PERCENTAGES · AGES 5–7

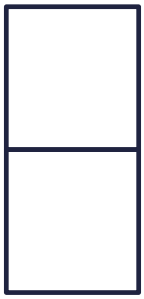
Colour the fraction

Acorn & Ink

Colour the right number of equal parts in each shape.

Name _____ Date _____ Score _____ / 9

Colour $\frac{1}{2}$



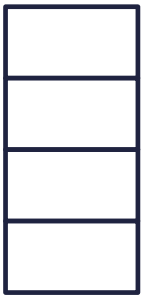
$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{2}$



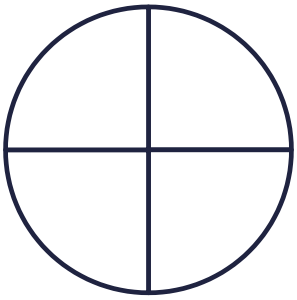
$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{4}$



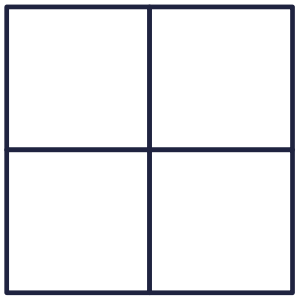
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{4}$



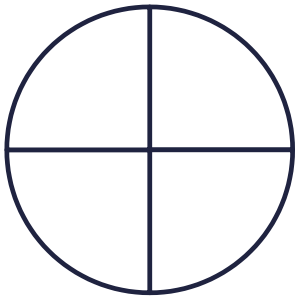
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{2}{4}$



$\frac{2}{4}$ is the same as **50%**

Colour $\frac{3}{4}$



$\frac{3}{4}$ is the same as **75%**

Colour $\frac{2}{4}$



$\frac{2}{4}$ is the same as **50%**

Colour $\frac{3}{4}$



$\frac{3}{4}$ is the same as **75%**

Colour $\frac{1}{3}$



PERCENTAGES · AGES 5–7

Colour the fraction

Acorn & Ink

Colour the right number of equal parts in each shape.

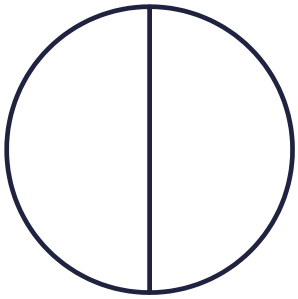
Name _____ Date _____ Score _____ / 9

Colour $\frac{1}{4}$



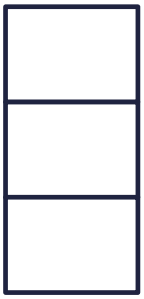
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{2}$

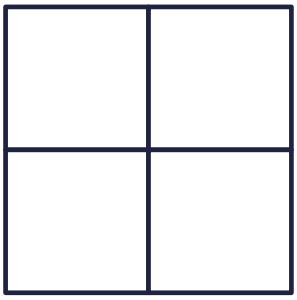


$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{3}$

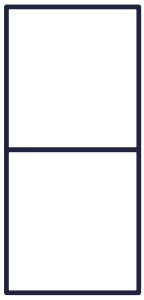


Colour $\frac{1}{4}$



$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{2}$



$\frac{1}{2}$ is the same as **50%**

Colour $\frac{2}{4}$



$\frac{2}{4}$ is the same as **50%**

Colour $\frac{1}{4}$



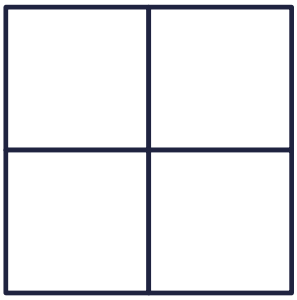
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{2}$



$\frac{1}{2}$ is the same as **50%**

Colour $\frac{3}{4}$



$\frac{3}{4}$ is the same as **75%**

PERCENTAGES · AGES 5–7

Halves and quarters

Share the dots into equal groups. Circle one group, then write how many.

Name _____ Date _____ Score _____ / 8

Half of 14 ($\frac{1}{2}$, or 50%)



= _____

Half of 10 ($\frac{1}{2}$, or 50%)

= _____

Half of 16 ($\frac{1}{2}$, or 50%)



= _____

A quarter of 20 ($\frac{1}{4}$, or 25%)



= _____

A quarter of 12 ($\frac{1}{4}$, or 25%)



= _____

Half of 6 ($\frac{1}{2}$, or 50%)



= _____

A quarter of 4 ($\frac{1}{4}$, or 25%)



= _____

A quarter of 16 ($\frac{1}{4}$, or 25%)



= _____

COLOUR BY SUM · HALVES AND QUARTERS

What's the mystery picture?

Acorn & Ink

Work out each sum. Find the answer in the key and colour the square that colour.

2 dark blue 3 leave white 5 red 6 orange

8 pink 9 yellow 10 brown

¼ of 12	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	½ of 6	¼ of 12	½ of 6	¼ of 12
¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	¼ of 12	¼ of 20	½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 12	½ of 6	½ of 6
½ of 6	½ of 6	¼ of 12	½ of 6	¼ of 12	½ of 16	¼ of 32	¼ of 32	½ of 6	¼ of 12	¼ of 12	¼ of 12	¼ of 12	½ of 6
½ of 6	½ of 6	½ of 6	¼ of 12	¼ of 32	½ of 16	½ of 16	¼ of 32	¼ of 32	½ of 16	¼ of 12	¼ of 12	¼ of 12	¼ of 12
¼ of 12	¼ of 12	¼ of 12	¼ of 32	½ of 16	¼ of 32	½ of 18	½ of 16	½ of 16	½ of 16	¼ of 32	¼ of 12	¼ of 12	½ of 6
½ of 6	½ of 6	½ of 16	½ of 16	¼ of 32	½ of 16	¼ of 32	¼ of 32	¼ of 32	½ of 16	¼ of 8	½ of 16	½ of 6	½ of 6
¼ of 12	½ of 16	½ of 16	½ of 18	½ of 16	¼ of 32	¼ of 32	¼ of 32	¼ of 32	¼ of 32	½ of 16	¼ of 32	¼ of 32	¼ of 12
½ of 6	½ of 16	¼ of 32	½ of 16	¼ of 32	¼ of 32	½ of 16	½ of 4	¼ of 32	½ of 16	¼ of 32	¼ of 36	¼ of 32	¼ of 12
½ of 6	¼ of 12	½ of 12	¼ of 40	½ of 12	½ of 12	¼ of 40	½ of 12	¼ of 24	¼ of 40	½ of 12	½ of 12	¼ of 12	¼ of 12
¼ of 12	½ of 6	½ of 12	½ of 20	½ of 12	½ of 12	¼ of 40	¼ of 24	¼ of 24	¼ of 40	¼ of 24	¼ of 24	½ of 6	¼ of 12
¼ of 12	½ of 6	¼ of 12	½ of 12	¼ of 40	¼ of 24	¼ of 24	¼ of 40	¼ of 24	¼ of 24	¼ of 40	¼ of 12	¼ of 12	½ of 6
¼ of 12	½ of 6	¼ of 12	½ of 12	½ of 20	½ of 12	½ of 12	½ of 20	¼ of 24	½ of 12	½ of 20	½ of 6	½ of 6	½ of 6
½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 24	¼ of 24	¼ of 24	½ of 12	½ of 12	¼ of 24	½ of 6	½ of 6	¼ of 12	½ of 6
¼ of 12	¼ of 12	½ of 6	½ of 6	¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	½ of 6	¼ of 12	¼ of 12	¼ of 12
½ of 6	¼ of 12	½ of 6	¼ of 12	¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 12
¼ of 12	¼ of 12	¼ of 12	½ of 6	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 12	½ of 6

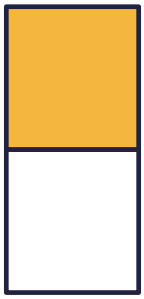
Colour the fraction

Acorn & Ink

Answers are shown in red.

Name _____ Date _____

Colour $\frac{1}{2}$



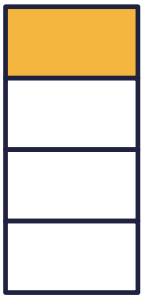
$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{2}$



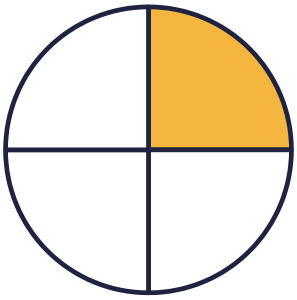
$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{4}$



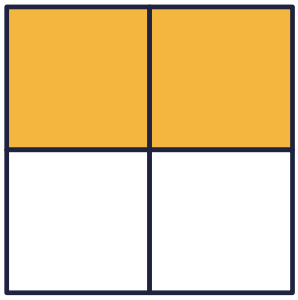
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{4}$



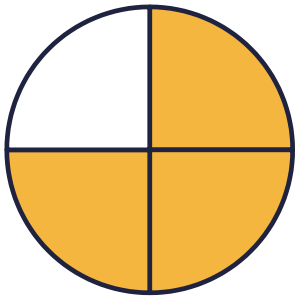
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{2}{4}$



$\frac{2}{4}$ is the same as **50%**

Colour $\frac{3}{4}$



$\frac{3}{4}$ is the same as **75%**

Colour $\frac{2}{4}$



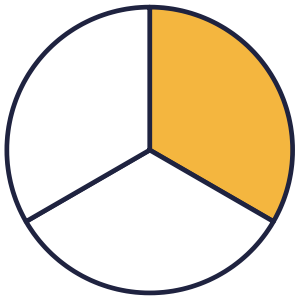
$\frac{2}{4}$ is the same as **50%**

Colour $\frac{3}{4}$



$\frac{3}{4}$ is the same as **75%**

Colour $\frac{1}{3}$



Colour the fraction

Answers are shown in red.

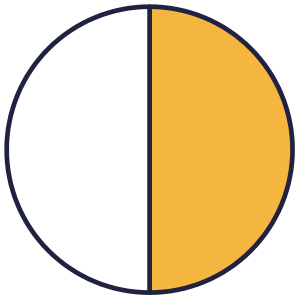
Name _____ Date _____

Colour $\frac{1}{4}$



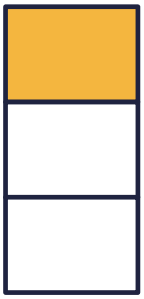
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{2}$

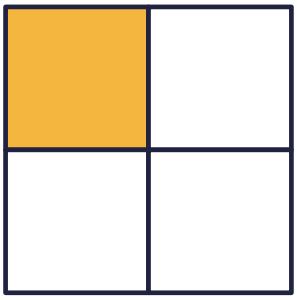


$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{3}$

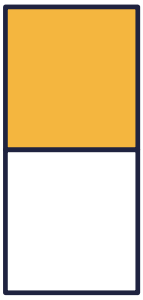


Colour $\frac{1}{4}$



$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{2}$



$\frac{1}{2}$ is the same as **50%**

Colour $\frac{2}{4}$



$\frac{2}{4}$ is the same as **50%**

Colour $\frac{1}{4}$



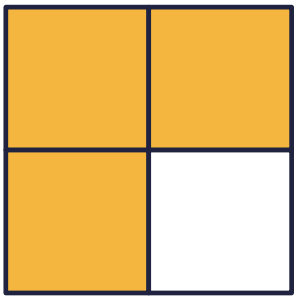
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{2}$



$\frac{1}{2}$ is the same as **50%**

Colour $\frac{3}{4}$



$\frac{3}{4}$ is the same as **75%**

Halves and quarters

Acorn & Ink

Answers are shown in red.

Name _____ Date _____

Half of 14 ($\frac{1}{2}$, or 50%) ○○○○○○○○○○○○○○ = **7**

Half of 10 ($\frac{1}{2}$, or 50%) ○○○○○○○○○○ = **5**

Half of 16 ($\frac{1}{2}$, or 50%) ○○○○○○○○○○○○○○○○ = **8**

A quarter of 20 ($\frac{1}{4}$, or 25%) ○○○○○○○○○○○○○○○○○○○○ = **5**

A quarter of 12 ($\frac{1}{4}$, or 25%) ○○○○○○○○○○○○ = **3**

Half of 6 ($\frac{1}{2}$, or 50%) ○○○○○○ = **3**

A quarter of 4 ($\frac{1}{4}$, or 25%) ○○○○ = **1**

A quarter of 16 ($\frac{1}{4}$, or 25%) ○○○○○○○○○○○○○○○○ = **4**

Acorn & Ink

It's a cupcake!

Here's how the finished picture looks.

2 dark blue 3 leave white 5 red 6 orange

8 pink 9 yellow 10 brown

¼ of 12	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	½ of 6	¼ of 12	½ of 6	¼ of 12
¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	¼ of 12	¼ of 20	½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 12	½ of 6	½ of 6
½ of 6	½ of 6	¼ of 12	½ of 6	¼ of 12	½ of 16	¼ of 32	¼ of 32	½ of 6	¼ of 12	¼ of 12	¼ of 12	¼ of 12	½ of 6
½ of 6	½ of 6	½ of 6	¼ of 12	¼ of 32	½ of 16	½ of 16	¼ of 32	¼ of 32	½ of 16	¼ of 12	¼ of 12	¼ of 12	¼ of 12
¼ of 12	¼ of 12	¼ of 12	¼ of 32	½ of 16	¼ of 32	½ of 18	½ of 16	½ of 16	½ of 16	¼ of 32	¼ of 12	¼ of 12	½ of 6
½ of 6	½ of 6	½ of 16	½ of 16	¼ of 32	½ of 16	¼ of 32	¼ of 32	¼ of 32	½ of 16	¼ of 8	½ of 16	½ of 6	½ of 6
¼ of 12	½ of 16	½ of 16	½ of 18	½ of 16	¼ of 32	¼ of 32	¼ of 32	¼ of 32	¼ of 32	½ of 16	¼ of 32	¼ of 32	¼ of 12
½ of 6	½ of 16	¼ of 32	½ of 16	¼ of 32	¼ of 32	½ of 16	½ of 4	¼ of 32	½ of 16	¼ of 32	¼ of 36	¼ of 32	¼ of 12
½ of 6	¼ of 12	½ of 12	¼ of 40	½ of 12	½ of 12	¼ of 40	½ of 12	¼ of 24	¼ of 40	½ of 12	½ of 12	¼ of 12	¼ of 12
¼ of 12	½ of 6	½ of 12	½ of 20	½ of 12	½ of 12	¼ of 40	¼ of 24	¼ of 24	¼ of 40	¼ of 24	¼ of 24	½ of 6	¼ of 12
¼ of 12	½ of 6	¼ of 12	½ of 12	¼ of 40	¼ of 24	¼ of 24	¼ of 40	¼ of 24	¼ of 24	¼ of 40	¼ of 12	¼ of 12	½ of 6
¼ of 12	½ of 6	¼ of 12	½ of 12	½ of 20	½ of 12	½ of 12	½ of 20	¼ of 24	½ of 12	½ of 20	½ of 6	½ of 6	½ of 6
½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 24	¼ of 24	¼ of 24	½ of 12	½ of 12	¼ of 24	½ of 6	½ of 6	¼ of 12	½ of 6
¼ of 12	¼ of 12	½ of 6	½ of 6	¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	½ of 6	¼ of 12	¼ of 12	¼ of 12
½ of 6	¼ of 12	½ of 6	¼ of 12	¼ of 12	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 12
¼ of 12	¼ of 12	¼ of 12	½ of 6	½ of 6	¼ of 12	¼ of 12	¼ of 12	½ of 6	¼ of 12	½ of 6	½ of 6	¼ of 12	½ of 6

Acorn & Ink

Percentages made easy

Per cent means “out of 100”. 18% = 18 out of every 100 = $\frac{18}{100}$.

The building blocks

100% the whole

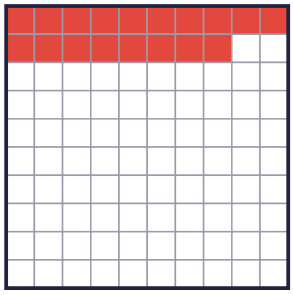
50% divide by 2 (half)

25% divide by 4 (a quarter)

10% divide by 10

5% half of 10%

1% divide by 100



18 squares out of 100 = 18%

1. Build it from blocks

35% of 240
= 10% + 10% + 10% + 5%
= 24 + 24 + 24 + 12 = **84**

2. Use a fraction

75% of 36 = $\frac{3}{4}$ of 36
36 ÷ 4 = 9
9 × 3 = **27**

3. Multiply, then ÷ 100

18% of 18
18 × 18 = 324
324 ÷ 100 = **3.24**

The swap trick

A% of B = B% of A.
8% of 25 = 25% of 8 = **2**

Ages 11+

Increase/decrease: work out the %, then add it or take it away.
As a %: part ÷ whole × 100.
% change: difference ÷ start × 100.

Fractions, decimals and percentages

$\frac{1}{2}$ = 0.5 = **50%** $\frac{1}{4}$ = 0.25 = **25%** $\frac{3}{4}$ = 0.75 = **75%** $\frac{1}{5}$ = 0.2 = **20%**

$\frac{1}{10}$ = 0.1 = **10%** $\frac{1}{100}$ = 0.01 = **1%**

PERCENTAGES · AGES 9–10

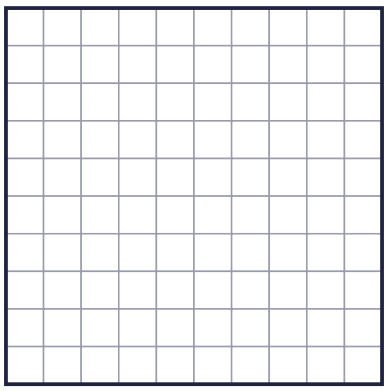
Colour the percentage

Acorn & Ink

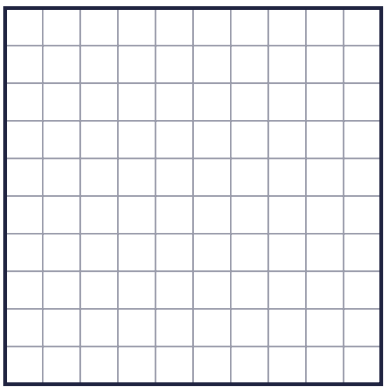
Colour the right number of squares in each 100 square.

Name _____ **Date** _____ **Score** _____ / 6

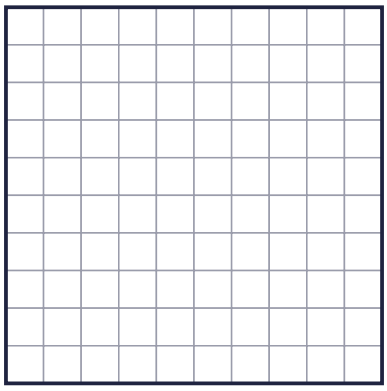
Colour **19%**



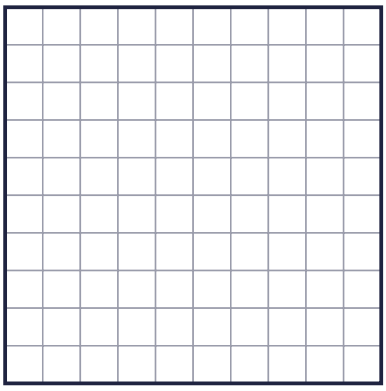
Colour **25%**



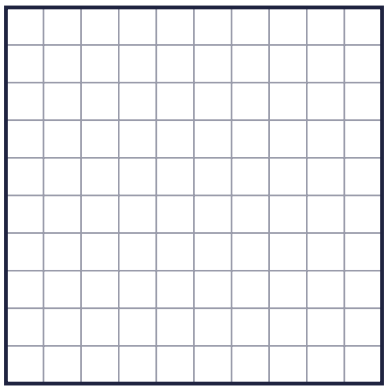
Colour **5%**



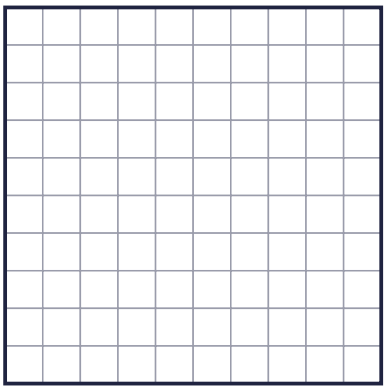
Colour **88%**



Colour **40%**



Colour **10%**



Remember: each small square is 1%. A whole row of 10 squares is 10%.

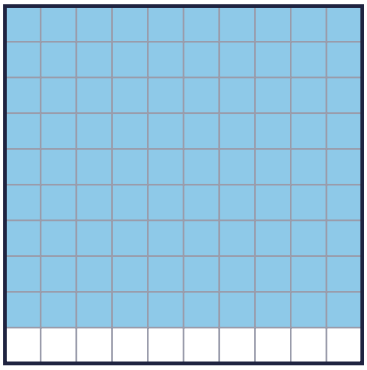
PERCENTAGES · AGES 9–10

Acorn & Ink

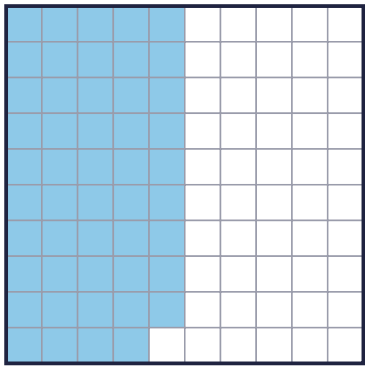
What percentage is shaded?

Count the shaded squares. Write the amount as a percentage, a fraction out of 100 and a decimal.

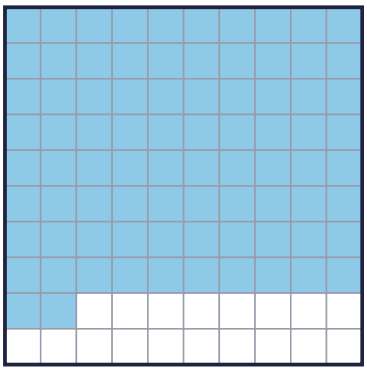
Name _____ **Date** _____ **Score** _____ / 18



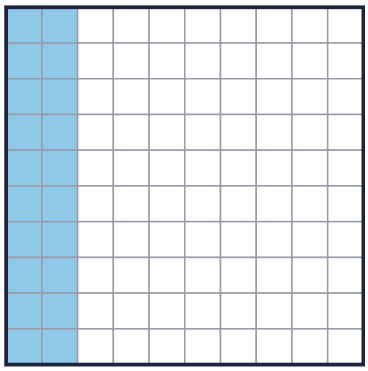
per cent _____ fraction _____ decimal _____



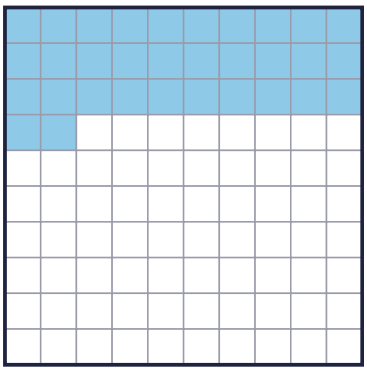
per cent _____ fraction _____ decimal _____



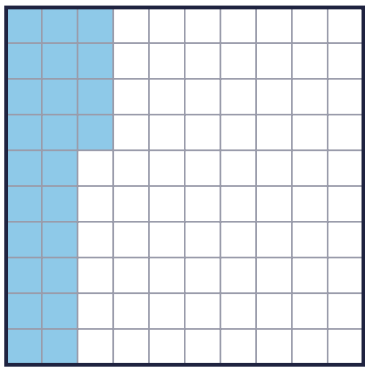
per cent _____ fraction _____ decimal _____



per cent _____ fraction _____ decimal _____



per cent _____ fraction _____ decimal _____



per cent _____ fraction _____ decimal _____

PERCENTAGES · AGES 9–10

Acorn & Ink

Fractions, decimals and percentages

Each row shows one amount. Fill in the two missing ways of writing it.

Name _____ Date _____ Score _____ / 24

Fraction	Decimal	Percentage
$\frac{1}{4}$		
	0.75	
		90%
$\frac{1}{5}$		
	0.1	
		2%
$\frac{63}{100}$		
	0.99	
		80%
$\frac{1}{100}$		
	0.7	
		37%

Acorn & Ink

Fraction, decimal, percentage snap

Cut out the cards. Each amount is written three ways: find the sets of three, or play snap and pairs.

Name _____ Date _____

$\frac{7}{10}$	50%	$\frac{4}{5}$	40%
$\frac{9}{10}$	0.25	20%	0.5
0.8	90%	$\frac{1}{2}$	80%
25%	$\frac{2}{5}$	0.9	0.7
70%	0.4	0.37	$\frac{1}{4}$
$\frac{1}{5}$	37%	$\frac{37}{100}$	0.2

COLOUR BY SUM · PERCENTAGES

What's the mystery picture?

Acorn & Ink

Work out each sum. Find the answer in the key and colour the square that colour.

3 black 5 light blue 6 dark green 8 green 12 yellow

25% of 20	25% of 20	50% of 10	50% of 10	25% of 20	20% of 25	25% of 20	20% of 25	50% of 10	10% of 50	20% of 25	20% of 25	25% of 20	10% of 50
20% of 25	25% of 20	25% of 20	25% of 20	10% of 50	50% of 10	50% of 10	10% of 50	10% of 80	50% of 16	20% of 40	10% of 80	10% of 50	10% of 50
20% of 25	20% of 25	50% of 10	10% of 50	20% of 25	25% of 20	50% of 10	10% of 80	50% of 16	10% of 80	10% of 80	50% of 16	25% of 32	10% of 50
10% of 50	10% of 50	50% of 10	25% of 20	50% of 10	50% of 10	10% of 50	10% of 80	20% of 40	25% of 12	50% of 16	20% of 40	20% of 40	20% of 25
25% of 20	10% of 50	20% of 25	25% of 20	25% of 20	50% of 10	50% of 10	20% of 40	20% of 40	25% of 32	50% of 16	25% of 32	10% of 80	10% of 80
25% of 20	20% of 25	10% of 50	50% of 10	20% of 25	50% of 10	25% of 20	20% of 40	25% of 32	20% of 40	50% of 10	20% of 25	10% of 50	20% of 25
50% of 10	20% of 25	50% of 10	50% of 10	25% of 20	20% of 25	50% of 16	20% of 40	20% of 40	25% of 32	50% of 10	10% of 50	50% of 10	25% of 20
20% of 25	50% of 10	20% of 25	25% of 20	20% of 60	50% of 16	25% of 32	20% of 40	10% of 80	25% of 32	20% of 40	10% of 50	50% of 10	20% of 25
25% of 20	20% of 25	20% of 25	25% of 48	20% of 40	10% of 80	25% of 32	20% of 40	10% of 80	20% of 40	20% of 40	50% of 16	50% of 10	25% of 20
20% of 25	20% of 25	20% of 60	10% of 80	10% of 80	50% of 16	10% of 80	25% of 32	10% of 80	20% of 40	20% of 40	25% of 32	10% of 80	25% of 20
25% of 20	25% of 32	10% of 80	20% of 40	25% of 32	20% of 40	50% of 16	25% of 32	20% of 40	20% of 40	20% of 40	10% of 50	10% of 50	20% of 25
25% of 32	50% of 16	10% of 50	25% of 20	25% of 32	25% of 32	50% of 16	10% of 80	25% of 32	50% of 16	10% of 80	20% of 25	50% of 10	50% of 10
25% of 32	25% of 20	50% of 10	10% of 50	10% of 50	50% of 16	10% of 80	25% of 20	25% of 20	20% of 40	20% of 40	50% of 10	10% of 50	50% of 10
20% of 25	25% of 20	10% of 50	10% of 50	50% of 10	25% of 32	25% of 32	20% of 25	50% of 10	20% of 40	10% of 80	20% of 25	50% of 10	10% of 50
25% of 24	20% of 30	20% of 30	10% of 60	25% of 24	50% of 12	20% of 30	20% of 30	20% of 30	10% of 60	10% of 60	50% of 12	20% of 30	10% of 60
50% of 12	25% of 24	50% of 12	20% of 30	25% of 24	10% of 60	10% of 60	25% of 24	20% of 30	25% of 24	25% of 24	25% of 24	25% of 24	50% of 12

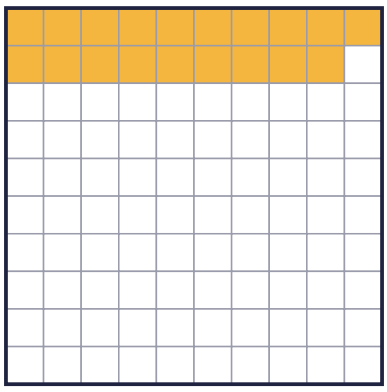
Acorn & Ink

Colour the percentage

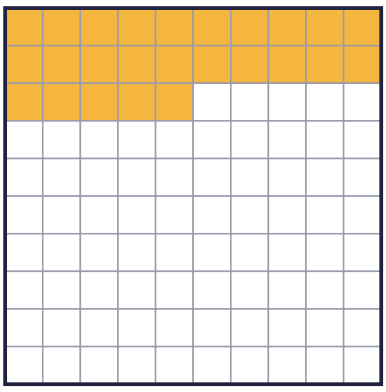
Answers are shown in red.

Name _____ **Date** _____

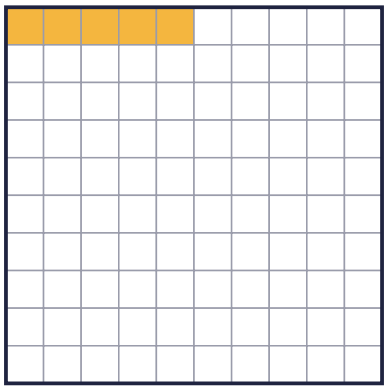
Colour **19%**



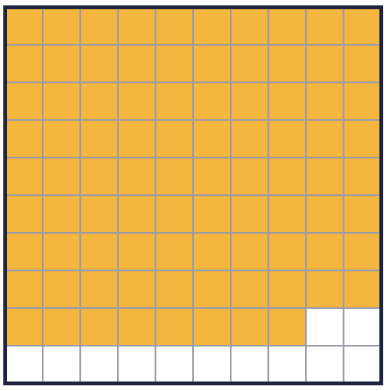
Colour **25%**



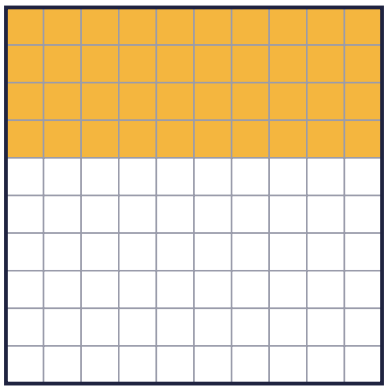
Colour **5%**



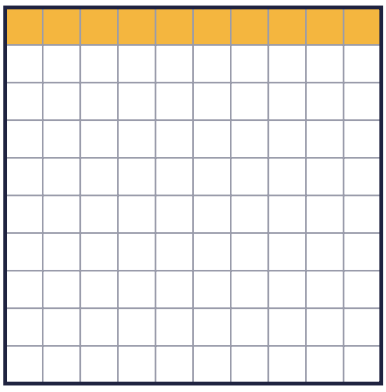
Colour **88%**



Colour **40%**



Colour **10%**



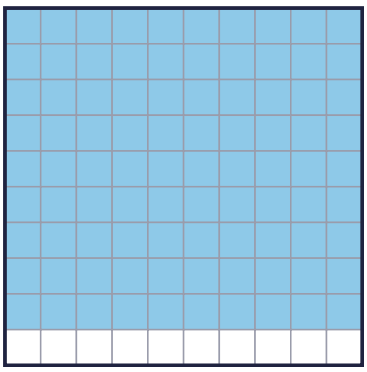
Remember: each small square is 1%. A whole row of 10 squares is 10%.

Acorn & Ink

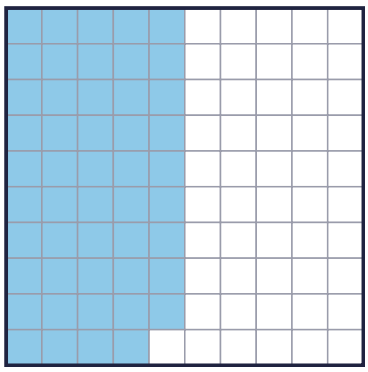
What percentage is shaded?

Answers are shown in red.

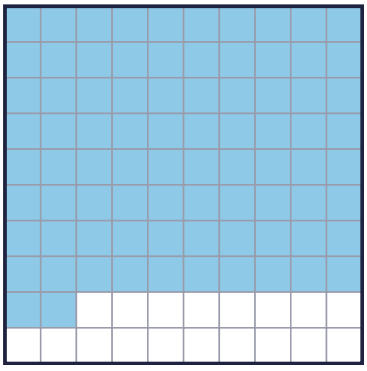
Name _____ Date _____



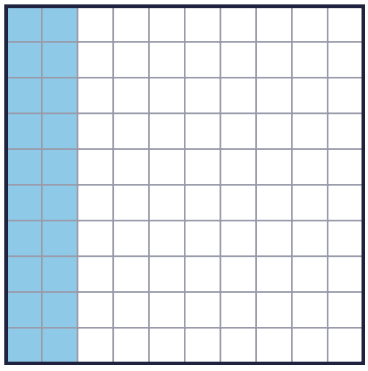
90%	90/100	0.9
per cent	fraction	decimal



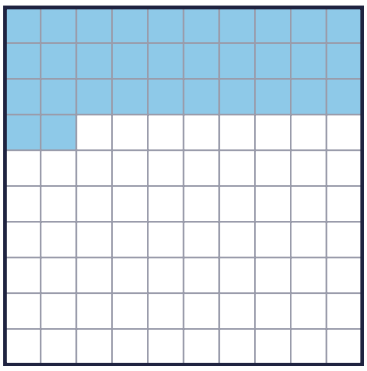
49%	49/100	0.49
per cent	fraction	decimal



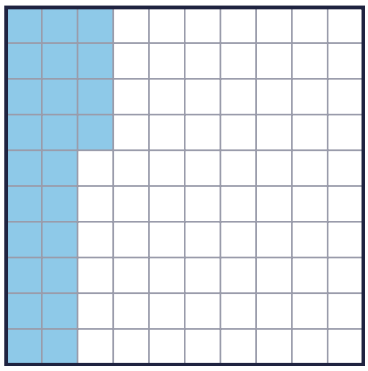
82%	82/100	0.82
per cent	fraction	decimal



20%	20/100	0.2
per cent	fraction	decimal



32%	32/100	0.32
per cent	fraction	decimal



24%	24/100	0.24
per cent	fraction	decimal

Acorn & Ink

Fractions, decimals and percentages

Answers are shown in red.

Name _____ Date _____

Fraction	Decimal	Percentage
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%
$\frac{9}{10}$	0.9	90%
$\frac{1}{5}$	0.2	20%
$\frac{1}{10}$	0.1	10%
$\frac{1}{50}$	0.02	2%
$\frac{63}{100}$	0.63	63%
$\frac{99}{100}$	0.99	99%
$\frac{4}{5}$	0.8	80%
$\frac{1}{100}$	0.01	1%
$\frac{7}{10}$	0.7	70%
$\frac{37}{100}$	0.37	37%

It's a dinosaur!

Acorn & Ink

Here's how the finished picture looks.

3 black 5 light blue 6 dark green 8 green 12 yellow

25% of 20	25% of 20	50% of 10	50% of 10	25% of 20	20% of 25	25% of 20	20% of 25	50% of 10	10% of 50	20% of 25	20% of 25	25% of 20	10% of 50
20% of 25	25% of 20	25% of 20	25% of 20	10% of 50	50% of 10	50% of 10	10% of 50	10% of 80	50% of 16	20% of 40	10% of 80	10% of 50	10% of 50
20% of 25	20% of 25	50% of 10	10% of 50	20% of 25	25% of 20	50% of 10	10% of 80	50% of 16	10% of 80	10% of 80	50% of 16	25% of 32	10% of 50
10% of 50	10% of 50	50% of 10	25% of 20	50% of 10	50% of 10	10% of 50	10% of 80	20% of 40	25% of 12	50% of 16	20% of 40	20% of 40	20% of 25
25% of 20	10% of 50	20% of 25	25% of 20	25% of 20	50% of 10	50% of 10	20% of 40	20% of 40	25% of 32	50% of 16	25% of 32	10% of 80	10% of 80
25% of 20	20% of 25	10% of 50	50% of 10	20% of 25	50% of 10	25% of 20	20% of 40	25% of 32	20% of 40	50% of 10	20% of 25	10% of 50	20% of 25
50% of 10	20% of 25	50% of 10	50% of 10	25% of 20	20% of 25	50% of 16	20% of 40	20% of 40	25% of 32	50% of 10	10% of 50	50% of 10	25% of 20
20% of 25	50% of 10	20% of 25	25% of 20	20% of 60	50% of 16	25% of 32	20% of 40	10% of 80	25% of 32	20% of 40	10% of 50	50% of 10	20% of 25
25% of 20	20% of 25	20% of 25	25% of 48	20% of 40	10% of 80	25% of 32	20% of 40	10% of 80	20% of 40	20% of 40	50% of 16	50% of 10	25% of 20
20% of 25	20% of 25	20% of 60	10% of 80	10% of 80	50% of 16	10% of 80	25% of 32	10% of 80	20% of 40	20% of 40	25% of 32	10% of 80	25% of 20
25% of 20	25% of 32	10% of 80	20% of 40	25% of 32	20% of 40	50% of 16	25% of 32	20% of 40	20% of 40	20% of 40	10% of 50	10% of 50	20% of 25
25% of 32	50% of 16	10% of 50	25% of 20	25% of 32	25% of 32	50% of 16	10% of 80	25% of 32	50% of 16	10% of 80	20% of 25	50% of 10	50% of 10
25% of 32	25% of 20	50% of 10	10% of 50	10% of 50	50% of 16	10% of 80	25% of 20	25% of 20	20% of 40	20% of 40	50% of 10	10% of 50	50% of 10
20% of 25	25% of 20	10% of 50	10% of 50	50% of 10	25% of 32	25% of 32	20% of 25	50% of 10	20% of 40	10% of 80	20% of 25	50% of 10	10% of 50
25% of 24	20% of 30	20% of 30	10% of 60	25% of 24	50% of 12	20% of 30	20% of 30	20% of 30	10% of 60	10% of 60	50% of 12	20% of 30	10% of 60
50% of 12	25% of 24	50% of 12	20% of 30	25% of 24	10% of 60	10% of 60	25% of 24	20% of 30	25% of 24	25% of 24	25% of 24	25% of 24	50% of 12

Acorn & Ink

Percentages made easy

Per cent means “out of 100”. 18% = 18 out of every 100 = $\frac{18}{100}$.

The building blocks

100% the whole

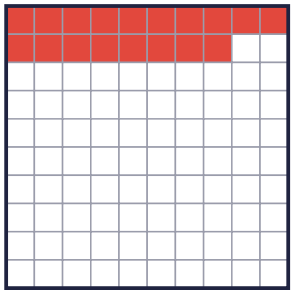
50% divide by 2 (half)

25% divide by 4 (a quarter)

10% divide by 10

5% half of 10%

1% divide by 100



18 squares out of 100 = 18%

1. Build it from blocks

35% of 240
= 10% + 10% + 10% + 5%
= 24 + 24 + 24 + 12 = **84**

2. Use a fraction

75% of 36 = $\frac{3}{4}$ of 36
36 ÷ 4 = 9
9 × 3 = **27**

3. Multiply, then ÷ 100

18% of 18
18 × 18 = 324
324 ÷ 100 = **3.24**

The swap trick

A% of B = B% of A.
8% of 25 = 25% of 8 = **2**

Ages 11+

Increase/decrease: work out the %, then add it or take it away.
As a %: part ÷ whole × 100.
% change: difference ÷ start × 100.

Fractions, decimals and percentages

$\frac{1}{2}$ = 0.5 = **50%** $\frac{1}{4}$ = 0.25 = **25%** $\frac{3}{4}$ = 0.75 = **75%** $\frac{1}{5}$ = 0.2 = **20%**

$\frac{1}{10}$ = 0.1 = **10%** $\frac{1}{100}$ = 0.01 = **1%**

PERCENTAGES · AGES 10–11

Percentages of amounts

Acorn & Ink

Work these out without a calculator. Use the building blocks.

Name _____ Date _____ Score _____ / 16

1. 50% of 100 = _____
2. 30% of 460 = _____
3. 1% of 400 = _____
4. 50% of 348 = _____
5. 15% of 240 = _____
6. 60% of 155 = _____
7. 10% of 300 = _____
8. 40% of 450 = _____
9. 75% of 84 = _____
10. 15% of 480 = _____
11. 25% of 456 = _____
12. 1% of 300 = _____
13. 40% of 310 = _____
14. 25% of 544 = _____
15. 5% of 180 = _____
16. 40% of 175 = _____

Tip: 50% is half, 25% is a quarter, 10% is divide by 10, 1% is divide by 100.

PERCENTAGES · AGES 10–11

Build it from blocks

Acorn & Ink

Work out 10%, 5% and 1% first. Then build the percentage you need and add the parts.

Name _____ Date _____ Score _____ / 6

1. Find **45% of 1,000**

10% = _____ 5% = _____ 1% = _____

45% = _____ = _____ = _____

2. Find **85% of 800**

10% = _____ 5% = _____ 1% = _____

85% = _____ = _____ = _____

3. Find **65% of 700**

10% = _____ 5% = _____ 1% = _____

65% = _____ = _____ = _____

4. Find **12% of 100**

10% = _____ 5% = _____ 1% = _____

12% = _____ = _____ = _____

5. Find **15% of 600**

10% = _____ 5% = _____ 1% = _____

15% = _____ = _____ = _____

6. Find **95% of 400**

10% = _____ 5% = _____ 1% = _____

95% = _____ = _____ = _____

PERCENTAGES · AGES 10–11

Sale shop

Acorn & Ink

Everything is in the sale! Work out how much you save, then the new price.

Name _____ Date _____ Score _____ / 16

Football
£120
10% off

You save _____ Sale price _____

Roller skates
£100
25% off

You save _____ Sale price _____

Skateboard
£20
10% off

You save _____ Sale price _____

Box of books
£156
25% off

You save _____ Sale price _____

Kite
£36
25% off

You save _____ Sale price _____

Backpack
£140
5% off

You save _____ Sale price _____

Tent
£35
20% off

You save _____ Sale price _____

Paint set
£40
30% off

You save _____ Sale price _____

PERCENTAGES · AGES 10–11

Acorn & Ink

Percentage word problems

Read each problem carefully. Show your working in the space.

Name _____ **Date** _____ **Score** _____ / 8

1. Isla's family is driving 20 km to the beach. They have done 75% of the journey. How far have they driven?

   Answer: _____

2. A computer game has 60 levels. Priya has finished 10% of them. How many levels is that?

   Answer: _____

3. A film lasts 120 minutes. 10% of it is the ending. How many minutes is the ending?

   Answer: _____

4. A bike costs £150. In a sale it is 20% off. How much money do you save?

   Answer: _____

5. Omar has 50 marbles. 20% of them are blue. How many marbles are not blue?

   Answer: _____

6. A cake weighs 200 g. 25% of the cake is sugar. How many grams of sugar are in the cake?

   Answer: _____

7. There are 35 children at Zara's football club. 60% of them are under 10. How many children are under 10?

   Answer: _____

8. A bottle holds 500 ml of juice. Alfie drinks 25% of it. How many ml does Alfie drink?

   Answer: _____

COLOUR BY SUM · PERCENTAGES

What's the mystery picture?

Acorn & Ink

Work out each sum. Find the answer in the key and colour the square that colour.

2 orange 3 black 4 green 7 sand

8 dark green 12 light blue 15 brown

25% of 48	25% of 48	20% of 60	20% of 60	50% of 24	50% of 24	50% of 24	25% of 48	50% of 24	25% of 48	25% of 48	20% of 60	50% of 24	25% of 48
20% of 60	50% of 24	20% of 60	50% of 24	25% of 48	50% of 24	50% of 24	50% of 24	25% of 48	20% of 60	50% of 24	25% of 48	20% of 60	25% of 48
25% of 48	20% of 60	50% of 24	25% of 48	20% of 60	50% of 24	50% of 24	20% of 60	50% of 24	20% of 60	50% of 24	25% of 48	50% of 24	20% of 60
20% of 60	25% of 48	25% of 48	50% of 24	50% of 24	10% of 20	20% of 10	20% of 10	20% of 10	50% of 24	25% of 48	50% of 24	25% of 48	50% of 24
20% of 60	25% of 48	25% of 48	20% of 60	50% of 4	50% of 4	20% of 75	50% of 30	20% of 75	25% of 8	25% of 8	20% of 60	25% of 48	20% of 60
10% of 30	50% of 24	50% of 24	10% of 20	25% of 8	20% of 75	25% of 8	20% of 10	50% of 4	20% of 75	50% of 4	50% of 4	25% of 48	50% of 24
25% of 28	25% of 48	50% of 24	10% of 20	20% of 75	20% of 10	20% of 75	50% of 30	10% of 20	25% of 60	50% of 4	50% of 4	20% of 60	50% of 24
50% of 14	20% of 60	50% of 24	50% of 4	50% of 30	20% of 10	20% of 10	10% of 20	20% of 10	50% of 30	25% of 8	50% of 4	25% of 48	25% of 48
10% of 70	10% of 70	25% of 48	50% of 4	10% of 20	50% of 30	25% of 60	20% of 75	50% of 30	50% of 4	50% of 4	50% of 24	25% of 48	50% of 24
10% of 70	25% of 28	25% of 28	10% of 70	25% of 28	25% of 28	10% of 70	50% of 14	25% of 28	20% of 35	10% of 70	50% of 14	50% of 14	50% of 24
25% of 48	50% of 24	10% of 70	50% of 14	25% of 28	25% of 28	20% of 35	20% of 35	25% of 28	20% of 35	25% of 28	10% of 70	50% of 14	25% of 28
25% of 48	20% of 60	50% of 24	20% of 60	20% of 60	50% of 24	50% of 24	50% of 24	50% of 24	50% of 24	25% of 48	25% of 48	25% of 48	50% of 24
20% of 60	25% of 48	25% of 48	20% of 60	20% of 60	20% of 60	50% of 24	20% of 60	25% of 48	50% of 24	50% of 24	50% of 24	20% of 60	25% of 48
20% of 20	25% of 16	20% of 20	10% of 40	20% of 20	10% of 40	20% of 20	50% of 8	25% of 16	50% of 8	25% of 16	25% of 16	10% of 40	10% of 40
20% of 40	20% of 40	20% of 40	10% of 80	20% of 40	10% of 80	20% of 40	20% of 40	20% of 40	20% of 40	50% of 16	25% of 32	25% of 32	20% of 40
10% of 80	25% of 32	50% of 16	50% of 16	25% of 32	50% of 16	10% of 80	50% of 16	20% of 40	20% of 40	25% of 32	50% of 16	25% of 32	20% of 40

Acorn & Ink

Percentages of amounts

Answers are shown in red.

Name _____ Date _____

1. 50% of 100 = **50**
2. 30% of 460 = **138**
3. 1% of 400 = **4**
4. 50% of 348 = **174**
5. 15% of 240 = **36**
6. 60% of 155 = **93**
7. 10% of 300 = **30**
8. 40% of 450 = **180**
9. 75% of 84 = **63**
10. 15% of 480 = **72**
11. 25% of 456 = **114**
12. 1% of 300 = **3**
13. 40% of 310 = **124**
14. 25% of 544 = **136**
15. 5% of 180 = **9**
16. 40% of 175 = **70**

Tip: 50% is half, 25% is a quarter, 10% is divide by 10, 1% is divide by 100.

Build it from blocks

Acorn & Ink

Answers are shown in red.

Name _____ Date _____

1. Find **45% of 1,000**

10% = **100** 5% = **50** 1% = **10**

45% = **10% × 4 + 5%** = **400 + 50** = **450**

2. Find **85% of 800**

10% = **80** 5% = **40** 1% = **8**

85% = **10% × 8 + 5%** = **640 + 40** = **680**

3. Find **65% of 700**

10% = **70** 5% = **35** 1% = **7**

65% = **10% × 6 + 5%** = **420 + 35** = **455**

4. Find **12% of 100**

10% = **10** 5% = **5** 1% = **1**

12% = **10% + 1% × 2** = **10 + 2** = **12**

5. Find **15% of 600**

10% = **60** 5% = **30** 1% = **6**

15% = **10% + 5%** = **60 + 30** = **90**

6. Find **95% of 400**

10% = **40** 5% = **20** 1% = **4**

95% = **10% × 9 + 5%** = **360 + 20** = **380**

Acorn & Ink

Sale shop

Answers are shown in red.

Name _____ Date _____

Football
£120
10% off

You save **£12** Sale price **£108**

Roller skates
£100
25% off

You save **£25** Sale price **£75**

Skateboard
£20
10% off

You save **£2** Sale price **£18**

Box of books
£156
25% off

You save **£39** Sale price **£117**

Kite
£36
25% off

You save **£9** Sale price **£27**

Backpack
£140
5% off

You save **£7** Sale price **£133**

Tent
£35
20% off

You save **£7** Sale price **£28**

Paint set
£40
30% off

You save **£12** Sale price **£28**

Acorn & Ink

Percentage word problems

Answers are shown in red.

Name _____ **Date** _____

1. Isla's family is driving 20 km to the beach. They have done 75% of the journey. How far have they driven?

   Answer: **15 km**

2. A computer game has 60 levels. Priya has finished 10% of them. How many levels is that?

   Answer: **6 levels**

3. A film lasts 120 minutes. 10% of it is the ending. How many minutes is the ending?

   Answer: **12 minutes**

4. A bike costs £150. In a sale it is 20% off. How much money do you save?

   Answer: **£30**

5. Omar has 50 marbles. 20% of them are blue. How many marbles are not blue?

   Answer: **40 marbles**

6. A cake weighs 200 g. 25% of the cake is sugar. How many grams of sugar are in the cake?

   Answer: **50 g**

7. There are 35 children at Zara's football club. 60% of them are under 10. How many children are under 10?

   Answer: **21 children**

8. A bottle holds 500 ml of juice. Alfie drinks 25% of it. How many ml does Alfie drink?

   Answer: **125 ml**

It's a snail!

Acorn & Ink

Here's how the finished picture looks.

2 orange 3 black 4 green 7 sand

8 dark green 12 light blue 15 brown

25% of 48	25% of 48	20% of 60	20% of 60	50% of 24	50% of 24	50% of 24	25% of 48	50% of 24	25% of 48	25% of 48	20% of 60	50% of 24	25% of 48
20% of 60	50% of 24	20% of 60	50% of 24	25% of 48	50% of 24	50% of 24	50% of 24	25% of 48	20% of 60	50% of 24	25% of 48	20% of 60	25% of 48
25% of 48	20% of 60	50% of 24	25% of 48	20% of 60	50% of 24	50% of 24	20% of 60	50% of 24	20% of 60	50% of 24	25% of 48	50% of 24	20% of 60
20% of 60	25% of 48	25% of 48	50% of 24	50% of 24	10% of 20	20% of 10	20% of 10	20% of 10	50% of 24	25% of 48	50% of 24	25% of 48	50% of 24
20% of 60	25% of 48	25% of 48	20% of 60	50% of 4	50% of 4	20% of 75	50% of 30	20% of 75	25% of 8	25% of 8	20% of 60	25% of 48	20% of 60
10% of 30	50% of 24	50% of 24	10% of 20	25% of 8	20% of 75	25% of 8	20% of 10	50% of 4	20% of 75	50% of 4	50% of 4	25% of 48	50% of 24
25% of 28	25% of 48	50% of 24	10% of 20	20% of 75	20% of 10	20% of 75	50% of 30	10% of 20	25% of 60	50% of 4	50% of 4	20% of 60	50% of 24
50% of 14	20% of 60	50% of 24	50% of 4	50% of 30	20% of 10	20% of 10	10% of 20	20% of 10	50% of 30	25% of 8	50% of 4	25% of 48	25% of 48
10% of 70	10% of 70	25% of 48	50% of 4	10% of 20	50% of 30	25% of 60	20% of 75	50% of 30	50% of 4	50% of 4	50% of 24	25% of 48	50% of 24
10% of 70	25% of 28	25% of 28	10% of 70	25% of 28	25% of 28	10% of 70	50% of 14	25% of 28	20% of 35	10% of 70	50% of 14	50% of 14	50% of 24
25% of 48	50% of 24	10% of 70	50% of 14	25% of 28	25% of 28	20% of 35	20% of 35	25% of 28	20% of 35	25% of 28	10% of 70	50% of 14	25% of 28
25% of 48	20% of 60	50% of 24	20% of 60	20% of 60	50% of 24	50% of 24	50% of 24	50% of 24	50% of 24	25% of 48	25% of 48	25% of 48	50% of 24
20% of 60	25% of 48	25% of 48	20% of 60	20% of 60	20% of 60	50% of 24	20% of 60	25% of 48	50% of 24	50% of 24	50% of 24	20% of 60	25% of 48
20% of 20	25% of 16	20% of 20	10% of 40	20% of 20	10% of 40	20% of 20	50% of 8	25% of 16	50% of 8	25% of 16	25% of 16	10% of 40	10% of 40
20% of 40	20% of 40	20% of 40	10% of 80	20% of 40	10% of 80	20% of 40	20% of 40	20% of 40	20% of 40	50% of 16	25% of 32	25% of 32	20% of 40
10% of 80	25% of 32	50% of 16	50% of 16	25% of 32	50% of 16	10% of 80	50% of 16	20% of 40	20% of 40	25% of 32	50% of 16	25% of 32	20% of 40

Acorn & Ink

Percentages made easy

Per cent means “out of 100”. 18% = 18 out of every 100 = $\frac{18}{100}$.

The building blocks

100% the whole

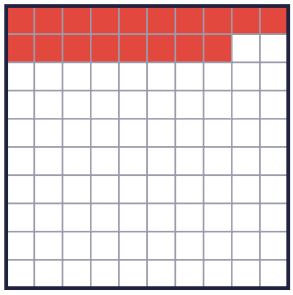
50% divide by 2 (half)

25% divide by 4 (a quarter)

10% divide by 10

5% half of 10%

1% divide by 100



18 squares out of 100 = 18%

1. Build it from blocks

35% of 240
= 10% + 10% + 10% + 5%
= 24 + 24 + 24 + 12 = **84**

2. Use a fraction

75% of 36 = $\frac{3}{4}$ of 36
36 ÷ 4 = 9
9 × 3 = **27**

3. Multiply, then ÷ 100

18% of 18
18 × 18 = 324
324 ÷ 100 = **3.24**

The swap trick

A% of B = B% of A.
8% of 25 = 25% of 8 = **2**

Ages 11+

Increase/decrease: work out the %, then add it or take it away.
As a %: part ÷ whole × 100.
% change: difference ÷ start × 100.

Fractions, decimals and percentages

$\frac{1}{2}$ = 0.5 = **50%** $\frac{1}{4}$ = 0.25 = **25%** $\frac{3}{4}$ = 0.75 = **75%** $\frac{1}{5}$ = 0.2 = **20%**

$\frac{1}{10}$ = 0.1 = **10%** $\frac{1}{100}$ = 0.01 = **1%**

PERCENTAGES · AGES 11–14

Acorn & Ink

Any percentage of any number

Work out each percentage. Estimate first, then check your answer looks sensible.

Name _____ Date _____ Score _____ / 14

1. 151% of 600 = _____

2. 48% of 25 = _____

3. 38% of 700 = _____

4. 17.5% of 80 = _____

5. 35% of 600 = _____

6. 14% of 350 = _____

7. 51% of 600 = _____

8. 5% of 740 = _____

9. 44% of 50 = _____

10. 0.5% of 600 = _____

11. 99% of 800 = _____

12. 137% of 400 = _____

13. 47% of 900 = _____

14. 0.5% of 400 = _____

> You can use a calculator: multiply the two numbers, then divide by 100. Every answer is a whole number.

PERCENTAGES · AGES 11–14

Increase and decrease

Acorn & Ink

Work out the new amount. Every answer is a whole number.

Name _____ Date _____ Score _____ / 12

1. Increase 70 ml by 40% = _____
2. Decrease £290 by 10% = _____
3. Decrease £60 by 15% = _____
4. Decrease £825 by 12% = _____
5. Increase 1,100 m by 3% = _____
6. Increase £300 by 5% = _____
7. Increase 515 kg by 40% = _____
8. Increase 700 ml by 3% = _____
9. Decrease 845 kg by 40% = _____
10. Increase 120 m by 17.5% = _____
11. Decrease 1,020 m by 35% = _____
12. Decrease 990 kg by 40% = _____

Shortcut: to increase by 15%, multiply by 1.15. To decrease by 15%, multiply by 0.85.

Acorn & Ink

One number as a percentage of another

Write the first number as a percentage of the second.

Name _____ Date _____ Score _____ / 12

1. 18 as a percentage of 20 = _____
2. 104 as a percentage of 200 = _____
3. 14 as a percentage of 200 = _____
4. 25 as a percentage of 50 = _____
5. 220 as a percentage of 250 = _____
6. 192 as a percentage of 200 = _____
7. 42 as a percentage of 60 = _____
8. 60 as a percentage of 240 = _____
9. 66 as a percentage of 120 = _____
10. 90 as a percentage of 120 = _____
11. 204 as a percentage of 240 = _____
12. 48 as a percentage of 75 = _____

Divide the part by the whole, then multiply by 100. Every answer is a whole number.

PERCENTAGES · AGES 11–14

Percentage change

Find the difference, divide by the starting amount, then multiply by 100.

Name _____ **Date** _____ **Score** _____ / 8

1. A school's number of pupils goes from 40 to 24. What is the percentage decrease?

   Answer: _____

2. A sunflower grows from 240 cm to 288 cm. What is the percentage increase?

   Answer: _____

3. A school's number of pupils goes from 440 to 550. What is the percentage increase?

   Answer: _____

4. A video game's price goes from £440 to £528. What is the percentage increase?

   Answer: _____

5. A channel's followers go from 360 to 504. What is the percentage increase?

   Answer: _____

6. A sunflower grows from 40 cm to 38 cm. What is the percentage decrease?

   Answer: _____

7. A café sells 120 cups of tea one week and 192 the next. What is the percentage increase?

   Answer: _____

8. A video game's price goes from £560 to £336. What is the percentage decrease?

   Answer: _____

PERCENTAGES · AGES 11–14

Real-life percentages

Acorn & Ink

You can use a calculator. Show what you typed in. Every answer is a whole number.

Name _____ **Date** _____ **Score** _____ / 8

1. A town had 8,000 people. Now it has 8,400. What is the percentage increase?

   Answer: _____

2. A phone battery is at 100%. It uses 18% of its charge every hour. What percentage is left after 4 hours?

   Answer: _____

3. Mia scored 33 out of 60 in a test. What percentage is that?

   Answer: _____

4. Sam buys trainers for £90 in a 40% off sale. What was the original price?

   Answer: _____

5. A phone costs £450. The price goes up by 6%. What is the new price?

   Answer: _____

6. A shop price is £30 before VAT. VAT at 20% is added. What is the price with VAT?

   Answer: _____

7. A restaurant bill is £24. A 12.5% service charge is added. What is the total bill?

   Answer: _____

8. You put £1,200 in a savings account that pays 3% simple interest each year. How much interest do you earn in 2 years?

   Answer: _____

Acorn & Ink

Any percentage of any number

Answers are shown in red.

Name _____ Date _____

1. 151% of 600 = **906**
2. 48% of 25 = **12**
3. 38% of 700 = **266**
4. 17.5% of 80 = **14**
5. 35% of 600 = **210**
6. 14% of 350 = **49**
7. 51% of 600 = **306**
8. 5% of 740 = **37**
9. 44% of 50 = **22**
10. 0.5% of 600 = **3**
11. 99% of 800 = **792**
12. 137% of 400 = **548**
13. 47% of 900 = **423**
14. 0.5% of 400 = **2**

You can use a calculator: multiply the two numbers, then divide by 100. Every answer is a whole number.

Acorn & Ink

Increase and decrease

Answers are shown in red.

Name _____ Date _____

1. Increase 70 ml by 40% = **98 ml**
2. Decrease £290 by 10% = **£261**
3. Decrease £60 by 15% = **£51**
4. Decrease £825 by 12% = **£726**
5. Increase 1,100 m by 3% = **1,133 m**
6. Increase £300 by 5% = **£315**
7. Increase 515 kg by 40% = **721 kg**
8. Increase 700 ml by 3% = **721 ml**
9. Decrease 845 kg by 40% = **507 kg**
10. Increase 120 m by 17.5% = **141 m**
11. Decrease 1,020 m by 35% = **663 m**
12. Decrease 990 kg by 40% = **594 kg**

Shortcut: to increase by 15%, multiply by 1.15. To decrease by 15%, multiply by 0.85.

Acorn & Ink

One number as a percentage of another

Answers are shown in red.

Name _____ Date _____

1. 18 as a percentage of 20 = **90%**
2. 104 as a percentage of 200 = **52%**
3. 14 as a percentage of 200 = **7%**
4. 25 as a percentage of 50 = **50%**
5. 220 as a percentage of 250 = **88%**
6. 192 as a percentage of 200 = **96%**
7. 42 as a percentage of 60 = **70%**
8. 60 as a percentage of 240 = **25%**
9. 66 as a percentage of 120 = **55%**
10. 90 as a percentage of 120 = **75%**
11. 204 as a percentage of 240 = **85%**
12. 48 as a percentage of 75 = **64%**

Divide the part by the whole, then multiply by 100. Every answer is a whole number.

Percentage change

Answers are shown in red.

Name _____ **Date** _____

1. A school's number of pupils goes from 40 to 24. What is the percentage decrease?

   Answer: **40% decrease**

2. A sunflower grows from 240 cm to 288 cm. What is the percentage increase?

   Answer: **20% increase**

3. A school's number of pupils goes from 440 to 550. What is the percentage increase?

   Answer: **25% increase**

4. A video game's price goes from £440 to £528. What is the percentage increase?

   Answer: **20% increase**

5. A channel's followers go from 360 to 504. What is the percentage increase?

   Answer: **40% increase**

6. A sunflower grows from 40 cm to 38 cm. What is the percentage decrease?

   Answer: **5% decrease**

7. A café sells 120 cups of tea one week and 192 the next. What is the percentage increase?

   Answer: **60% increase**

8. A video game's price goes from £560 to £336. What is the percentage decrease?

   Answer: **40% decrease**

ANSWERS · PERCENTAGES · AGES 11–14

Real-life percentages

Acorn & Ink

Answers are shown in red.

Name _____ **Date** _____

1. A town had 8,000 people. Now it has 8,400. What is the percentage increase?

   Answer: **5%**

2. A phone battery is at 100%. It uses 18% of its charge every hour. What percentage is left after 4 hours?

   Answer: **28%**

3. Mia scored 33 out of 60 in a test. What percentage is that?

   Answer: **55%**

4. Sam buys trainers for £90 in a 40% off sale. What was the original price?

   Answer: **£150**

5. A phone costs £450. The price goes up by 6%. What is the new price?

   Answer: **£477**

6. A shop price is £30 before VAT. VAT at 20% is added. What is the price with VAT?

   Answer: **£36**

7. A restaurant bill is £24. A 12.5% service charge is added. What is the total bill?

   Answer: **£27**

8. You put £1,200 in a savings account that pays 3% simple interest each year. How much interest do you earn in 2 years?

   Answer: **£72**