



Fractions



0.35 2% 0.15 2% 20 0.15



My name



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Series E – Fractions

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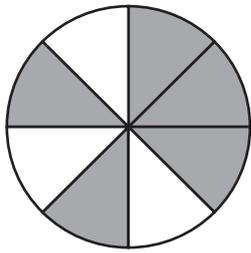
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Series Author:

Nicola Herringer

Working with fractions – modelling fractions

A fraction is a part of a whole. This circle had been divided into 8 pieces and has 5 pieces shaded.

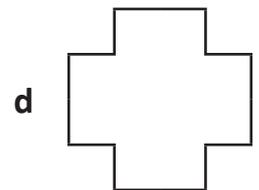
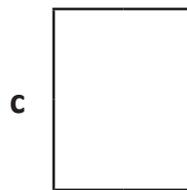
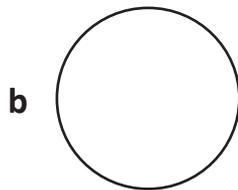
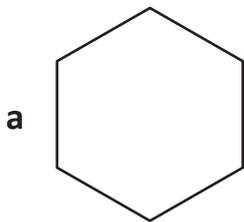


$$\frac{5}{8} = \frac{5 \text{ shaded parts}}{8 \text{ parts altogether}}$$

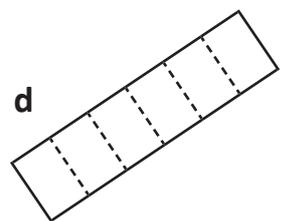
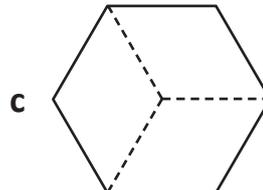
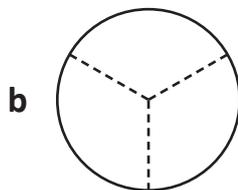
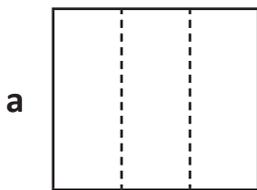


The top number is the numerator, the bottom number is the denominator.

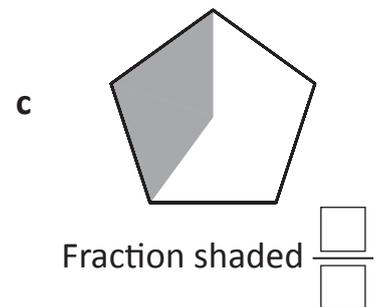
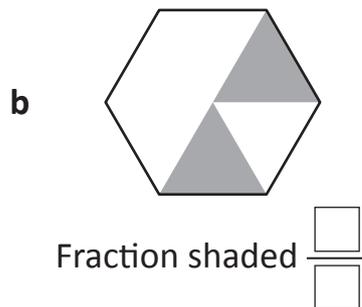
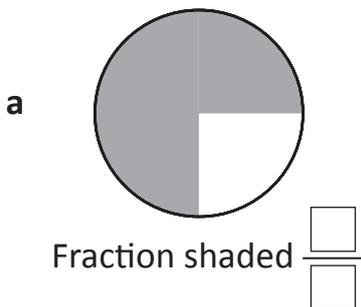
1 Divide each shape into quarters. Shade one quarter:



2 Shade one third on each shape:



3 What fraction is shaded?

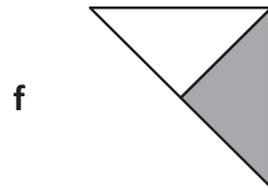
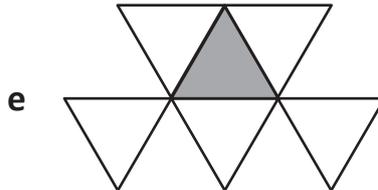
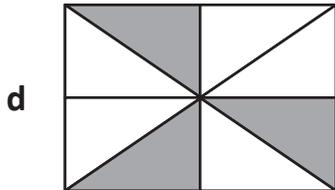
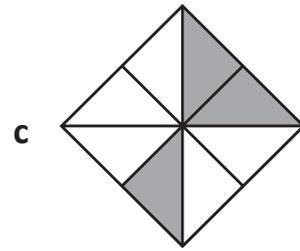


4 If this is $\frac{1}{3}$ of a shape, what does the whole shape look like?

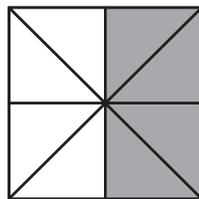


Working with fractions – modelling fractions

5 Complete the table for each shape.

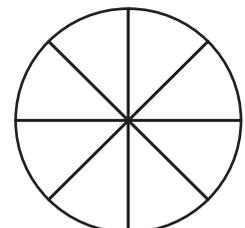
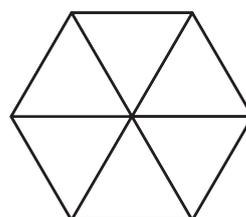
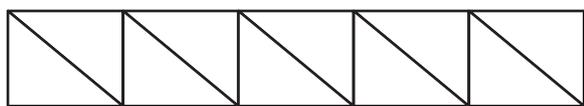
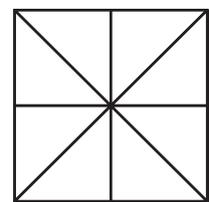
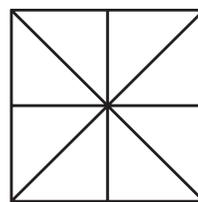
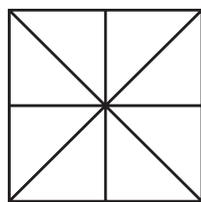
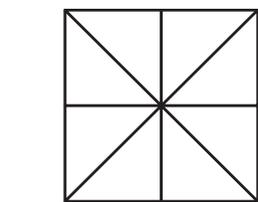


Shape	a	b	c	d	e	f
Fraction that is shaded	—	—	—	—	—	—
Fraction that is unshaded	—	—	—	—	—	—

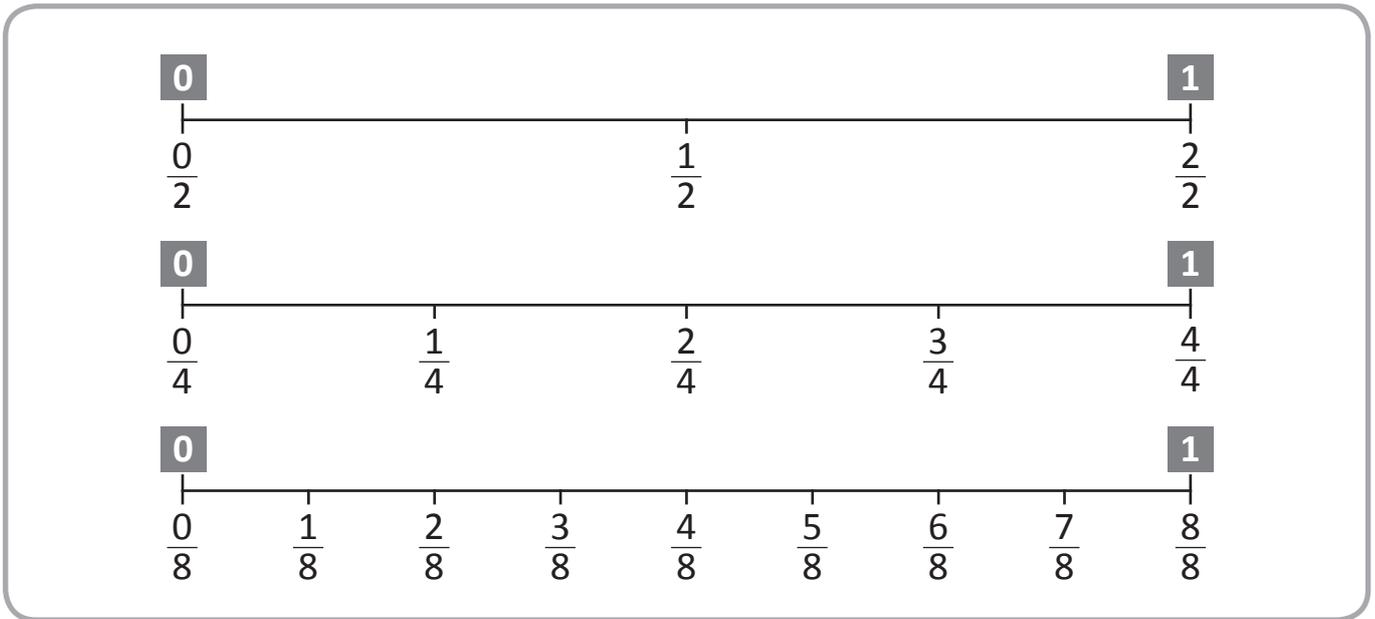


This shape has 8 pieces. To show half, I have shaded 4 pieces.

6 How many different ways can you show a half?

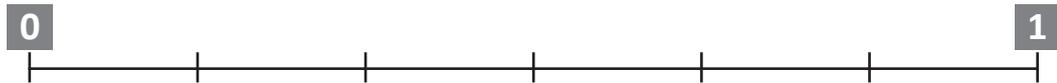


Working with fractions – comparing and ordering fractions



1 Connect the fractions to their places on the number lines.

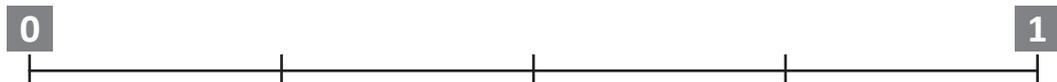
a $\frac{1}{3}$ $\frac{1}{6}$



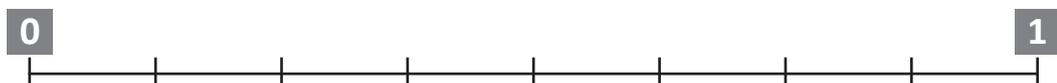
b $\frac{1}{2}$ $\frac{1}{4}$ $\frac{5}{8}$



c $\frac{1}{2}$ $\frac{3}{4}$

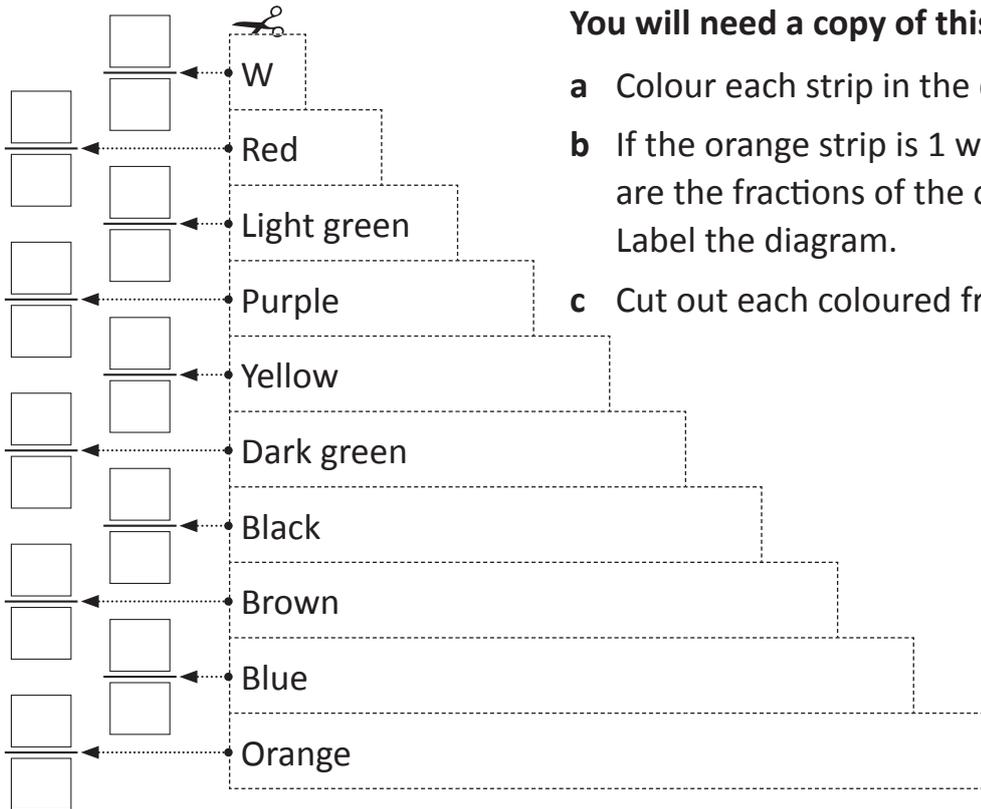


d $\frac{3}{8}$ $\frac{5}{8}$ $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$



Working with fractions – comparing and ordering fractions

2



You will need a copy of this page.



- Colour each strip in the diagram.
- If the orange strip is 1 whole, what are the fractions of the other strips? Label the diagram.
- Cut out each coloured fraction strip.

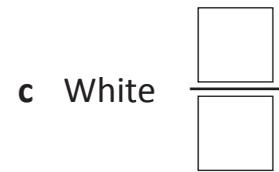
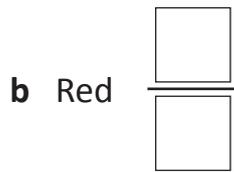
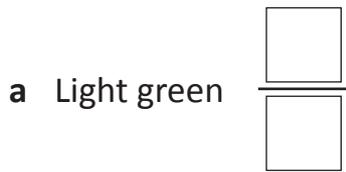
3

Use the fraction strips that you have cut and coloured to answer these:

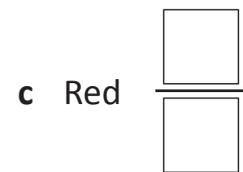
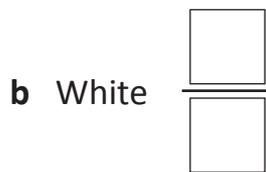
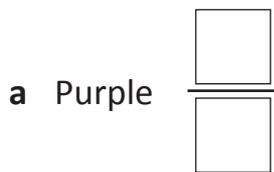
- If purple is $\frac{1}{2}$, which colour is 1 whole? _____
- If red is $\frac{1}{4}$, which colour is 1 whole? _____
- If blue is 1 whole, which colour is $\frac{1}{3}$? _____
- If I connected purple and dark green together and they equalled 1 whole, what is the value of each?
 Purple = _____ Dark green = _____
- If I connected red, light green and purple and they equalled 1 whole, what is the value of each?
 Red = _____ Light green = _____
 Purple = _____

Working with fractions – comparing and ordering fractions

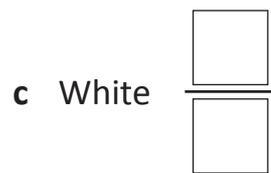
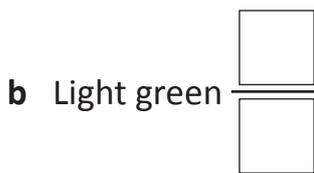
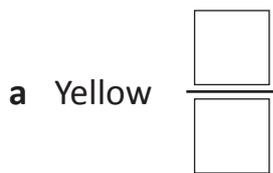
4 If the purple strip is equal to 1 whole, what fractions would these strips now be:



5 If the brown strip is equal to 1 whole, what fractions would these strips now be:



6 If the dark green strip is equal to 1 whole, what fractions would these strips now be:



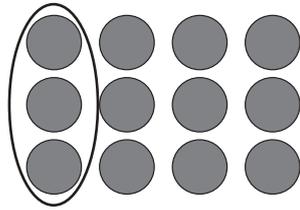
7 This picture shows halves. The red rod is 1 and each white rod is $\frac{1}{2}$.



a Use your rods to create a picture that shows a whole, halves and quarters. First choose a rod that is equal to 1 whole, then choose different colours for the halves and the quarters. Paste your rods in the space below:

Working with fractions – fractions of a collection

Finding a fraction of different amounts is like division. Look at this array of dots. Finding one quarter is the same as dividing 12 by 4.

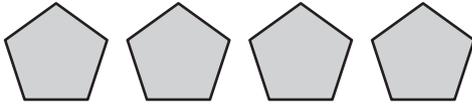


$$12 \div 4 = 3$$

$$\frac{1}{4} \text{ of } 12 = 3$$

1 Circle the fraction given for each group and complete the statements:

a $\frac{1}{2}$ of 4 pentagons



$$\square \div \square = \square$$

$$\frac{1}{2} \text{ of } \square = \square$$

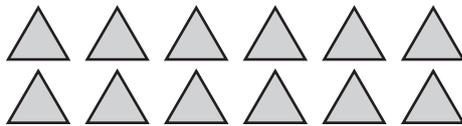
b $\frac{1}{4}$ of 8 stars



$$\square \div \square = \square$$

$$\frac{1}{4} \text{ of } \square = \square$$

c $\frac{1}{4}$ of 12 triangles



$$\square \div \square = \square$$

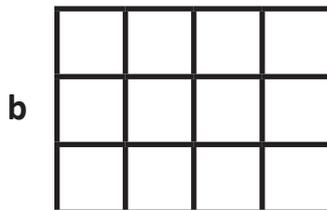
$$\frac{1}{4} \text{ of } \square = \square$$

2 Shade $\frac{1}{3}$ of these grids and complete the statements. The first one has been done for you.



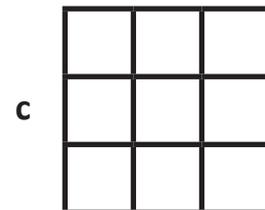
$$\square \div \square = \square$$

$$\frac{1}{3} \text{ of } \square = \square$$



$$\square \div \square = \square$$

$$\frac{1}{3} \text{ of } \square = \square$$

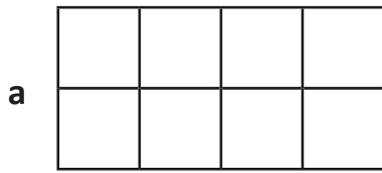


$$\square \div \square = \square$$

$$\frac{1}{3} \text{ of } \square = \square$$

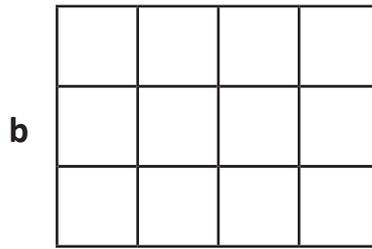
Working with fractions – fractions of a collection

3 Shade $\frac{1}{4}$ on these grids and complete the statements:



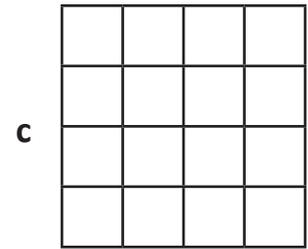
$$\square \div \square = \square$$

$$\frac{1}{4} \text{ of } \square = \square$$



$$\square \div \square = \square$$

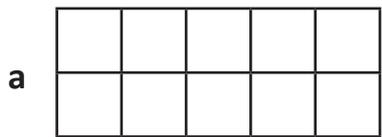
$$\frac{1}{4} \text{ of } \square = \square$$



$$\square \div \square = \square$$

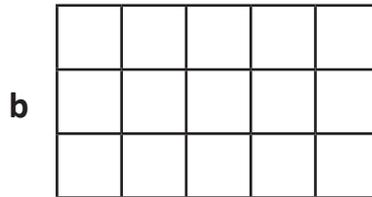
$$\frac{1}{4} \text{ of } \square = \square$$

4 Shade $\frac{1}{5}$ on these grids and complete the statements:



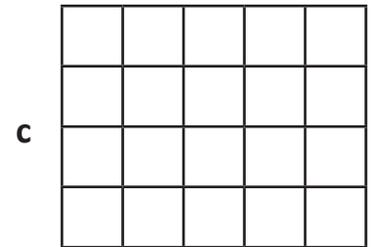
$$\square \div \square = \square$$

$$\frac{1}{5} \text{ of } \square = \square$$



$$\square \div \square = \square$$

$$\frac{1}{5} \text{ of } \square = \square$$



$$\square \div \square = \square$$

$$\frac{1}{5} \text{ of } \square = \square$$

5 Find the fractions of these numbers:

a $\frac{1}{2}$ of 8 =

b $\frac{1}{4}$ of 12 =

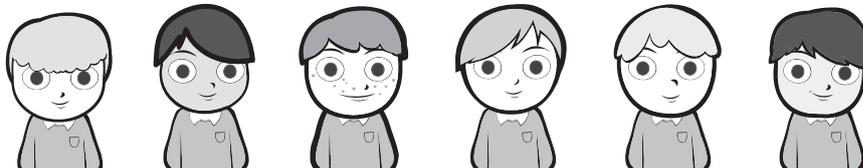
c $\frac{1}{3}$ of 9 =

d $\frac{1}{5}$ of 15 =

e $\frac{1}{8}$ of 16 =

f $\frac{1}{4}$ of 20 =

6 Complete this picture to show that $\frac{2}{3}$ of these boys are wearing hats:



First work out what $\frac{1}{3}$ of 6 is then times by 2.

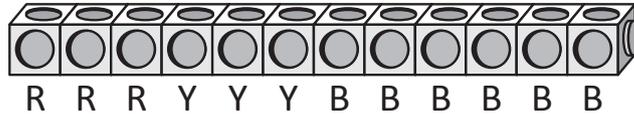


Working with fractions – fractions of a collection

Josie connected 12 cubes. $\frac{1}{4}$ were red, $\frac{1}{4}$ were yellow and the rest were blue. What fraction of the whole were blue?

$\frac{6}{12}$ or $\frac{1}{2}$

Red: $\frac{1}{4}$ of 12 = 3 Yellow: $\frac{1}{4}$ of 12 = 3 Blue = 6



7 Answer these cube problems:

a Amy connected 8 cubes. $\frac{1}{2}$ were green, $\frac{1}{4}$ were red and the rest were blue.



How many were blue? Green: $\frac{1}{2}$ of 8 = Red: $\frac{1}{4}$ of 8 =

b Joel connected 16 cubes. $\frac{1}{2}$ were blue, $\frac{1}{4}$ were orange and the rest were purple.



How many were purple? Blue: $\frac{1}{2}$ of 16 = Orange: $\frac{1}{4}$ of 16 =

c Natalie connected 20 cubes. $\frac{1}{4}$ were yellow, $\frac{1}{5}$ were green and the rest were orange.



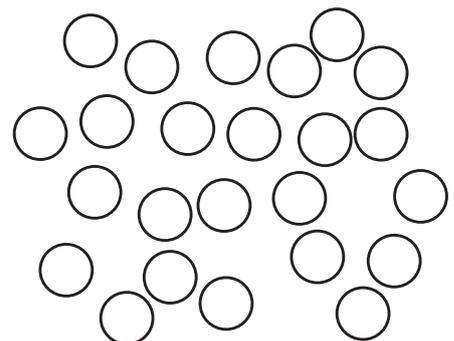
How many were orange? Yellow: $\frac{1}{4}$ of 20 = Green: $\frac{1}{5}$ of 20 =

8 Amber scattered a packet of 24 Smarties on her desk to see how many blue ones there were. Below is a list of what was in the packet. Shade them as shown:

a $\frac{1}{4}$ were red = b $\frac{1}{8}$ were pink =

c $\frac{1}{3}$ were yellow = d $\frac{1}{6}$ were green =

e The rest were blue. How many were blue?

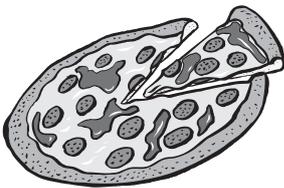


Working with fractions – fraction word problems

- 1 Jess spent half of her pocket money on a magazine. If she gets £10 pocket money, how much was the magazine?

- 2 If one quarter of a packet of jelly beans is 8 jelly beans, how many jelly beans are there in the whole packet?

- 3 Marley and Matt shared a pizza that had been cut into 8 pieces. Marley ate $\frac{1}{4}$ of the pizza and Matt ate $\frac{1}{2}$. How many pieces were left?



- 4 Amy made 24 cupcakes. She iced $\frac{1}{8}$ of them pink, $\frac{1}{4}$ of them blue and left the rest plain. How many plain cupcakes were there?



- 5 Josie ordered two pizzas cut into eighths. If he ate $\frac{5}{8}$ of a pizza, how much was left?



Getting ready

This is a game for either 3 or 5 players. Each player will need to cut out a copy of the cards on page 11.



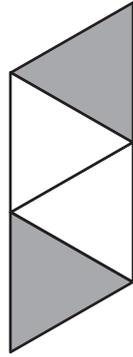
What to do

Choose one person to be the dealer. Each player cuts out the cards and gives them to the dealer. The object of this game is to collect as many pairs of cards showing the same fraction as possible.

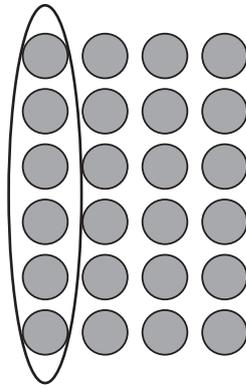
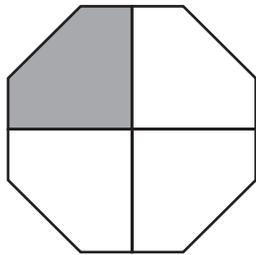
The dealer shuffles the cards well and deals 6 cards to each player. The remaining cards are placed face down in 'the pond' in the middle with players sitting around the pond in a circle.

- 1 The player on the dealer's right begins by asking any player for a specific card. For example: "Amity do you have a card that shows $\frac{1}{4}$?"
- 2 If Amity has a $\frac{1}{4}$ card she must hand over that card and the same player asks anyone in the group for another card.
- 3 If a player does not have the card that was asked for they must say, "Go fish." Then the person asking must take a card from 'the pond' and it is the next person's turn.
- 4 Play continues until there are no more cards left in the pond. The player with the most sets is the winner.

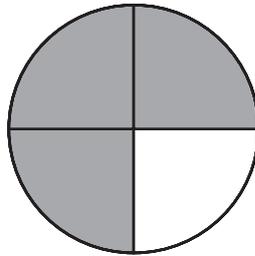
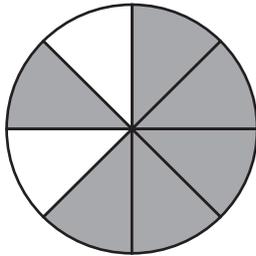




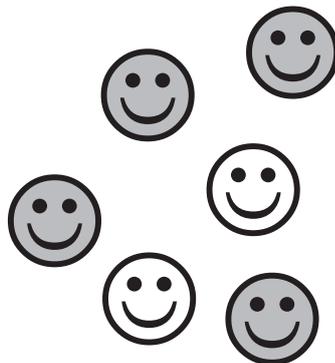
$$\frac{1}{2}$$



$$\frac{1}{4}$$



$$\frac{3}{4}$$

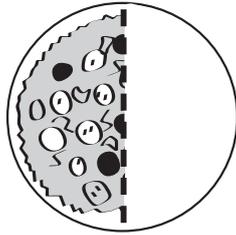


$$\frac{1}{3}$$

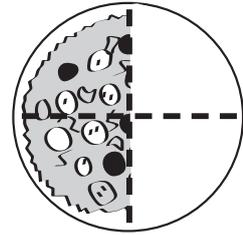
Types of fractions – equivalent fractions

Different fractions can have the same amount. They are equivalent.

This pizza has been cut into 2 parts.
 $\frac{1}{2}$ has been eaten.



This pizza has been cut into 4 parts.
 $\frac{2}{4}$ has been eaten.



Here we are going to explore equivalency. You will need a copy of these fraction strips.



First colour in each strip a different colour, then follow these steps:

- Strip 1:** Cut out the first strip and write '1 whole'.
- Strip 2:** Cut out the second strip, fold it in half and cut the 2 equal size pieces. Label each piece $\frac{1}{2}$.
- Strip 3:** Cut it out, fold it in half and half again. Cut the 4 pieces and label each piece $\frac{1}{4}$.
- Strip 4:** Cut out the next strip and fold into eighths. How will you do this? Cut the 8 pieces and label each piece $\frac{1}{8}$.
- Strips 5 and 6:** The last 2 strips have been marked for you. Count the markings. What fractions are they?

Place all of these strips into a plastic sleeve to keep them all in one place. This is your fraction kit.

Types of fractions – equivalent fractions

1 Use the equivalent fraction strips to answer these:

- a How many quarters in one half? $\frac{\square}{\square}$
- b How many eighths in one half? $\frac{\square}{\square}$
- c How many fifths in one whole? $\frac{\square}{\square}$
- d How many tenths in one half? $\frac{\square}{\square}$

Use the equivalent fraction strips to play these games. Both games are for 2 players only.

You will need: ■ your fraction kit ■ a die



Number on die	Fraction piece from kit
1 or 2	$\frac{1}{2}$ red
3 or 4	$\frac{1}{4}$ yellow
5 or 6	$\frac{1}{8}$ orange

Game 1

The aim of this game is to be the first to reveal the whole piece of paper from your fraction kit.

Start the game with the whole covered with 2 halves.

Player 1 rolls the die and takes off that fraction. Players may need to swap pieces from their own kit first. For example, if you roll $\frac{1}{4}$ first, you need to swap $\frac{1}{2}$ for $\frac{2}{4}$, then you can take off $\frac{1}{4}$.

Player 2 rolls the die and takes off that fraction, swapping pieces if needed.

The winner is the player who is the first to reveal the whole piece of paper first.

Game 2

The aim of this game is to be the first player to complete 2 wholes.

2 players use both sets of fraction strips. Line up the 2 wholes together.

Player 1 rolls the die and places the fraction piece on top of one of the wholes.

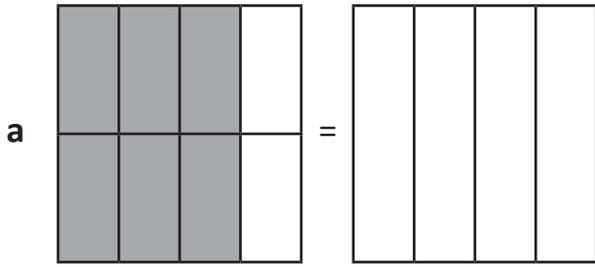
Player 2 rolls the die and places that fraction piece on top of one of the wholes. Players take turns.

The winner is first player who is the first to place the last piece that covers 2 wholes.

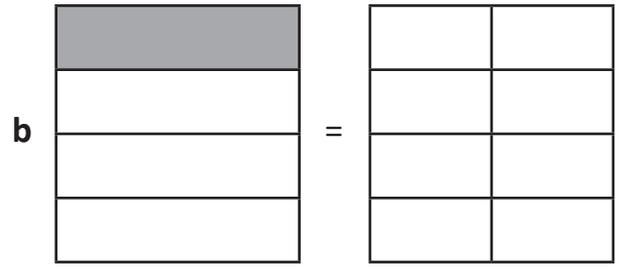
You cannot go over 2 wholes. Your last piece must fit exactly.

Types of fractions – equivalent fractions

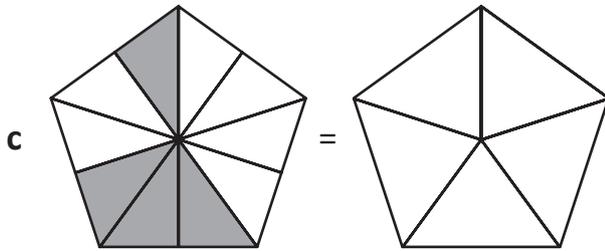
2 Shade and label these models to show equivalent fractions:



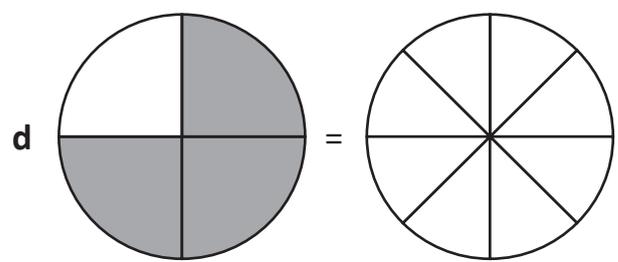
$$\frac{\square}{\square} = \frac{\square}{\square}$$



$$\frac{\square}{\square} = \frac{\square}{\square}$$



$$\frac{\square}{\square} = \frac{\square}{\square}$$



$$\frac{\square}{\square} = \frac{\square}{\square}$$

3 Write either T for true or F for false under each statement:

a $\frac{2}{8} > \frac{1}{10}$

b $\frac{3}{10} < \frac{1}{4}$

c $\frac{3}{5} < \frac{3}{10}$

d $\frac{4}{5} > \frac{7}{10}$

e $\frac{4}{8} < \frac{3}{4}$

f $\frac{5}{10} < \frac{1}{5}$



Getting ready

This is a game for 2 players. You will need a copy of the playing cards on this page and page 16. Cut them out and shuffle them well. Players take turns being the dealer.



copy



What to do

The aim of this game is to get rid of all the cards. The dealer deals out all the cards evenly so each player has the same amount of cards.

Each player keeps their cards in a pile face down.

On the count of 3, players turn over the top card and place them on the table.

The player who has the greater fraction wins the round and the other player adds both cards to their pile. If the fractions are equivalent, play continues until a player wins the round.

The winner is the first player to get rid of all their cards.



$\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{10}$	$\frac{2}{10}$
$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$
$\frac{1}{4}$	$\frac{2}{4}$	$\frac{3}{4}$	$\frac{3}{10}$



$$\frac{4}{10}$$

$$\frac{5}{10}$$

$$\frac{6}{10}$$

$$\frac{7}{10}$$

$$\frac{8}{10}$$

$$\frac{9}{10}$$

$$\frac{1}{8}$$

$$\frac{2}{8}$$

$$\frac{3}{8}$$

$$\frac{4}{8}$$

$$\frac{5}{8}$$

$$\frac{6}{8}$$

$$\frac{7}{8}$$

$$\frac{1}{2}$$

$$\frac{1}{4}$$

$$\frac{2}{4}$$

$$\frac{3}{4}$$

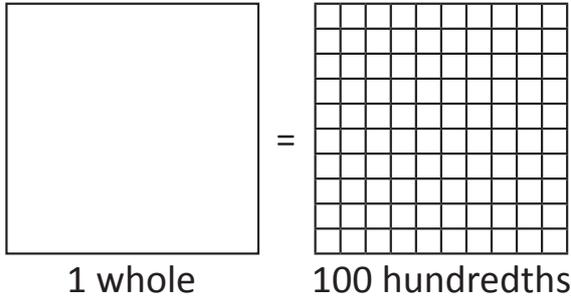
$$\frac{1}{2}$$

$$\frac{4}{8}$$

$$\frac{5}{10}$$

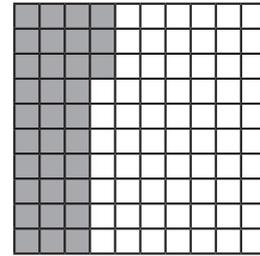
Fractions and decimals – introducing hundredths

We can divide a whole into one hundred parts. These are called hundredths.

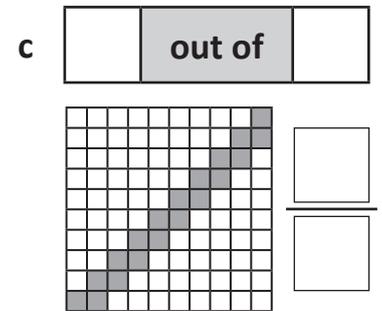
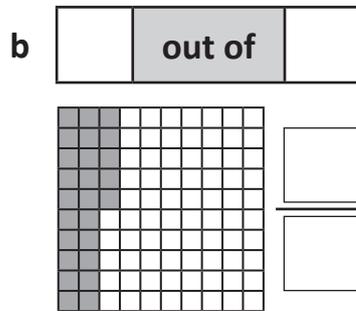
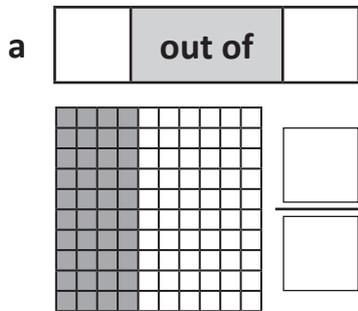


This hundred grid shows 33 out of 100.

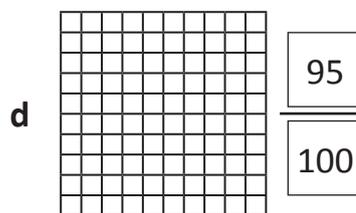
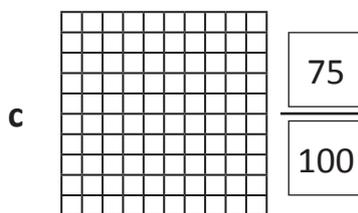
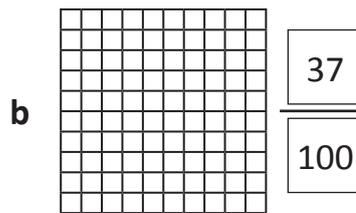
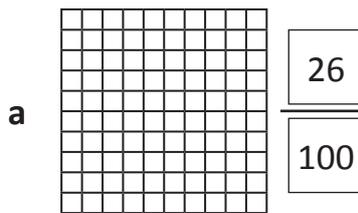
As a fraction it is $\frac{33}{100}$



1 Write what each grid shows part out of 100 that is shaded and record it as a fraction:



2 Shade these grids according to the fraction:



It is easier to work out how many grids not to shade instead of counting each one.

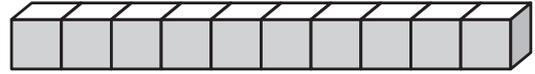


3 Order the fractions from question 2 from smallest to largest:

Fractions and decimals – writing tenths as decimals

Fractions can be written as decimals.

This row of cubes shows 10 tenths:



$\frac{6}{10}$ can be shown like this:



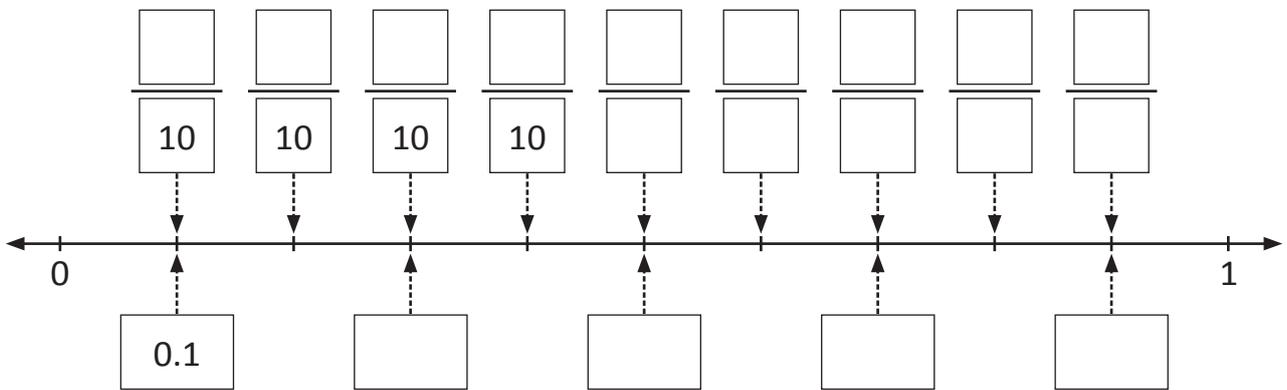
$\frac{6}{10}$ as a decimal is 0.6

Ones	Tenths
0	6

The decimal point separates the whole number from the decimal.

We would write 1 or $\frac{10}{10}$ as 1.0

1 Complete this number line showing equivalent tenths and decimals:



2 If a row of 10 cubes is 1 whole, then label the other rows with a fraction and decimal:

	Fraction	Decimal
a	$\frac{\quad}{\quad}$	\quad
b	$\frac{\quad}{\quad}$	\quad
c	$\frac{\quad}{\quad}$	\quad

Fractions and decimals – writing tenths as decimals

3 Shade the fraction strips so each one matches the fraction or the decimal:

a 0.7 

b $\frac{4}{10}$ 

c 0.5 

4 Order each set of fractions and decimals from smallest to largest:

a $0.8, 0.2, \frac{4}{10}, \frac{9}{10}$

b $\frac{9}{10}, 0.1, 1.0, \frac{5}{10}$

5 Show the place value of these decimals by writing them in the table:

	Ones	Tenths
a	0.6	•
b	2.7	•
c	5.1	•



Ones	Tenths
3	• 8

The decimal point signals the place value of numbers smaller than 1.
This number is 3 and $\frac{8}{10}$ or 3 and 0.8

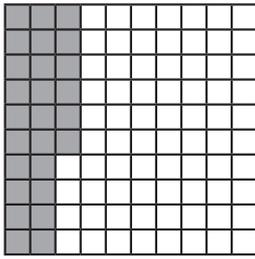
6 Connect the matching fractions and decimals:

$\frac{4}{10}$	0.6
$1\frac{2}{10}$	0.7
$\frac{6}{10}$	1.2
$\frac{7}{10}$	0.4

$\frac{7}{10}$	3.5
$4\frac{3}{10}$	0.9
$\frac{9}{10}$	4.3
$3\frac{5}{10}$	0.7

Fractions and decimals – writing tenths as decimals

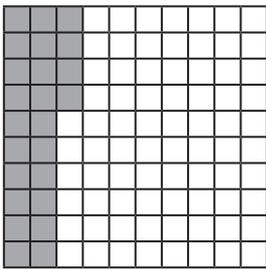
This diagram shows 26 hundredths shaded or $\frac{26}{100}$



Fractions can be written as decimals.
As a decimal, this amount is written as:

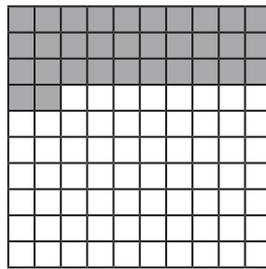
Ones	Tenths	Hundredths
0	2	6

7 Label each hundredth grid picture with the fraction and decimal:



a

--



b

--



$\frac{10}{100}$ is the same as $\frac{1}{10}$ which is the same as 0.1

8 Colour this grid of stars according to the directions below:

a Orange $\frac{22}{100}$

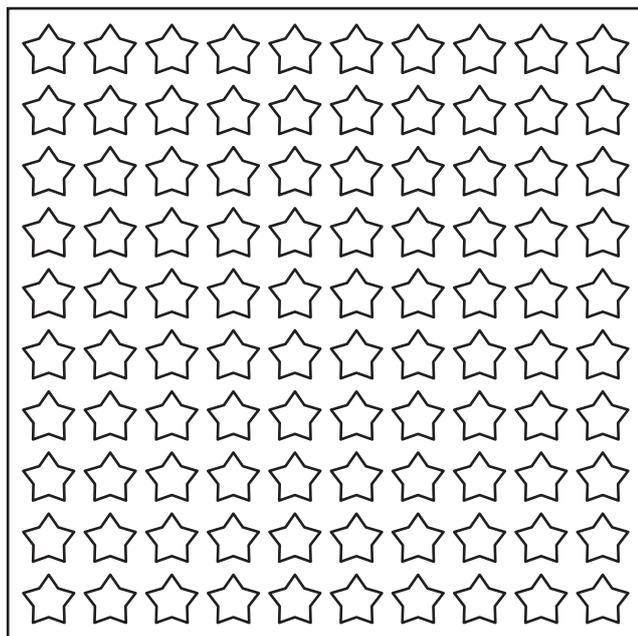
b Blue $\frac{12}{100}$

c Green $\frac{9}{100}$

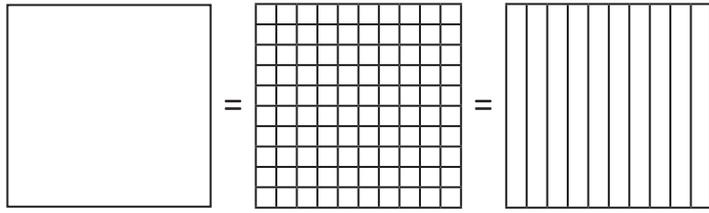
d Pink $\frac{25}{100}$

e Yellow 0.15

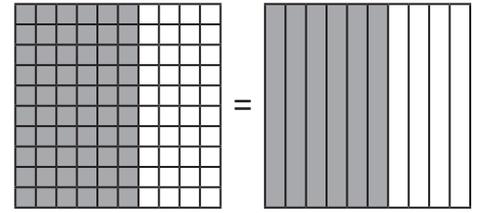
f Red 0.17



Fractions and decimals – writing tenths as decimals



1 whole 100 hundredths 10 tenths

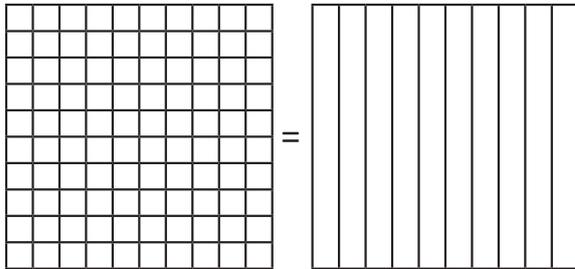


$\frac{60}{100}$ is the same amount as $\frac{6}{10}$.

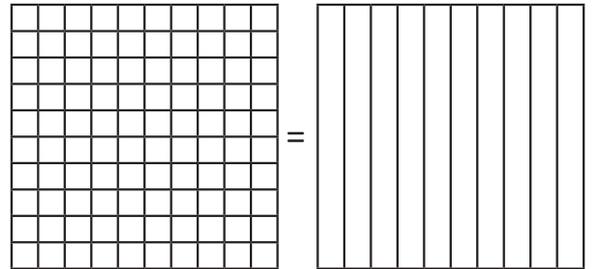
We can divide a whole into one hundred parts. These are called hundredths. Hundredths are made up of 10 lots of tenths.

9 Show how these amounts are the same:

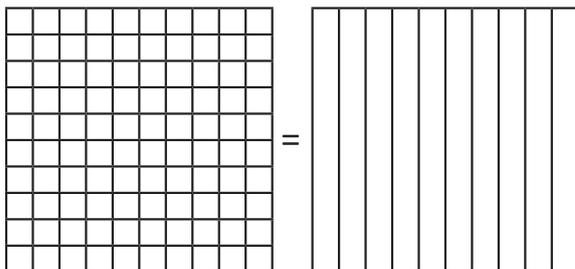
a $\frac{80}{100}$ is the same amount as $\frac{8}{10}$.



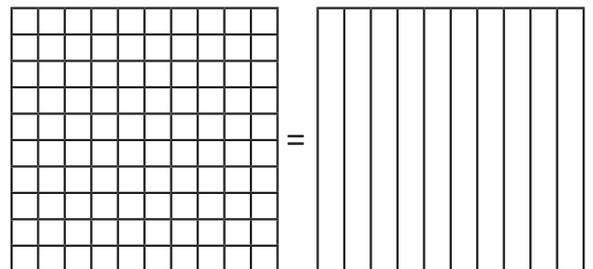
b $\frac{20}{100}$ is the same amount as $\frac{2}{10}$.



c $\frac{30}{100}$ is the same amount as $\frac{3}{10}$.

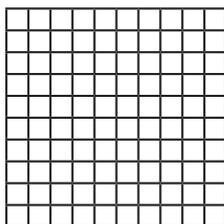


d $\frac{70}{100}$ is the same amount as $\frac{7}{10}$.

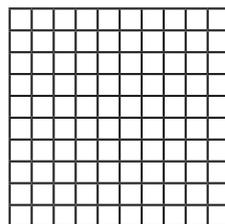


10 Shade these amounts on the hundred grids:

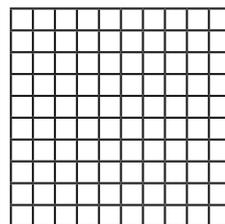
a $\frac{5}{10}$



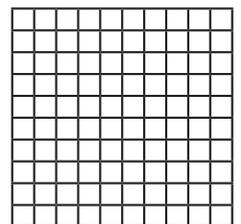
b $\frac{9}{10}$



c $\frac{10}{10}$

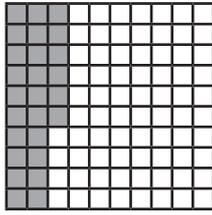


d $\frac{1}{10}$



Fractions and decimals – relating tenths, hundredths and decimals

This diagram shows 26 hundredths shaded or $\frac{26}{100}$.



Fractions can be written as decimals.
As a decimal, this amount is written as:

Ones	Tenths	Hundredths
0	2	6

3 Complete this table to show the amounts as tenths, hundredths and decimals:

a

Tenths	<input type="text"/>	
Hundredths	<input type="text"/>	
Decimals	<input type="text"/>	

b

Tenths	<input type="text"/>	
Hundredths	<input type="text"/>	
Decimals	<input type="text"/>	

c

Hundredths	<input type="text"/>	
Decimals	<input type="text"/>	

d

Hundredths	<input type="text"/>	
Decimals	<input type="text"/>	

1.5 is same as 1.50



THINK

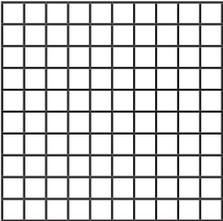
4 Show the place value of these decimals by writing them in the table:

	Hundreds	Tens	Ones		Tenths	Hundredths
a	2.6			•		
b	3.76			•		
c	112.6			•		
d	45.67			•		

Fractions and decimals – relating tenths, hundredths and decimals

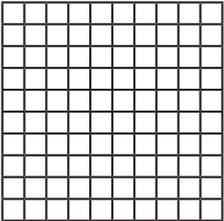
5 Shade the fractions on the grid and show them as hundredths and decimals:

a $\frac{1}{2}$



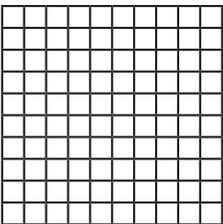
= $\frac{\boxed{}}{100}$ = $0.\boxed{}$

b $\frac{1}{4}$



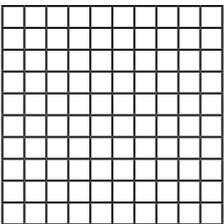
= $\frac{\boxed{}}{100}$ = $0.\boxed{}$

c $\frac{1}{5}$



= $\frac{\boxed{}}{100}$ = $0.\boxed{}$

d $\frac{1}{10}$



= $\frac{\boxed{}}{100}$ = $0.\boxed{}$

6 Express these common fractions as hundredths and as decimals:

a $\frac{1}{2} = \frac{\boxed{}}{100} = 0.\boxed{}$

b $\frac{4}{5} = \frac{\boxed{}}{100} = 0.\boxed{}$

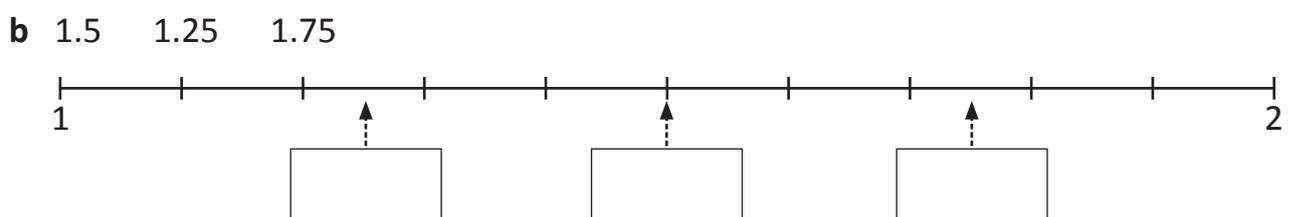
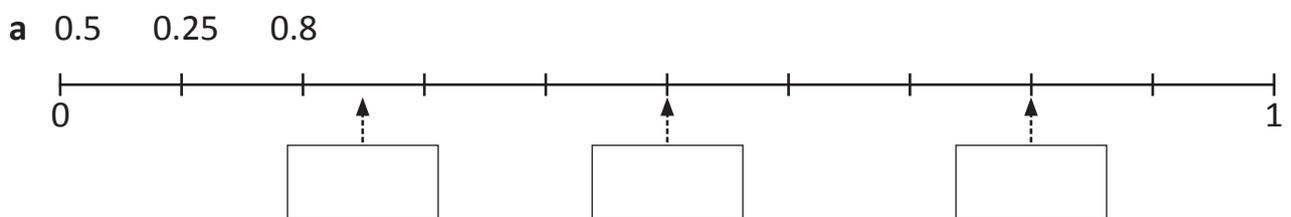
c $\frac{4}{10} = \frac{\boxed{}}{100} = 0.\boxed{}$

d $\frac{3}{4} = \frac{\boxed{}}{100} = 0.\boxed{}$

e $\frac{2}{4} = \frac{\boxed{}}{100} = 0.\boxed{}$

f $\frac{5}{10} = \frac{\boxed{}}{100} = 0.\boxed{}$

7 Show where the decimals fit on the number lines:



Fractions and decimals – dividing by 10 and 100

When we divide a number by 10, we move the digits one place value space to the right.

For example, $700 \div 10 = 70$

The hundreds digit becomes the tens digit.

Hundreds	Tens	Ones
7	0	0
	7	0

$\div 10$

When we divide a number by 100, we move the digits two place value spaces to the right.

For example, $700 \div 100 = 7$

The hundreds digit becomes the units digit.

Hundreds	Tens	Ones
7	0	0
		7

$\div 100$

The same rule applies when moving the digit creates a decimal.

For example, $5 \div 10 = 0.5$

(Note that we usually write a 0 before the decimal place if there are no units.)

Tens	Ones	Tenths	Hundredths
	5	2	6
	0	5	

$23 \div 100 = 0.23$

Tens	Ones	Tenths	Hundredths
2	3		
	0	2	3

1 Use the place value tables to divide these numbers by 10 and 100:

a

Tens	Ones
	8

•

Tenths	Hundredths

$\div 10$

$\div 100$

Fractions and decimals – dividing by 10 and 100

b

Tens	Ones
	4

•		
•		

÷ 10

÷ 100

c

Tens	Ones
2	7

•		
•		

÷ 10

÷ 100

d

Tens	Ones
9	3

•		
•		

÷ 10

÷ 100

2 Solve these divisions by 10:

a $6 \div 10 =$

 b $9 \div 10 =$

 c $17 \div 10 =$

d $46 \div 10 =$

 e $75 \div 10 =$

 f $328 \div 10 =$

3 Solve these divisions by 100:

a $17 \div 100 =$

 b $6 \div 100 =$

 c $63 \div 100 =$

d $2 \div 100 =$

 e $48 \div 100 =$

 f $319 \div 100 =$

Fractions and decimals – comparing decimals

To compare and order decimals, the same rules apply as for whole numbers.

First, look at the digit on the left of each number. Those with the lowest digits are the smallest numbers, so, in the decimals below, 0.9 is the smallest number.

1.8 1.4 1.5 0.9 1.1

If the left-most digits are the same, then you look at the next digit, and order the numbers according to those. So, the numbers above should be ordered from smallest to largest as:

0.9 1.1 1.4 1.5 1.8

1 Order these decimals from smallest to largest:

a 5.7 7.5 5.5 7.3 3.7

--	--	--	--	--

b 32.2 23.3 33.2 23.2 30.1

--	--	--	--	--

2 Order these decimals from largest to smallest:

a 3.43 4.53 3.54 4.34 3.34

--	--	--	--	--

b 70.06 70.67 67.76 76.07 67.67

--	--	--	--	--

Fractions and decimals – rounding

Just as we can round whole numbers up to the nearest 10 or 100, so we can round decimals up to the nearest tenth or whole number. The rules are the same: if the digit to be rounded is between 1 and 4 you round down; if it is between 5 and 9 you round up.

26 rounded to the nearest ten is 30.

2.6 rounded to the nearest one is 3.

1 Round the following numbers to the nearest one:

a $3.2 =$

b $9.7 =$

c $17.5 =$

d $35.4 =$

e $199.5 =$

f $687.7 =$

2 Each number below has been rounded to the nearest one. What was the original number? Circle the correct answer.

a **47** 46.6 46.4 47.5 47.8 46.3

b **105** 104.2 105.4 104.4 105.6 105.9

c **378** 377.4 378.6 377.5 378.8 378.5

3 The following numbers have been rounded to the nearest one. What number with 1 decimal place might they have been originally?

a $5 =$

b $25 =$

c $39 =$

d $666 =$

e $3,245 =$

f $97,256 =$

Fractions and decimals – common equivalents

We use some fraction and decimal equivalents often. The most common is half. Two halves make a whole:

$$\frac{1}{2} + \frac{1}{2} = 1$$

$$0.5 + 0.5 = 1$$

$$\frac{1}{2} = 0.5$$

Half of a half is a quarter, so two quarters make a half:

$$\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$$

$$0.25 + 0.25 = 0.5$$

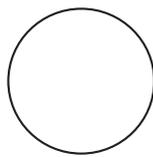
$$\frac{1}{4} = 0.25$$

So,

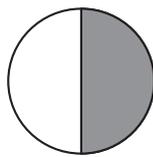
$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$$

$$0.25 + 0.25 + 0.25 = 0.75$$

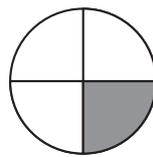
$$\frac{3}{4} = 0.75$$



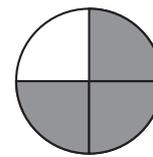
1



$$\frac{1}{2} = 0.5$$

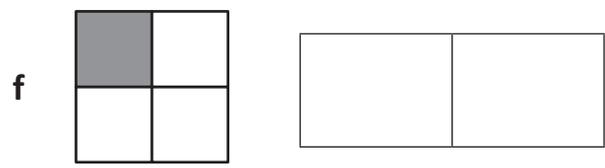
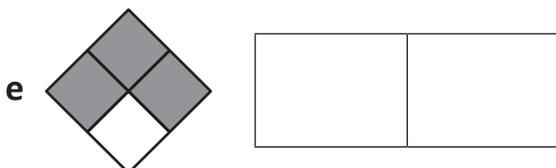
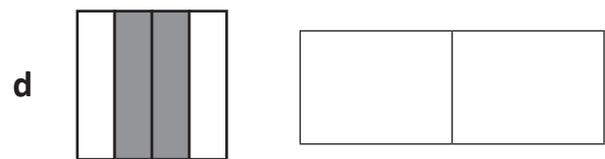
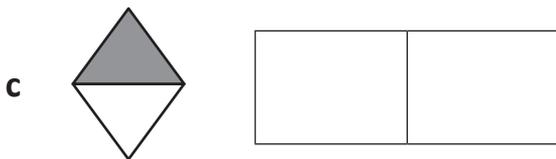
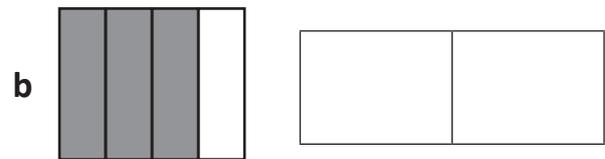
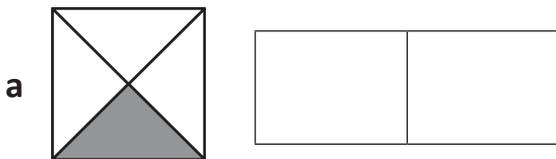


$$\frac{1}{4} = 0.25$$



$$\frac{3}{4} = 0.75$$

1 Write the fraction and decimal equivalent for the shaded parts of these shapes:



Fractions and decimals – decimal word problems

1 Solve these word problems:

- a Wood is for sale in $\frac{1}{4}$ metre lengths. I need 1.5 metres of wood for a project I am making. How many lengths of wood do I need?

- b My brother drank $\frac{3}{4}$ of a 2-litre juice carton in the fridge. How much juice did he drink in litres?

- c Mrs Green sells 0.1 kg bags of sweets in her sweet shop. The first four bags she sells actually weigh 0.11 kg, 0.13 kg, 0.12 kg and 0.13 kg. How much in total has she overfilled these four bags?

- d A cafe sells quarter pizzas for £0.99. If I and my three friends wanted a quarter slice each, how much would we pay in total?

- e In the supermarket cans of soup are on offer at three cans for £1.20. If they are normally £0.45 each, how much would I save over the normal price if I bought three in the offer?



Getting ready

This is a game for 2 players. Each player will need a copy of this page and a copy of the playing cards on page 31.



copy

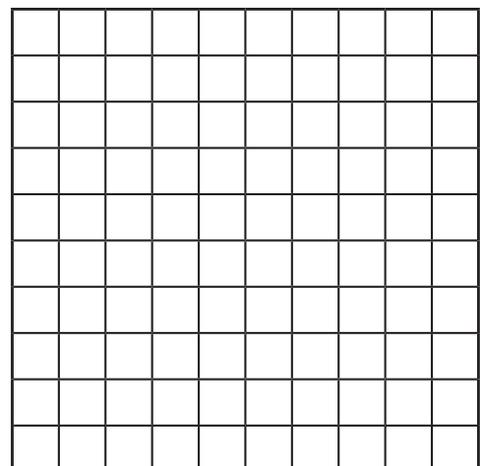
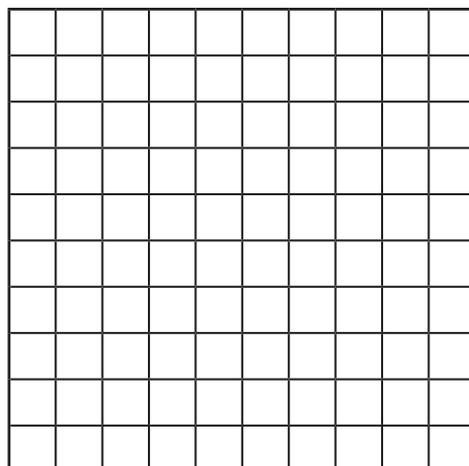
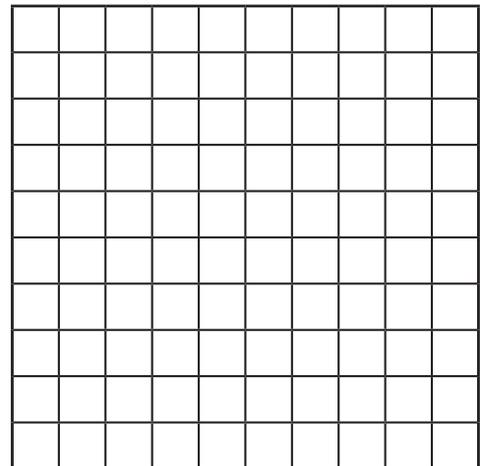
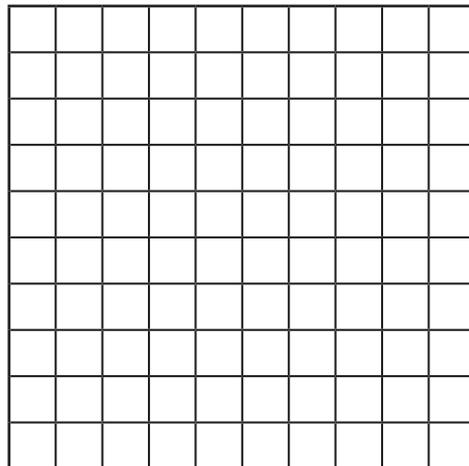


What to do

The object of this game is to be the first player to colour a whole grid. Each player cuts out the playing cards. The 2 players join the cards and shuffle them. There will be 48 cards. Lay 4 cards out in a row, ensuring both players can see them. The rest of the cards go face down in a pile.

Player 1 takes a card from the row of 4 and colours in that amount on one of their hundred grids. Then they put that card at the bottom of the pile and replace it with one from the top of the pile. Player 2 repeats this process.

Players take turns until 1 player has filled in 100 hundredths or 1 whole. (If you go over 100 hundredths or 1 whole, it does not count as a win. You must reach exactly 1 whole.) There are 4 grids so play the best out of 4.





$$\frac{30}{100}$$

0.25

$$\frac{50}{200}$$

0.08

0.35

0.17

0.4

$$\frac{10}{200}$$

$$\frac{6}{10}$$

0.1

0.19

0.05

0.6

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

$$\frac{15}{100}$$

$$\frac{1}{100}$$

$$\frac{12}{100}$$

$$\frac{2}{100}$$

0.15

$$\frac{4}{200}$$

$$\frac{20}{200}$$

0.8

0.2

$$\frac{5}{100}$$