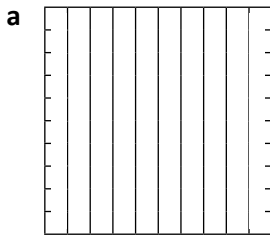
$\frac{5}{10}$

Fractions, decimals and percentages – tenths and hundredths

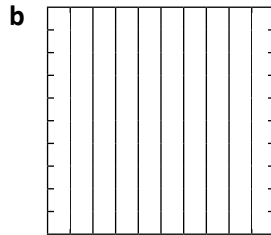
A hundredth is a tenth of a tenth.
Here, 26 hundredths have been shaded.
We write this as **0.26**
There are no ones, 2 tenths and 6 hundredths.



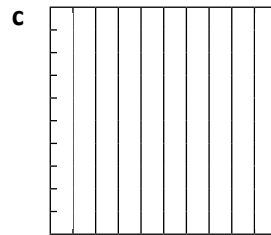
1 Use a ruler and a pencil to divide these into hundredths and then shade the specified amounts:



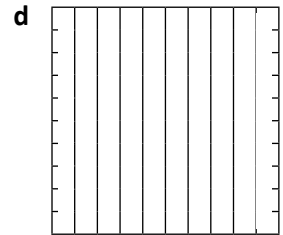
$\frac{61}{100}$ 0 .



$\frac{82}{100}$ 0 .

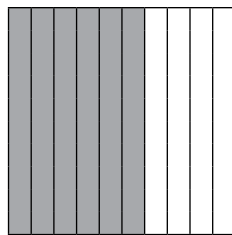


$\frac{55}{100}$ 0 .

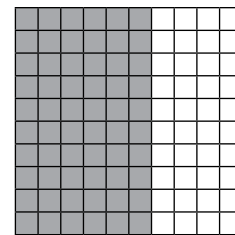


$\frac{27}{100}$ 0 .

Six tenths are shaded here.

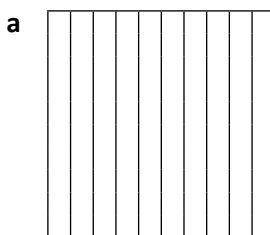


Sixty hundredths are shaded here.

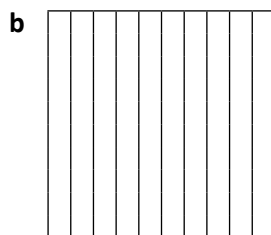
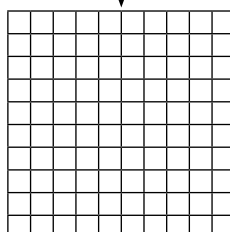


What do you notice? Sixty hundredths and six tenths have the same value $0.60 = 0.6$

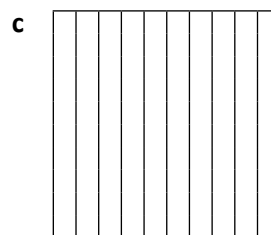
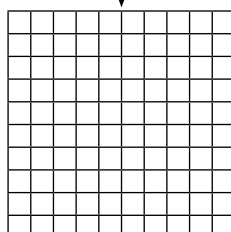
2 Check that the above statement is true by shading the amounts. Are they the same?



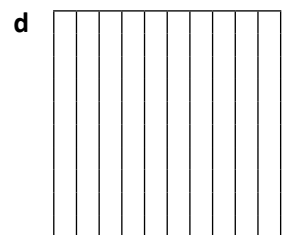
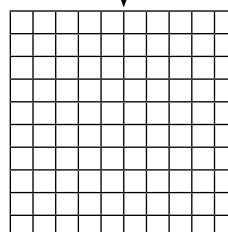
4 tenths
40 hundredths



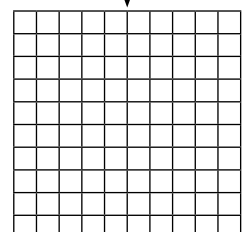
6 tenths
60 hundredths



8 tenths
80 hundredths

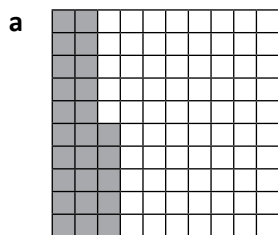


2 tenths
20 hundredths

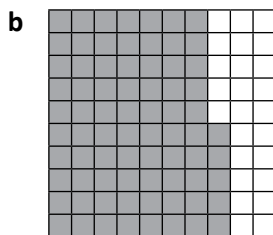


Fractions, decimals and percentages – tenths and hundredths

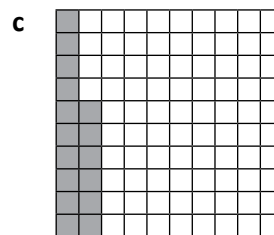
3 Complete these statements. The first one has been done for you.



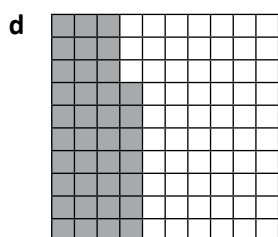
This is $\frac{25}{100}$
It can be renamed as:
 $\frac{2}{10}$ and $\frac{5}{100}$



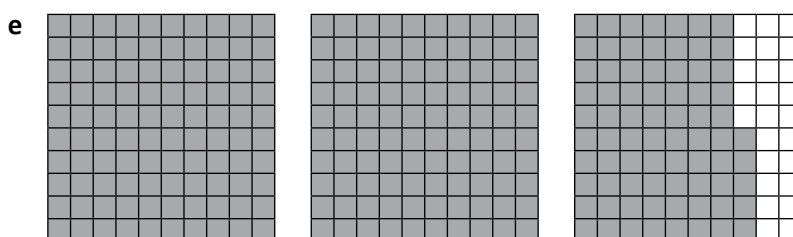
This is $\frac{75}{100}$
It can be renamed as:



This is $\frac{16}{100}$
It can be renamed as:

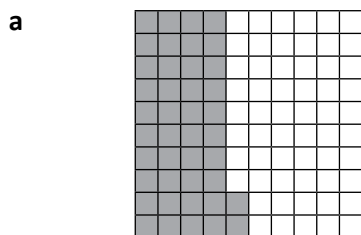


This is $\frac{37}{100}$
It can be renamed as:

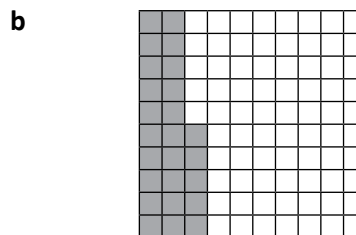


This represents 2 wholes and $\frac{75}{100}$
It can be renamed as:

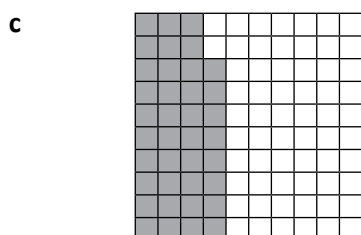
4 Complete the missing information:



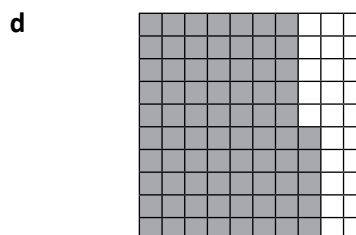
$$\frac{42}{100} = \frac{4}{10} + \frac{2}{100} = \boxed{}.\boxed{}$$



$$\frac{}{100} = \frac{}{10} + \frac{}{100} = \boxed{}.\boxed{}$$



$$\frac{}{100} = \frac{}{10} + \frac{}{100} = \boxed{}.\boxed{}$$



$$\frac{}{100} = \frac{}{10} + \frac{}{100} = \boxed{}.\boxed{}$$

Fractions, decimals and percentages – place value to thousandths

A thousandth is a tenth of a hundredth.

Ones		Tenths	Hundredths	Thousandths
2	•	2	5	6

This number has 2 ones, 2 tenths, 5 hundredths and 6 thousandths.

1 Write these numbers in the place value chart:

	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
a 5 tens, 3 ones and 8 tenths					•		
b 7 hundreds, 8 tens, 4 ones, 2 tenths and 3 hundredths					•		
c 9 tens, 8 tenths and 4 thousandths					•	0	
d 6 hundreds, 8 tenths, 4 hundredths and 3 thousandths			0	0	•		
e 4 ones, 9 tenths and 8 hundredths					•		
f 3 ones, 4 tenths and 2 hundredths					•		
g 2 tens, 3 ones, 4 hundredths and 6 thousandths					•	0	
h 8 thousandths					•	0	0

2 Answer true or false to the following questions. Score 0.5 points for each correct answer.

- a** The value of 4 in 56.48 is 4 hundredths.
- b** The value of 3 in 38.65 is 3 tens.
- c** The value of 7 in 0.75 is 7 hundredths.
- d** Thomas thought of a decimal number between 5.61 and 5.91. The number could have been 5.64.
- e** The value of 8 in 9.998 is 8 thousandths.
- f** 97.3 is 9 tens, 7 ones and 3 hundredths.

T or F	Score
Total	

Fractions, decimals and percentages – place value to thousandths

When comparing and ordering decimals, the place value of a digit is crucial. The further the digit is to the left, the greater its value.

Even though one thousandth sounds big, it is actually very small. Remember, one thousandth is just a single piece of a whole divided into a thousand parts. One tenth is actually one hundred times bigger than one thousandth.

3 Which is bigger? Circle the correct answer:

a 0.7 or 0.07

b 0.56 or 6 tenths

c 7.5 or $\frac{7}{10}$

d 15 or 0.15

e $\frac{1}{2}$ or 0.25

f 35 or 0.035

4 Use < or > or = to show the relationship between the two numbers:

a 6.89 ____ 6.76

b 70.908 ____ 7.908

c 9.08 ____ 9.8

d 5.098 ____ 5.98

e 0.56 ____ 0.560

f 11.80 ____ 11.8

5 This chart shows the vital statistics of some Roosters Rugby Club players.

Name	Height	Weight
Harry	2.06 m	79.054 kg
Phillip	1.96 m	110.652 kg
Ali	1.73 m	79.934 kg
Sebastian	1.84 m	88.91 kg
George	1.81 m	99.552 kg
Joe	2.01 m	118.236 kg
Connor		65.789 kg



a Who is tallest? Who is shortest?

b Put these players in order of lightest to heaviest: Ali, George, Sebastian:

c Who do you want to throw the ball over the other players? (It would help to be really tall.)

d Who would you least like to have tackle you? Why?

e Connor twirled out of the club before his height was measured. We know he is taller than Ali and shorter than Sebastian. What could his height be? Add it to the table.

Fractions, decimals and percentages – ordering decimals to 3 decimal places

To compare and order decimals, always start by looking at the digit on the left side of the number. For example, if we want to know which is bigger 5.2 or 3.9, we look at the left digit in each number and can see that 5 is bigger than 3, so 5.2 is bigger than 3.9.

We only need to look at the next digit if the first is the same. So if we are comparing 7.66 and 7.83, we can see that the first digits in each number are the same, so we need to compare the following digits. As 8 is bigger than 6, we know that 7.8 is bigger than 7.6. The third digit doesn't matter.

If the first two digits are the same, then you need to move on to compare the third, and so on.

1 Order these decimals from smallest to largest:

a 3.04 4.03 3.34 3.43 3.4

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b 7.673 7.376 7.637 7.763 7.736

--	--	--	--	--

c 89.978 98.987 98.899 89.879 89.789

--	--	--	--	--

2 True or false?

a $3.034 > 3.043$

--

b $732.35 < 732.53$

--

c $0.010 < 0.009$

--

d $13.200 = 13.2$

--

e $17.171 < 17.717$

--

f $2,020.202 > 2,020.022$

--

Fractions, decimals and percentages – rounding decimals

Rounding decimals follows the same rules as rounding any number. If the key digit is between 1 and 4 you round down; if it is between 5 and 9 you round up.

The key digit will be the one to the right of the digit to which you are rounding. If you are rounding a number to the nearest one, you focus on the 'tenth' digit; if rounding to one decimal place (the nearest tenth), then the 'hundredth' digit is the key one. So,

3.48 rounded to the nearest one is 3 as the '4' rounds down.

3.48 rounded to one decimal place is 3.5 as the '8' rounds up.

1 Round the following numbers to the nearest one:

a 4.29

b 8.72

c 27.51

d 75.48

e 999.52

f 7,687.73

2 Round the following numbers to one decimal place (the nearest tenth):

a 9.36

b 0.45

c 69.29

d 86.66

e 538.44

f 2,972.86

3 The following numbers have been rounded to one decimal place. What number with two decimal places might they have been originally?

a 8.3

b 17.8

c 67.1

d 569.6

e 3,829.4

f 72,853.9

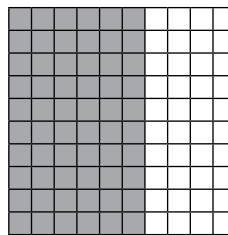
Fractions, decimals and percentages – percentages

Percent means part per hundred and is expressed using the symbol %.

Here, 60% has been shaded grey.

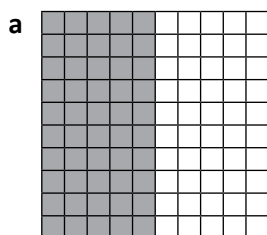
It is the same as 60 hundredths.

$$\frac{60}{100} = 0.60 = 60\%$$

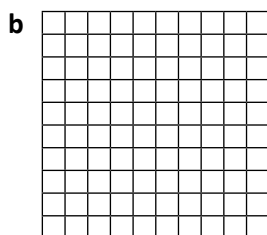


1 Think of at least five times you see the % sign or use percentages:

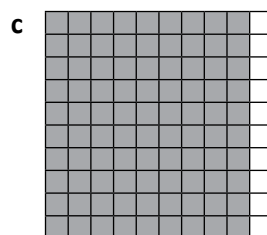
2 Fill in the missing values and shade the grids:



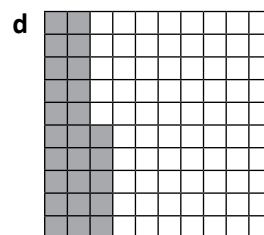
$\frac{50}{100}$	0.	%
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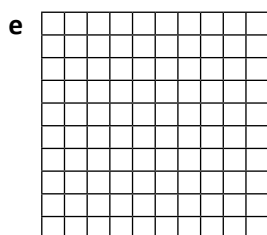
$\frac{30}{100}$	0.3	%
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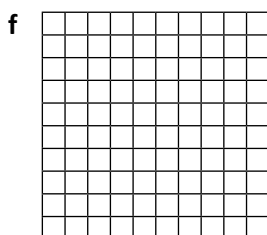
—	0.	90%
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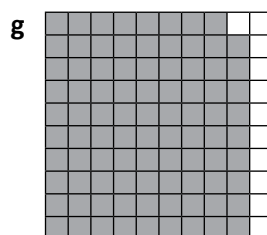
—	0.25	%
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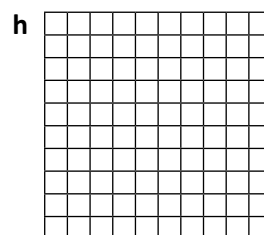
$\frac{45}{100}$	0.	%
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—	0.75	%
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—	0.	89%
---	----	-----



—	0.42	%
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3 Are these statements correct?

a 75% is greater than 0.5

b One quarter is the same as 50%

c 45% is greater than 0.5

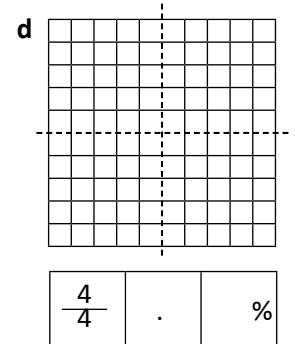
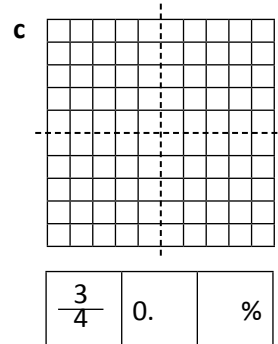
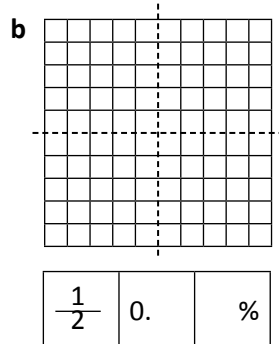
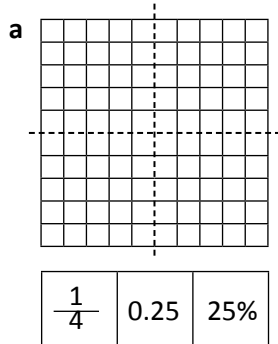
d 0.42 is equivalent to 425

e You score 100% on a test. Your friend scores 20/20. You both received the same score.

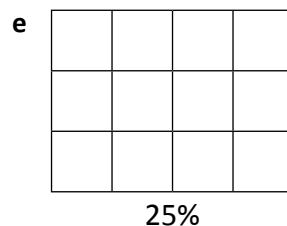
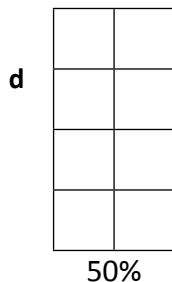
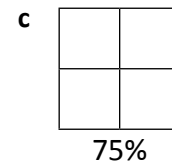
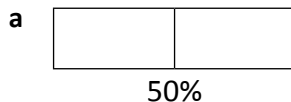
Fractions, decimals and percentages – percentages

It is useful to know some common percentages such as 25%, 50% or 75%.

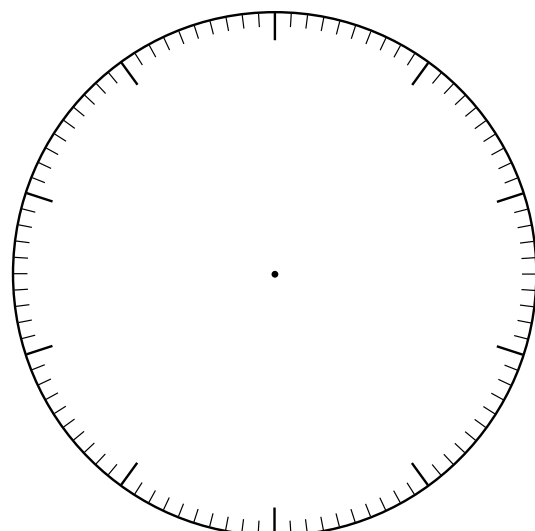
4 Shade the grids and show the following fractions by completing the missing information:



5 Shade these shapes to show the following percentages:

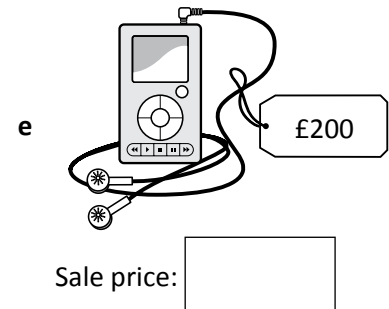
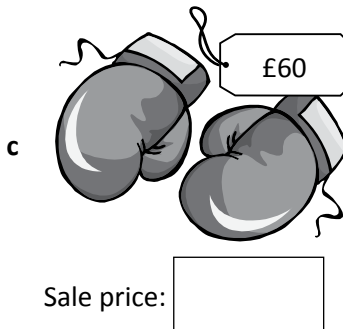
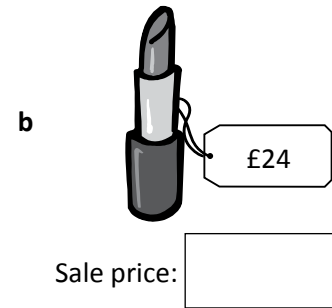


6 James goes on holiday. He has £100 spending money and spends it as outlined below. Show this on the pie graph and label each section of the pie with the correct percentage:



Fractions, decimals and percentages – introducing percentages

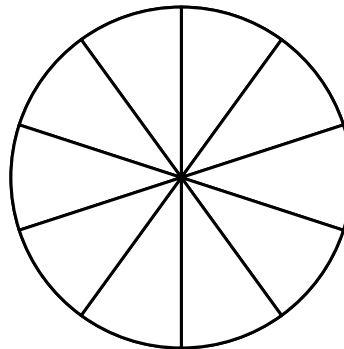
- 1 Often you can see percentages in shops when it is sale time. Work out the sale price of these items:



- 2 Pie charts are used to show information clearly and are often colour coded. Complete the pie charts according to the information. Each whole pie chart is 100% and each segment is 10%. Choose a colour for each bit of information.

- a 100 people were surveyed about their favourite weekend activities.

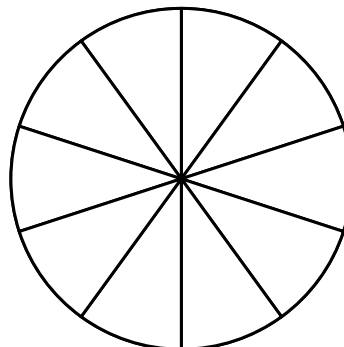
- ☐ Go to a restaurant 30%
- ☐ Go to the beach 10%
- ☐ See a movie 20%
- ☐ Go shopping 20%
- ☐ Play sport 20%



A percentage is an amount out of 100, so $\frac{60}{200}$ would be the same as $\frac{30}{100}$.

- b 200 people were surveyed about their favourite food.

- ☐ Pizza 80
- ☐ Hamburgers 40
- ☐ Pasta 60
- ☐ Curry 20



THINK

Fractions, decimals and percentages – word problems

1 Solve these word problems:

- a In a Year 5 class, half of the pupils walk to school, 30% take the bus and the remaining children walk. Express the fraction of the class who walk as a decimal.

- b In a talent contest, Jerry gets $\frac{2}{5}$ of the vote. What percentage of people didn't vote for him?

- c I share an extra large pizza with my friend for lunch. I eat $\frac{3}{5}$ of it, and he eats $\frac{3}{10}$. What percentage of the pizza is left?

- d In a sale a coat is marked as 50% off. If it's original price was £45.00, how much does it cost in the sale?

- e A carpenter is making a piece of furniture. He needs 6 pieces of wood 250 mm long. If he cuts them from a piece 2,000 mm long, what fraction of this piece will be left over?

- f I love chocolate. My mum buys a big bar and says I can have $\frac{1}{8}$, 10% or 0.12 of the bar. Which of these will give me the most chocolate?

- g In an interview an athlete says "I put 110% effort into that race." What is wrong with that statement?



This is a game for 2 or more players. You will race against each other to come up with equivalent fractions, decimals or percentages to match those on cards. You'll need one copy of this page and one copy of page 31 between you.



Cut out the playing cards, mix them up and put them face down in a pile.

Cut out the blank cards on page 31 and divide them between the two of you. Make sure you both have a pencil each.

Turn over the first playing card. Both players write an equivalent fraction, decimal or percentage to match it on one of the blank cards and cover the playing card as quickly as possible.

For example, the playing card may say 50% – you could write $\frac{1}{2}$ or $\frac{5}{10}$ or $\frac{50}{100}$.

The first person to cover the card with a correct match wins and takes the pair.

The player at the end of the game with the most cards is the winner.

Playing Cards

$\frac{75}{100}$	25%	$\frac{3}{4}$	$\frac{1}{4}$
0.5	0.25	$\frac{1}{2}$	50%
0.1	$\frac{1}{10}$	10%	0.75

Blank cards



Mathletics



A 3P Learning Product