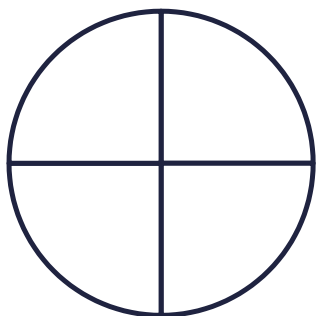


Colour the fraction

Colour the right number of equal parts in each shape.

Name _____ Date _____ Score _____ / 9

Colour $\frac{3}{4}$



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

Colour $\frac{1}{3}$



Colour $\frac{1}{4}$



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

Colour $\frac{1}{4}$



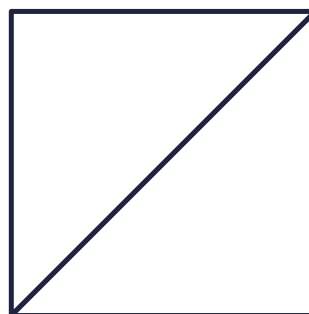
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{3}{4}$



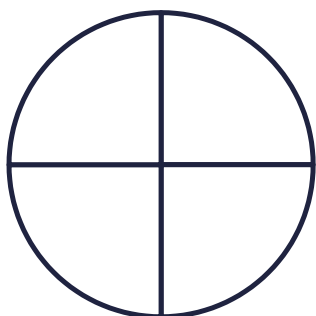
$\frac{3}{4}$ is the same as **75%**

Colour $\frac{1}{2}$



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

Colour $\frac{2}{4}$



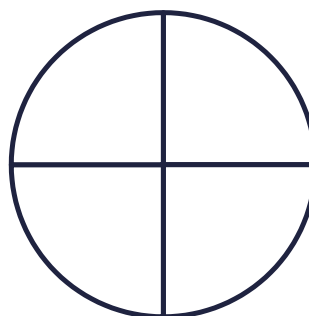
$\frac{2}{4}$ is the same as **50%**

Colour $\frac{1}{2}$



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

Colour $\frac{1}{4}$



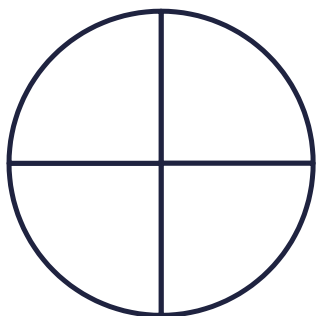
$\frac{1}{4}$ is the same as **25%**

Colour the fraction

Colour the right number of equal parts in each shape.

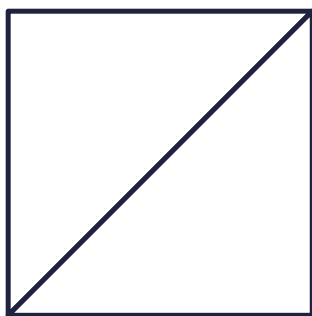
Name _____ Date _____ Score _____ / 9

Colour $\frac{3}{4}$



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

Colour $\frac{1}{2}$



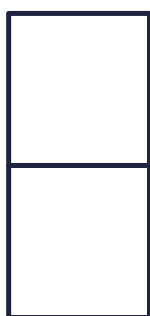
$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{2}$



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

Colour $\frac{1}{2}$



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

Colour $\frac{1}{3}$

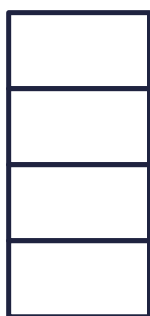


Colour $\frac{1}{4}$



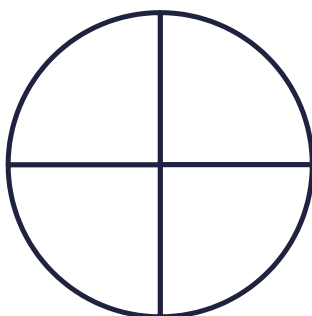
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{4}$



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

Colour $\frac{2}{4}$



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

Colour $\frac{1}{4}$



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

Halves and quarters

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

Name _____ Date _____ Score _____ / 8

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



= _____

Half of 20 ($\frac{1}{2}$, or 50%)



= _____

A quarter of 8 ($\frac{1}{4}$, or 25%)



= _____

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



= _____

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



= _____

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



= _____

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



= _____

Half of 18 ($\frac{1}{2}$, or 50%)



= _____

What's the mystery picture?

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

- 2  yellow
 3  light blue
 4  red
 6  dark blue
 7  leave white
 8  sand
 9  green
 10  brown

$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 4	$\frac{1}{2}$ of 4	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 28	$\frac{1}{4}$ of 28	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 4	$\frac{1}{2}$ of 4	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 28	$\frac{1}{2}$ of 14	$\frac{1}{4}$ of 28	$\frac{1}{2}$ of 14
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12
$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 12	$\frac{1}{4}$ of 24	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 12	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 12	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 40	$\frac{1}{2}$ of 20	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 40	$\frac{1}{2}$ of 20	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36
$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18

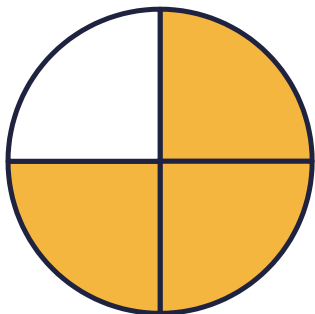
Colour the fraction

Answers are shown in red.

Name _____

Date _____

Colour $\frac{3}{4}$



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

Colour $\frac{1}{3}$



Colour $\frac{1}{4}$



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

Colour $\frac{1}{4}$



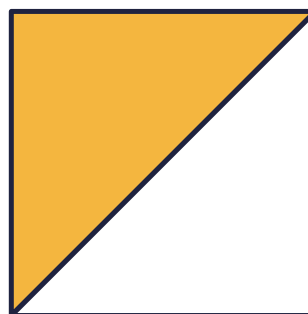
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{3}{4}$



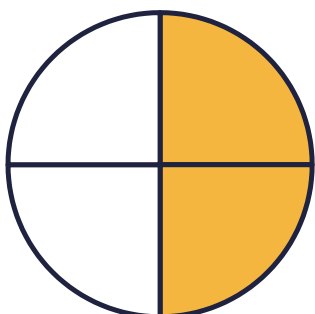
$\frac{3}{4}$ is the same as **75%**

Colour $\frac{1}{2}$



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

Colour $\frac{2}{4}$



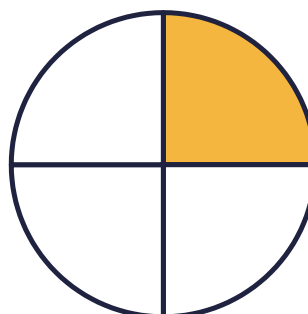
$\frac{2}{4}$ is the same as **50%**

Colour $\frac{1}{2}$



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

Colour $\frac{1}{4}$



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

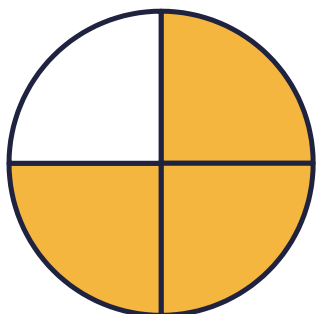
Colour the fraction

Answers are shown in red.

Name _____

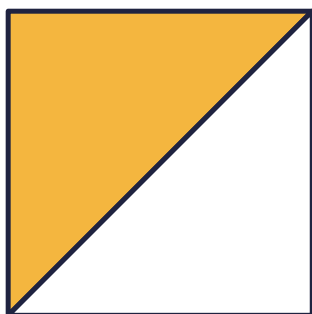
Date _____

Colour $\frac{3}{4}$



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

Colour $\frac{1}{2}$



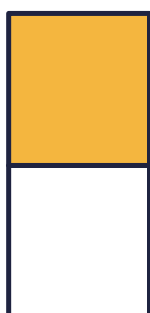
$\frac{1}{2}$ is the same as **50%**

Colour $\frac{1}{2}$



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

Colour $\frac{1}{2}$



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

Colour $\frac{1}{3}$

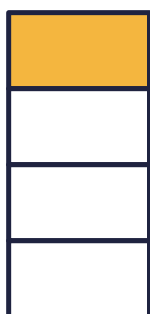


Colour $\frac{1}{4}$



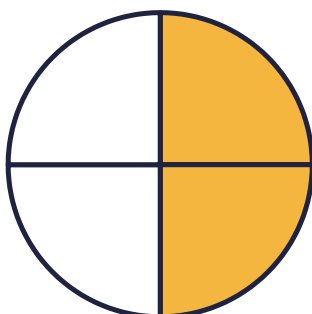
$\frac{1}{4}$ is the same as **25%**

Colour $\frac{1}{4}$



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

Colour $\frac{2}{4}$



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

Colour $\frac{1}{4}$



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

Halves and quarters

Answers are shown in red.

Name _____ Date _____

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



= 4

Half of 20 ($\frac{1}{2}$, or 50%)



= 10

A quarter of 8 ($\frac{1}{4}$, or
25%)



= 2

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



= 4

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



= 8

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



= 5

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



= 1

Half of 18 ($\frac{1}{2}$, or 50%)



= 9

It's a house!

Here's how the finished picture looks.

- 2  yellow
 3  light blue
 4  red
 6  dark blue
 7  leave white
 8  sand
 9  green
 10  brown

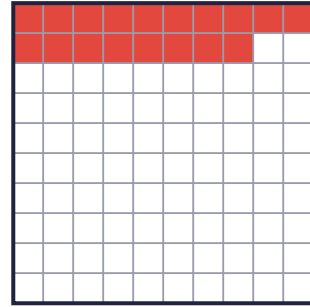
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 4	$\frac{1}{2}$ of 4	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 28	$\frac{1}{4}$ of 28	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 4	$\frac{1}{2}$ of 4	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 28	$\frac{1}{2}$ of 14	$\frac{1}{4}$ of 28	$\frac{1}{2}$ of 14
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 16	$\frac{1}{2}$ of 8	$\frac{1}{2}$ of 8	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12
$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 12	$\frac{1}{4}$ of 24	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 12	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 12	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12
$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 40	$\frac{1}{2}$ of 20	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12
$\frac{1}{2}$ of 6	$\frac{1}{4}$ of 12	$\frac{1}{4}$ of 12	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 40	$\frac{1}{2}$ of 20	$\frac{1}{2}$ of 16	$\frac{1}{2}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6	$\frac{1}{2}$ of 6
$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36
$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 36	$\frac{1}{2}$ of 18

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
 $36 \div 4 = 9$
 $9 \times 3 = 27$

3. Multiply, then ÷

100
 18% of 18
 $18 \times 18 = 324$
 $324 \div 100 = 3.24$

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 %: $\text{part} \div \text{whole} \times 100$.

% change: $\text{difference} \div \text{start} \times 100$.

Fractions, decimals and percentages

$\frac{1}{2} = 0.5 = 50\%$ $\frac{1}{4} = 0.25 = 25\%$ $\frac{3}{4} = 0.75 = 75\%$ $\frac{1}{5} = 0.2 = 20\%$
 $\frac{1}{10} = 0.1 = 10\%$ $\frac{1}{100} = 0.01 = 1\%$

Colour the percentage

Colour the right number of squares in each 100 square.

Name _____ Date _____ Score _____ / 6

Colour **49%**

Colour **32%**

Colour **90%**

Colour **60%**

Colour **37%**

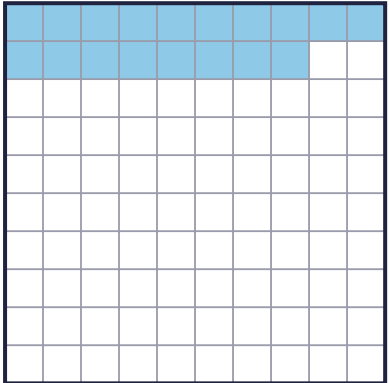
Colour **72%**

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

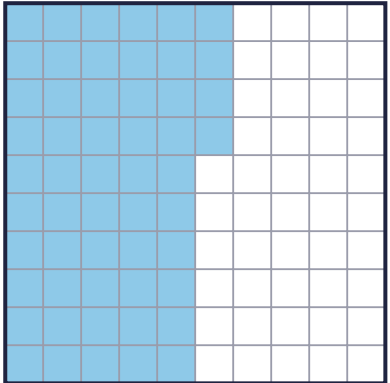
What percentage is shaded?

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

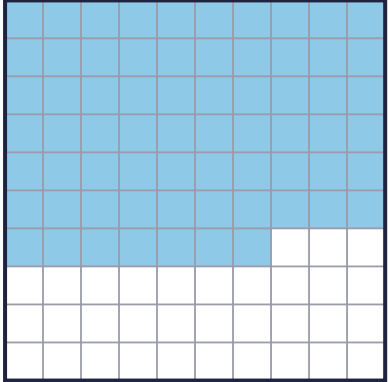
Name _____ Date _____ Score _____ / 18



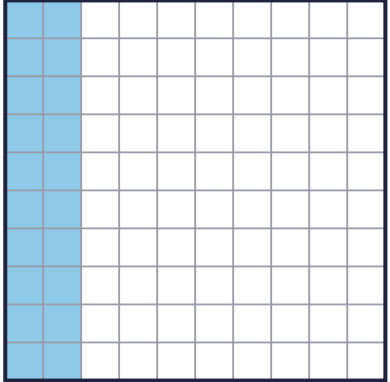
_____ per cent _____ fraction _____ decimal



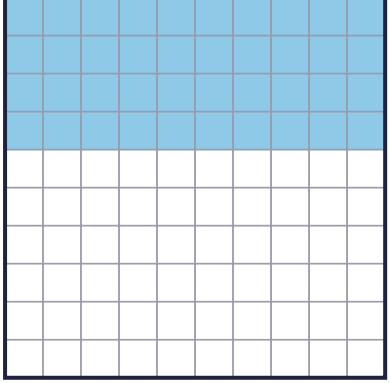
_____ per cent _____ fraction _____ decimal



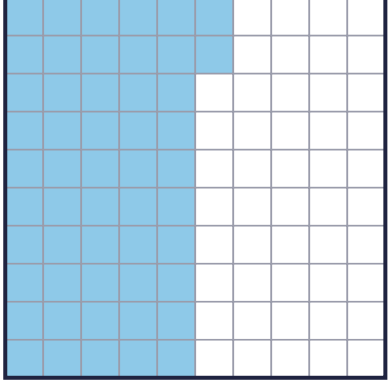
_____ per cent _____ fraction _____ decimal



_____ per cent _____ fraction _____ decimal



_____ per cent _____ fraction _____ decimal



_____ per cent _____ fraction _____ decimal

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
$\frac{1}{20}$	_____	_____
_____	0.99	_____
_____	_____	80%
$\frac{1}{100}$	_____	_____
_____	0.6	_____
_____	_____	40%
$\frac{1}{2}$	_____	_____
_____	0.7	_____
_____	_____	37%
$\frac{17}{100}$	_____	_____
_____	0.03	_____
_____	_____	2%

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 _____

0.2	20%	40%	90%
0.7	$\frac{4}{5}$	$\frac{2}{5}$	0.4
80%	5%	$\frac{9}{10}$	$\frac{7}{10}$
70%	$\frac{1}{2}$	$\frac{1}{20}$	$\frac{3}{10}$
50%	0.5	0.3	0.8
30%	0.9	0.05	$\frac{1}{5}$

What's the mystery picture?

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

2  yellow4  dark blue8  red9  orange12  leave white

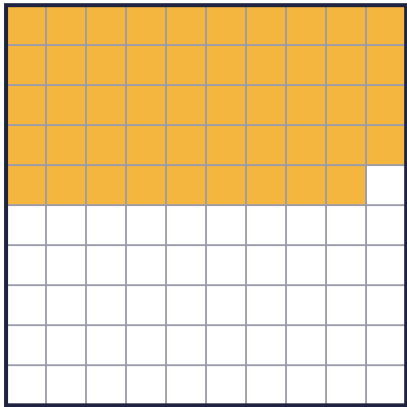
50% of 8	50% of 8	25% of 16	10% of 40	10% of 40	25% of 16	10% of 40	50% of 8	50% of 8	20% of 20	50% of 8	50% of 8	20% of 60	50% of 8
10% of 40	25% of 48	20% of 20	50% of 8	25% of 16	20% of 20	10% of 40	20% of 20	20% of 20	25% of 16	10% of 40	25% of 16	25% of 16	20% of 20
10% of 40	20% of 20	20% of 20	25% of 16	25% of 16	50% of 18	20% of 45	50% of 18	25% of 36	25% of 16	20% of 20	20% of 20	25% of 16	10% of 40
10% of 40	25% of 16	10% of 40	20% of 20	10% of 90	50% of 18	50% of 18	50% of 18	10% of 90	20% of 45	20% of 20	50% of 8	10% of 40	50% of 8
10% of 40	10% of 40	50% of 8	25% of 36	25% of 36	50% of 16	20% of 45	20% of 45	50% of 18	20% of 45	50% of 18	50% of 8	10% of 40	50% of 8
10% of 40	25% of 8	25% of 8	25% of 36	50% of 18	10% of 90	20% of 45	20% of 45	50% of 18	20% of 45	10% of 90	25% of 8	20% of 10	10% of 40
20% of 10	25% of 8	25% of 8	25% of 8	20% of 10	50% of 4	25% of 8	25% of 8	25% of 8	10% of 20	20% of 10	25% of 8	20% of 10	25% of 8
50% of 8	25% of 16	10% of 20	20% of 45	20% of 45	10% of 80	10% of 80	50% of 16	20% of 40	20% of 45	10% of 90	10% of 20	10% of 40	25% of 16
10% of 40	50% of 8	50% of 8	10% of 90	20% of 45	10% of 90	50% of 18	50% of 18	50% of 18	25% of 36	50% of 18	20% of 20	10% of 40	20% of 20
50% of 8	50% of 8	20% of 20	25% of 16	50% of 18	20% of 45	25% of 36	20% of 45	20% of 45	50% of 18	25% of 16	50% of 8	50% of 8	10% of 40
10% of 40	25% of 16	50% of 8	50% of 8	50% of 8	50% of 18	25% of 36	25% of 36	10% of 90	10% of 40	10% of 40	10% of 40	10% of 40	20% of 20
10% of 40	50% of 8	20% of 20	50% of 8	10% of 40	10% of 40	10% of 40	10% of 40	10% of 40	25% of 16	10% of 40	25% of 48	50% of 8	50% of 8
50% of 8	25% of 16	50% of 24	20% of 20	50% of 8	10% of 40	20% of 20	50% of 8	10% of 40	20% of 20	10% of 40	10% of 40	50% of 8	20% of 20
25% of 16	20% of 20	25% of 16	25% of 16	20% of 20	25% of 16	25% of 16	20% of 60	25% of 16	50% of 8	25% of 16	10% of 40	10% of 40	10% of 40
20% of 20	50% of 8	20% of 20	25% of 16	20% of 20	20% of 20	10% of 40	10% of 40	20% of 20	20% of 20	25% of 16	25% of 16	25% of 16	10% of 40
20% of 20	20% of 60	25% of 16	10% of 40	25% of 16	20% of 20	10% of 40	10% of 40	50% of 8	10% of 40	20% of 20	10% of 40	50% of 24	20% of 20

Colour the percentage

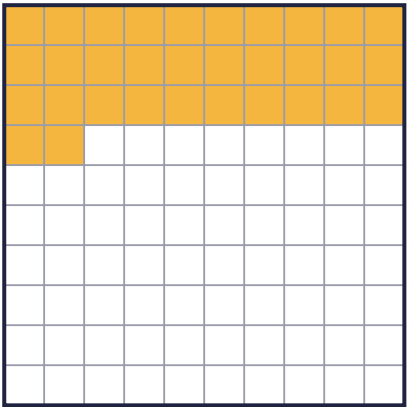
Answers are shown in red.

Name _____ Date _____

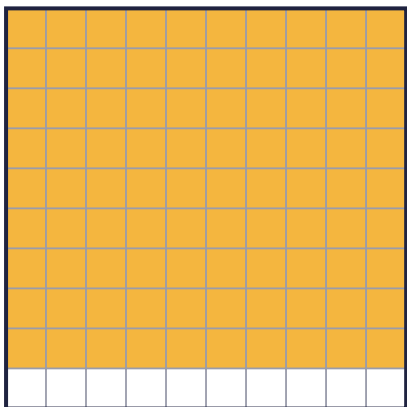
Colour **49%**



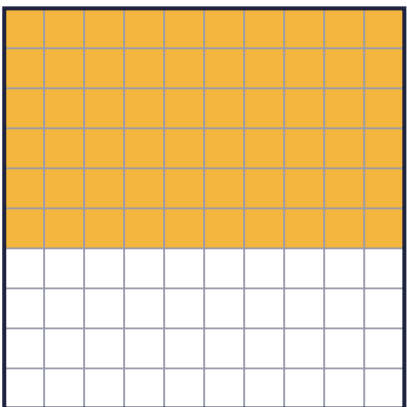
Colour **32%**



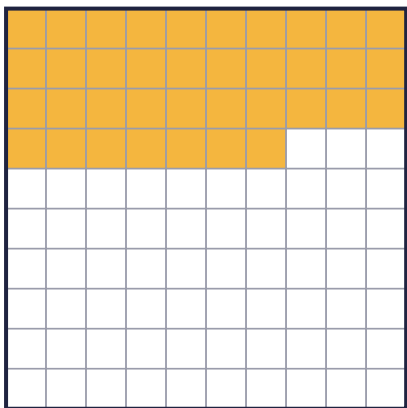
Colour **90%**



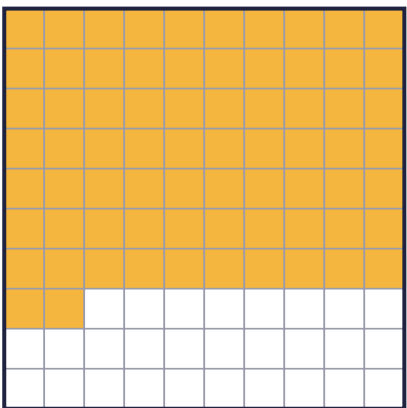
Colour **60%**



Colour **37%**



Colour **72%**

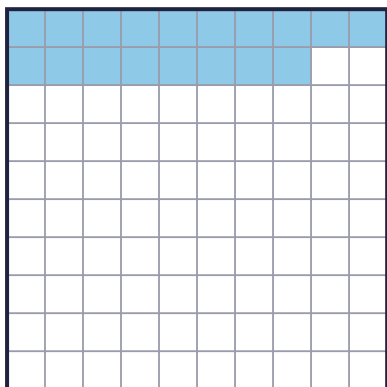


Remember: each small square is 1%. A whole row of 10 squares is 10%.

What percentage is shaded?

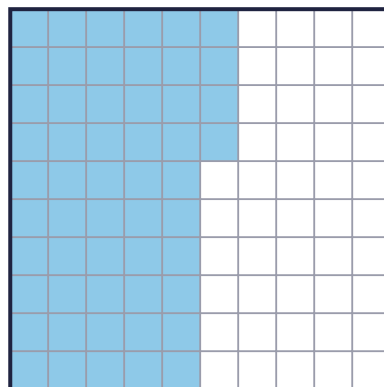
Answers are shown in red.

Name _____ Date _____



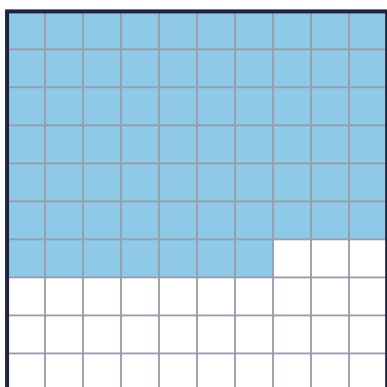
18% **18/100** **0.18**

per cent fraction decimal



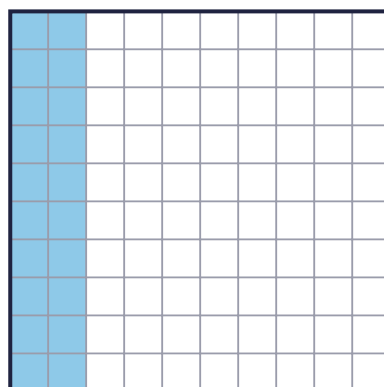
54% **54/100** **0.54**

per cent fraction decimal



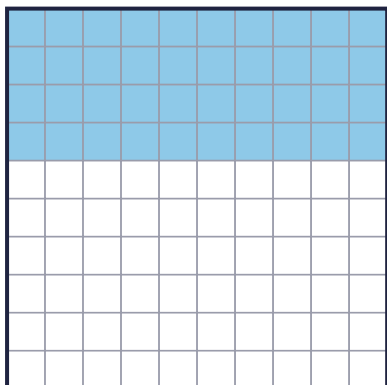
67% **67/100** **0.67**

per cent fraction decimal



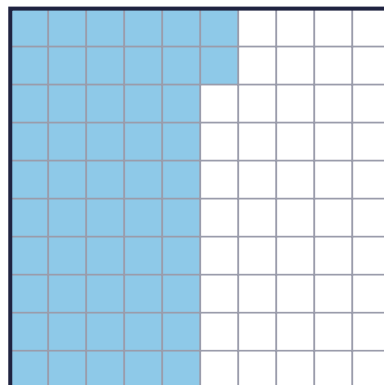
20% **20/100** **0.2**

per cent fraction decimal



40% **40/100** **0.4**

per cent fraction decimal



52% **52/100** **0.52**

per cent fraction decimal

Fractions, decimals and percentages

Answers are shown in red.

Name _____ Date _____

Fraction	Decimal	Percentage
$\frac{1}{20}$	<u>0.05</u>	<u>5%</u>
<u>$\frac{99}{100}$</u>	0.99	<u>99%</u>
<u>$\frac{4}{5}$</u>	<u>0.8</u>	80%
$\frac{1}{100}$	<u>0.01</u>	<u>1%</u>
<u>$\frac{3}{5}$</u>	0.6	<u>60%</u>
<u>$\frac{2}{5}$</u>	<u>0.4</u>	40%
$\frac{1}{2}$	<u>0.5</u>	<u>50%</u>
<u>$\frac{7}{10}$</u>	0.7	<u>70%</u>
<u>$\frac{37}{100}$</u>	<u>0.37</u>	37%
$\frac{17}{100}$	<u>0.17</u>	<u>17%</u>
<u>$\frac{3}{100}$</u>	0.03	<u>3%</u>
<u>$\frac{1}{50}$</u>	<u>0.02</u>	2%

It's a ringed planet!

Here's how the finished picture looks.

2  yellow
 4  dark blue
 8  red
 9  orange
 12  leave white

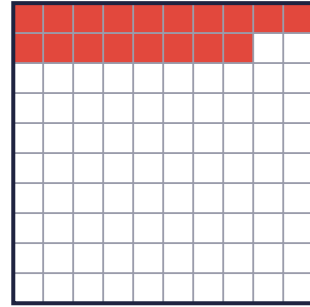
50% of 8	50% of 8	25% of 16	10% of 40	10% of 40	25% of 16	10% of 40	50% of 8	50% of 8	20% of 20	50% of 8	50% of 8	20% of 60	50% of 8
10% of 40	25% of 48	20% of 20	50% of 8	25% of 16	20% of 20	10% of 40	20% of 20	20% of 20	25% of 16	10% of 40	25% of 16	25% of 16	20% of 20
10% of 40	20% of 20	20% of 20	25% of 16	25% of 16	50% of 18	20% of 45	50% of 18	25% of 36	25% of 16	20% of 20	20% of 20	25% of 16	10% of 40
10% of 40	25% of 16	10% of 40	20% of 20	10% of 90	50% of 18	50% of 18	50% of 18	10% of 90	20% of 45	20% of 20	50% of 8	10% of 40	50% of 8
10% of 40	10% of 40	50% of 8	25% of 36	25% of 36	50% of 16	20% of 45	20% of 45	50% of 18	20% of 45	50% of 18	50% of 8	10% of 40	50% of 8
10% of 40	25% of 8	25% of 8	25% of 36	50% of 18	10% of 90	20% of 45	20% of 45	50% of 18	20% of 45	10% of 90	25% of 8	20% of 10	10% of 40
20% of 10	25% of 8	25% of 8	25% of 8	20% of 10	50% of 4	25% of 8	25% of 8	25% of 8	10% of 20	20% of 10	25% of 8	20% of 10	25% of 8
50% of 8	25% of 16	10% of 20	20% of 45	20% of 45	10% of 80	10% of 80	50% of 16	20% of 40	20% of 45	10% of 90	10% of 20	10% of 40	25% of 16
10% of 40	50% of 8	50% of 8	10% of 90	20% of 45	10% of 90	50% of 18	50% of 18	50% of 18	25% of 36	50% of 18	20% of 20	10% of 40	20% of 20
50% of 8	50% of 8	20% of 20	25% of 16	50% of 18	20% of 45	25% of 36	20% of 45	20% of 45	50% of 18	25% of 16	50% of 8	50% of 8	10% of 40
10% of 40	25% of 16	50% of 8	50% of 8	50% of 8	50% of 18	25% of 36	25% of 36	10% of 90	10% of 40	10% of 40	10% of 40	10% of 40	20% of 20
10% of 40	50% of 8	20% of 20	50% of 8	10% of 40	10% of 40	10% of 40	10% of 40	10% of 40	25% of 16	10% of 40	25% of 48	50% of 8	50% of 8
50% of 8	25% of 16	50% of 24	20% of 20	50% of 8	10% of 40	20% of 20	50% of 8	10% of 40	20% of 20	10% of 40	10% of 40	50% of 8	20% of 20
25% of 16	20% of 20	25% of 16	25% of 16	20% of 20	25% of 16	25% of 16	20% of 60	25% of 16	50% of 8	25% of 16	10% of 40	10% of 40	10% of 40
20% of 20	50% of 8	20% of 20	25% of 16	20% of 20	20% of 20	10% of 40	10% of 40	20% of 20	20% of 20	25% of 16	25% of 16	25% of 16	10% of 40
20% of 20	20% of 60	25% of 16	10% of 40	25% of 16	20% of 20	10% of 40	10% of 40	50% of 8	10% of 40	20% of 20	10% of 40	50% of 24	20% of 20

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
 $36 \div 4 = 9$
 $9 \times 3 = 27$

3. Multiply, then ÷

100
 18% of 18
 $18 \times 18 = 324$
 $324 \div 100 = 3.24$

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 %: $\text{part} \div \text{whole} \times 100$.

% change: $\text{difference} \div \text{start} \times 100$.

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 of amounts

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

Name _____

Date _____

Score _____ / 16

1. 30% of 500 = _____

2. 40% of 380 = _____

3. 50% of 256 = _____

4. 75% of 320 = _____

5. 15% of 380 = _____

6. 1% of 400 = _____

7. 15% of 580 = _____

8. 20% of 490 = _____

9. 90% of 530 = _____

10. 1% of 200 = _____

11. 30% of 170 = _____

12. 40% of 385 = _____

13. 15% of 40 = _____

14. 1% of 100 = _____

15. 50% of 544 = _____

16. 90% of 60 = _____

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

Build it from blocks

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

Name _____ Date _____ Score _____ / 6

1. Find 21% of 500

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

21% = _____ = _____ = _____

2. Find 32% of 300

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

32% = _____ = _____ = _____

3. Find 35% of 120

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

35% = _____ = _____ = _____

4. Find 55% of 460

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

55% = _____ = _____ = _____

5. Find 43% of 900

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

43% = _____ = _____ = _____

6. Find 15% of 480

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

15% = _____ = _____ = _____

Sale shop

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

Name _____

Date _____

Score _____ / 16

Roller skates**£40****50% off**

You save _____ Sale price _____

Telescope**£160****40% off**

You save _____ Sale price _____

Headphones**£60****15% off**

You save _____ Sale price _____

Kite**£20****10% off**

You save _____ Sale price _____

Tent**£155****40% off**

You save _____ Sale price _____

Scooter**£40****25% off**

You save _____ Sale price _____

Box of books**£40****40% off**

You save _____ Sale price _____

Trainers**£64****25% off**

You save _____ Sale price _____

Percentage word problems

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

Name _____ Date _____ Score _____ / 8

1. Ruby has 20 marbles. 10% of them are blue. How many marbles are not blue?

Answer: _____

2. A film lasts 120 minutes. 50% of it is the ending. How many minutes is the ending?

Answer: _____

3. A cake weighs 500 g. 25% of the cake is sugar. How many grams of sugar are in the cake?

Answer: _____

4. Leo's family is driving 50 km to the beach. They have done 10% of the journey. How far have they driven?

Answer: _____

5. A bike costs £150. In a sale it is 50% off. How much money do you save?

Answer: _____

6. There are 30 children at Zara's football club. 40% of them are under 10. How many children are under 10?

Answer: _____

7. A bottle holds 200 ml of juice. Omar drinks 20% of it. How many ml does Omar drink?

Answer: _____

8. A computer game has 120 levels. Leo has finished 50% of them. How many levels is that?

Answer: _____

What's the mystery picture?

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

2  purple
 3  black
 7  leave white
 8  sand
 9  pink
 15  light blue

25% of 60	20% of 75	25% of 60	25% of 60	25% of 60	20% of 75	20% of 75	25% of 60	25% of 60	50% of 30	25% of 60	20% of 75	25% of 60	50% of 30
50% of 30	20% of 75	25% of 60	25% of 60	25% of 8	25% of 8	20% of 10	25% of 8	20% of 10	25% of 8	50% of 30	50% of 30	20% of 75	25% of 60
50% of 30	50% of 30	50% of 30	20% of 10	25% of 8	50% of 4	20% of 10	25% of 8	25% of 8	20% of 10	25% of 8	20% of 75	50% of 30	50% of 30
25% of 60	50% of 30	10% of 20	50% of 4	10% of 20	25% of 8	50% of 4	20% of 10	25% of 8	25% of 8	20% of 10	20% of 10	20% of 75	50% of 30
50% of 30	25% of 60	20% of 10	20% of 10	20% of 35	10% of 70	10% of 20	20% of 10	10% of 70	20% of 35	25% of 8	50% of 4	50% of 30	20% of 75
50% of 30	25% of 60	20% of 10	50% of 4	25% of 28	20% of 15	10% of 20	50% of 4	25% of 28	20% of 15	25% of 8	25% of 8	25% of 60	50% of 30
20% of 75	50% of 30	10% of 20	50% of 4	10% of 20	25% of 8	50% of 4	50% of 4	20% of 10	50% of 4	25% of 8	25% of 8	25% of 60	50% of 30
25% of 60	20% of 75	10% of 20	50% of 4	50% of 4	25% of 8	20% of 45	10% of 90	50% of 4	20% of 10	50% of 4	50% of 4	25% of 60	20% of 75
50% of 30	20% of 75	50% of 30	10% of 20	50% of 4	25% of 8	50% of 4	50% of 4	25% of 8	20% of 10	20% of 10	25% of 60	50% of 30	20% of 75
20% of 75	25% of 60	10% of 20	50% of 4	10% of 20	50% of 4	20% of 10	20% of 10	25% of 8	50% of 4	20% of 10	10% of 20	25% of 60	20% of 75
50% of 30	10% of 20	10% of 20	10% of 20	50% of 4	50% of 4	50% of 4	10% of 20	20% of 10	25% of 8	20% of 10	50% of 4	20% of 10	25% of 60
10% of 20	20% of 10	25% of 60	50% of 4	10% of 20	20% of 75	50% of 4	10% of 20	50% of 30	20% of 10	50% of 4	20% of 75	20% of 10	50% of 4
50% of 4	20% of 75	50% of 30	20% of 10	50% of 30	25% of 60	50% of 4	50% of 30	25% of 60	10% of 20	25% of 60	50% of 30	10% of 20	25% of 60
50% of 4	20% of 75	50% of 30	10% of 20	20% of 75	50% of 30	50% of 4	50% of 30	25% of 60	25% of 8	20% of 75	20% of 75	25% of 8	20% of 75
50% of 30	20% of 10	50% of 30	20% of 75	20% of 10	20% of 75	20% of 75	25% of 8	25% of 60	25% of 60	20% of 10	20% of 75	50% of 30	25% of 8
25% of 32	20% of 40	25% of 32	25% of 32	50% of 16	10% of 80	20% of 40	10% of 80	25% of 32	20% of 40	50% of 16	25% of 32	10% of 80	20% of 40

Percentages of amounts

Answers are shown in red.

Name _____

Date _____

1. 30% of 500 = 150

2. 40% of 380 = 152

3. 50% of 256 = 128

4. 75% of 320 = 240

5. 15% of 380 = 57

6. 1% of 400 = 4

7. 15% of 580 = 87

8. 20% of 490 = 98

9. 90% of 530 = 477

10. 1% of 200 = 2

11. 30% of 170 = 51

12. 40% of 385 = 154

13. 15% of 40 = 6

14. 1% of 100 = 1

15. 50% of 544 = 272

16. 90% of 60 = 54

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

Build it from blocks

Answers are shown in red.

Name _____

Date _____

1. Find 21% of 500

$$\begin{aligned} 10\% &= \underline{50} & 5\% &= \underline{25} & 1\% &= \underline{5} \\ 21\% &= \underline{10\% \times 2 + 1\%} = \underline{100 + 5} = \underline{105} \end{aligned}$$

2. Find 32% of 300

$$\begin{aligned} 10\% &= \underline{30} & 5\% &= \underline{15} & 1\% &= \underline{3} \\ 32\% &= \underline{10\% \times 3 + 1\% \times 2} = \underline{90 + 6} = \underline{96} \end{aligned}$$

3. Find 35% of 120

$$\begin{aligned} 10\% &= \underline{12} & 5\% &= \underline{6} & 1\% &= \underline{1.2} \\ 35\% &= \underline{10\% \times 3 + 5\%} = \underline{36 + 6} = \underline{42} \end{aligned}$$

4. Find 55% of 460

$$\begin{aligned} 10\% &= \underline{46} & 5\% &= \underline{23} & 1\% &= \underline{4.6} \\ 55\% &= \underline{10\% \times 5 + 5\%} = \underline{230 + 23} = \underline{253} \end{aligned}$$

5. Find 43% of 900

$$\begin{aligned} 10\% &= \underline{90} & 5\% &= \underline{45} & 1\% &= \underline{9} \\ 43\% &= \underline{10\% \times 4 + 1\% \times 3} = \underline{360 + 27} = \underline{387} \end{aligned}$$

6. Find 15% of 480

$$\begin{aligned} 10\% &= \underline{48} & 5\% &= \underline{24} & 1\% &= \underline{4.8} \\ 15\% &= \underline{10\% + 5\%} = \underline{48 + 24} = \underline{72} \end{aligned}$$

Sale shop

Answers are shown in red.

Name _____ Date _____

Roller skates

£40

50% off

You save **£20** Sale price **£20**

Telescope

£160

40% off

You save **£64** Sale price **£96**

Headphones

£60

15% off

You save **£9** Sale price **£51**

Kite

£20

10% off

You save **£2** Sale price **£18**

Tent

£155

40% off

You save **£62** Sale price **£93**

Scooter

£40

25% off

You save **£10** Sale price **£30**

Box of books

£40

40% off

You save **£16** Sale price **£24**

Trainers

£64

25% off

You save **£16** Sale price **£48**

Percentage word problems

Answers are shown in red.

Name _____ Date _____

1. Ruby has 20 marbles. 10% of them are blue. How many marbles are not blue?

Answer: 18 marbles

2. A film lasts 120 minutes. 50% of it is the ending. How many minutes is the ending?

Answer: 60 minutes

3. A cake weighs 500 g. 25% of the cake is sugar. How many grams of sugar are in the cake?

Answer: 125 g

4. Leo's family is driving 50 km to the beach. They have done 10% of the journey. How far have they driven?

Answer: 5 km

5. A bike costs £150. In a sale it is 50% off. How much money do you save?

Answer: £75

6. There are 30 children at Zara's football club. 40% of them are under 10. How many children are under 10?

Answer: 12 children

7. A bottle holds 200 ml of juice. Omar drinks 20% of it. How many ml does Omar drink?

Answer: 40 ml

8. A computer game has 120 levels. Leo has finished 50% of them. How many levels is that?

Answer: 60 levels

It's an octopus!

Here's how the finished picture looks.

2  purple
 3  black
 7  leave white
 8  sand
 9  pink
 15  light blue

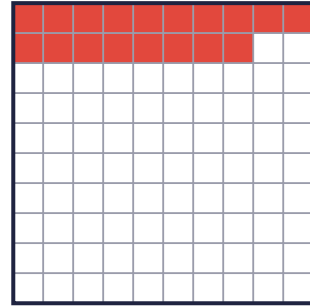
25% of 60	20% of 75	25% of 60	25% of 60	25% of 60	20% of 75	20% of 75	25% of 60	25% of 60	50% of 30	25% of 60	20% of 75	25% of 60	50% of 30
50% of 30	20% of 75	25% of 60	25% of 60	25% of 8	25% of 8	20% of 10	25% of 8	20% of 10	25% of 8	50% of 30	50% of 30	20% of 75	25% of 60
50% of 30	50% of 30	50% of 30	20% of 10	25% of 8	50% of 4	20% of 10	25% of 8	25% of 8	20% of 10	25% of 8	20% of 75	50% of 30	50% of 30
25% of 60	50% of 30	10% of 20	50% of 4	10% of 20	25% of 8	50% of 4	20% of 10	25% of 8	25% of 8	20% of 10	20% of 10	20% of 75	50% of 30
50% of 30	25% of 60	20% of 10	20% of 10	20% of 35	10% of 70	10% of 20	20% of 10	10% of 70	20% of 35	25% of 8	50% of 4	50% of 30	20% of 75
50% of 30	25% of 60	20% of 10	50% of 4	25% of 28		10% of 20	50% of 4	25% of 28		25% of 8	25% of 8	25% of 60	50% of 30
20% of 75	50% of 30	10% of 20	50% of 4	10% of 20	25% of 8	50% of 4	50% of 4	20% of 10	50% of 4	25% of 8	25% of 8	25% of 60	50% of 30
25% of 60	20% of 75	10% of 20	50% of 4	50% of 4	25% of 8	20% of 45	10% of 90	50% of 4	20% of 10	50% of 4	50% of 4	25% of 60	20% of 75
50% of 30	20% of 75	50% of 30	10% of 20	50% of 4	25% of 8	50% of 4	50% of 4	25% of 8	20% of 10	20% of 10	25% of 60	50% of 30	20% of 75
20% of 75	25% of 60	10% of 20	50% of 4	10% of 20	50% of 4	20% of 10	20% of 10	25% of 8	50% of 4	20% of 10	10% of 20	25% of 60	20% of 75
50% of 30	10% of 20	10% of 20	10% of 20	50% of 4	50% of 4	50% of 4	10% of 20	20% of 10	25% of 8	20% of 10	50% of 4	20% of 10	25% of 60
10% of 20	20% of 10	25% of 60	50% of 4	10% of 20	20% of 75	50% of 4	10% of 20	50% of 30	20% of 10	50% of 4	20% of 75	20% of 10	50% of 4
50% of 4	20% of 75	50% of 30	20% of 10	50% of 30	25% of 60	50% of 4	50% of 30	25% of 60	10% of 20	25% of 60	50% of 30	10% of 20	25% of 60
50% of 4	20% of 75	50% of 30	10% of 20	20% of 75	50% of 30	50% of 4	50% of 30	25% of 60	25% of 8	20% of 75	20% of 75	25% of 8	20% of 75
50% of 30	20% of 10	50% of 30	20% of 75	20% of 10	20% of 75	20% of 75	25% of 8	25% of 60	25% of 60	20% of 10	20% of 75	50% of 30	25% of 8
25% of 32	20% of 40	25% of 32	25% of 32	50% of 16	10% of 80	20% of 40	10% of 80	25% of 32	20% of 40	50% of 16	25% of 32	10% of 80	20% of 40

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
 $= 10\% + 10\% + 10\% + 5\%$
 $= 24 + 24 + 24 + 12 = \mathbf{84}$

2. Use a fraction

75% of 36 $= \frac{3}{4}$ of 36
 $36 \div 4 = 9$
 $9 \times 3 = \mathbf{27}$

3. Multiply, then ÷

100
 18% of 18
 $18 \times 18 = 324$
 $324 \div 100 = \mathbf{3.24}$

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 %: $\text{part} \div \text{whole} \times 100$.

% change: $\text{difference} \div \text{start} \times 100$.

Fractions, decimals and percentages

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

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

Any percentage of any number

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

Name _____ Date _____ Score _____ / 14

1. 28% of 937 = _____

2. 95% of 176 = _____

3. 36% of 670 = _____

4. 12.5% of 339 = _____

5. 116% of 91 = _____

6. 96% of 445 = _____

7. 52% of 303 = _____

8. 106% of 666 = _____

9. 93% of 117 = _____

10. 64% of 40 = _____

11. 88% of 224 = _____

12. 2.5% of 65 = _____

13. 0.5% of 730 = _____

14. 31% of 57 = _____

You can use a calculator: multiply the two numbers, then divide by 100. Round to 2 decimal places where needed.

Increase and decrease

Work out the new amount. Round money to the nearest penny.

Name _____ Date _____ Score _____ / 12

1. Decrease £220 by 15% = _____
2. Increase £860 by 30% = _____
3. Increase 160 kg by 8% = _____
4. Decrease £260 by 20% = _____
5. Increase 90 ml by 3% = _____
6. Decrease £20 by 15% = _____
7. Decrease £230 by 40% = _____
8. Decrease 205 kg by 30% = _____
9. Increase 540 ml by 10% = _____
10. Increase 225 kg by 35% = _____
11. Increase 40 kg by 12% = _____
12. Decrease 130 kg by 12% = _____

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

One number as a percentage of another

Write the first number as a percentage of the second.

Name _____ Date _____ Score _____ / 12

1. 1 as a percentage of 25 = _____

2. 10 as a percentage of 25 = _____

3. 4 as a percentage of 80 = _____

4. 135 as a percentage of 200 = _____

5. 43 as a percentage of 80 = _____

6. 36 as a percentage of 50 = _____

7. 87 as a percentage of 167 = _____

8. 63 as a percentage of 141 = _____

9. 6 as a percentage of 107 = _____

10. 11 as a percentage of 37 = _____

11. 48 as a percentage of 94 = _____

12. 133 as a percentage of 168 = _____

Divide the part by the whole, then multiply by 100. Round to 1 decimal place.

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 560 to 490. What is the percentage decrease?

Answer: _____

2. A school's number of pupils goes from 200 to 225. What is the percentage increase?

Answer: _____

3. A café sells 520 cups of tea one week and 468 the next. What is the percentage decrease?

Answer: _____

4. A channel's followers go from 480 to 336. What is the percentage decrease?

Answer: _____

5. A sunflower grows from 280 cm to 294 cm. What is the percentage increase?

Answer: _____

6. A train ticket goes from £160 to £120. What is the percentage decrease?

Answer: _____

7. A channel's followers go from 120 to 102. What is the percentage decrease?

Answer: _____

8. A train ticket goes from £560 to £532. What is the percentage decrease?

Answer: _____

Real-life percentages

You can use a calculator. Show what you typed in, and round money to the nearest penny.

Name _____ Date _____ Score _____ / 8

1. A town had 4,000 people. Now it has 3,200. What is the percentage decrease?

Answer: _____

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

Answer: _____

3. Mia buys trainers for £36 in a 40% off sale. What was the original price?

Answer: _____

4. A phone battery is at 100%. It uses 18% of its charge every hour. What percentage is left after 3 hours?

Answer: _____

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

Answer: _____

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

Answer: _____

7. Noah scored 22 out of 25 in a test. What percentage is that? Give your answer to 1 decimal place.

Answer: _____

8. A jacket costs £64. It is reduced by 30% in a sale. What is the sale price?

Answer: _____

Any percentage of any number

Answers are shown in red.

Name _____ Date _____

1. 28% of 937 = 262.36

2. 95% of 176 = 167.2

3. 36% of 670 = 241.2

4. 12.5% of 339 = 42.38

5. 116% of 91 = 105.56

6. 96% of 445 = 427.2

7. 52% of 303 = 157.56

8. 106% of 666 = 705.96

9. 93% of 117 = 108.81

10. 64% of 40 = 25.6

11. 88% of 224 = 197.12

12. 2.5% of 65 = 1.63

13. 0.5% of 730 = 3.65

14. 31% of 57 = 17.67

You can use a calculator: multiply the two numbers, then divide by 100. Round to 2 decimal places where needed.

Increase and decrease

Answers are shown in red.

Name _____

Date _____

1. Decrease £220 by 15% = £187

2. Increase £860 by 30% = £1,118

3. Increase 160 kg by 8% = 172.8 kg

4. Decrease £260 by 20% = £208

5. Increase 90 ml by 3% = 92.7 ml

6. Decrease £20 by 15% = £17

7. Decrease £230 by 40% = £138

8. Decrease 205 kg by 30% = 143.5 kg

9. Increase 540 ml by 10% = 594 ml

10. Increase 225 kg by 35% = 303.75 kg

11. Increase 40 kg by 12% = 44.8 kg

12. Decrease 130 kg by 12% = 114.4 kg

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

One number as a percentage of another

Answers are shown in red.

Name _____

Date _____

1. 1 as a percentage of 25 = 4%

2. 10 as a percentage of 25 = 40%

3. 4 as a percentage of 80 = 5%

4. 135 as a percentage of 200 = 67.5%

5. 43 as a percentage of 80 = 53.8%

6. 36 as a percentage of 50 = 72%

7. 87 as a percentage of 167 = 52.1%

8. 63 as a percentage of 141 = 44.7%

9. 6 as a percentage of 107 = 5.6%

10. 11 as a percentage of 37 = 29.7%

11. 48 as a percentage of 94 = 51.1%

12. 133 as a percentage of 168 = 79.2%

Divide the part by the whole, then multiply by 100. Round to 1 decimal place.

Percentage change

Answers are shown in red.

Name _____ Date _____

1. A school's number of pupils goes from 560 to 490. What is the percentage decrease?

Answer: **12.5% decrease**

2. A school's number of pupils goes from 200 to 225. What is the percentage increase?

Answer: **12.5% increase**

3. A café sells 520 cups of tea one week and 468 the next. What is the percentage decrease?

Answer: **10% decrease**

4. A channel's followers go from 480 to 336. What is the percentage decrease?

Answer: **30% decrease**

5. A sunflower grows from 280 cm to 294 cm. What is the percentage increase?

Answer: **5% increase**

6. A train ticket goes from £160 to £120. What is the percentage decrease?

Answer: **25% decrease**

7. A channel's followers go from 120 to 102. What is the percentage decrease?

Answer: **15% decrease**

8. A train ticket goes from £560 to £532. What is the percentage decrease?

Answer: **5% decrease**

Real-life percentages

Answers are shown in red.

Name _____ Date _____

1. A town had 4,000 people. Now it has 3,200. What is the percentage decrease?

Answer: 20%

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

Answer: £36

3. Mia buys trainers for £36 in a 40% off sale. What was the original price?

Answer: £60

4. A phone battery is at 100%. It uses 18% of its charge every hour. What percentage is left after 3 hours?

Answer: 46%

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

Answer: £27

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

Answer: £472.50

7. Noah scored 22 out of 25 in a test. What percentage is that? Give your answer to 1 decimal place.

Answer: 88%

8. A jacket costs £64. It is reduced by 30% in a sale. What is the sale price?

Answer: £44.80