Mathletics

Series E Student

# Fractions

My name

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First edition printed 2009 in Australia.

A catalogue record for this book is available from 3P Learning Ltd.

**ISBN** 978-1-921860-59-1

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# Series E – Fractions

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Series Author:

Nicola Herringer



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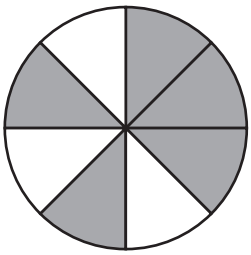
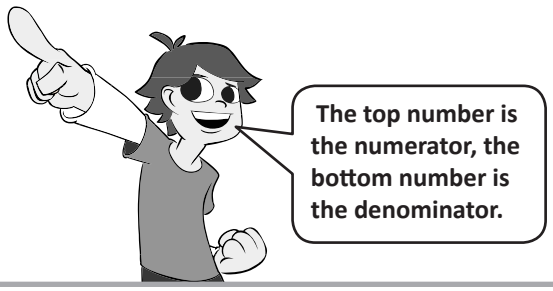
# Working with fractions – modelling fractions

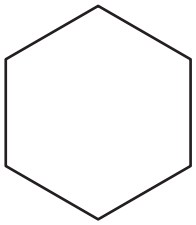
A fraction is a part of a whole. This circle had been divided into 8 pieces and has 5 pieces shaded.

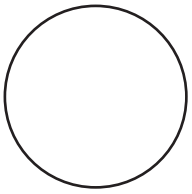


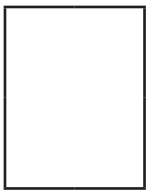
$$\frac{5}{8} = \frac{\text{5 shaded parts}}{\text{8 parts altogether}}$$

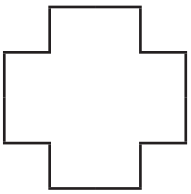



**1** **Divide each shape into quarters. Shade one quarter:**

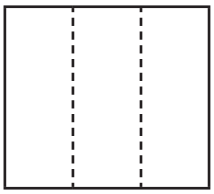
**a** 

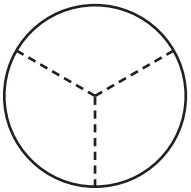
**b** 

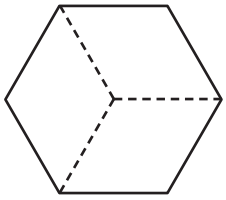
**c** 

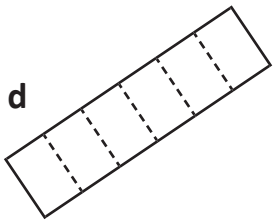
**d** 

**2** **Shade one third on each shape:**

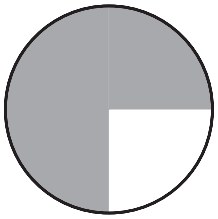
**a** 

**b** 

**c** 

**d** 

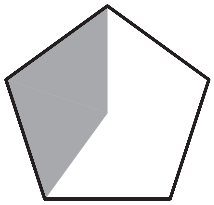
**3** **What fraction is shaded?**

**a** 

Fraction shaded $\frac{\square}{\square}$

**b**

Fraction shaded $\frac{\square}{\square}$

**c** 

Fraction shaded $\frac{\square}{\square}$

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

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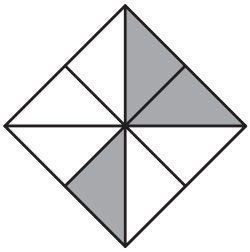
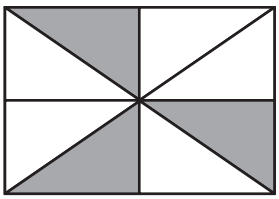
# Working with fractions – modelling fractions

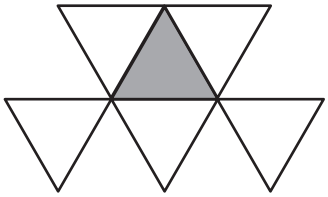
**5** **Complete the table for each shape.**

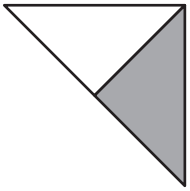
a

b

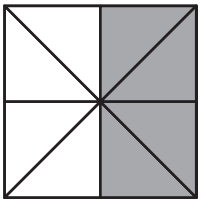
c 

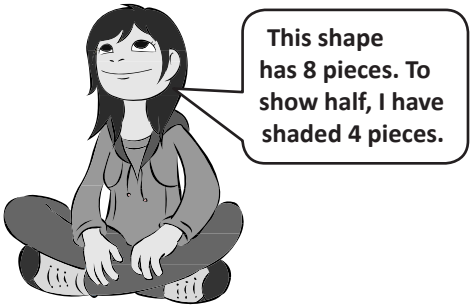
d 

e 

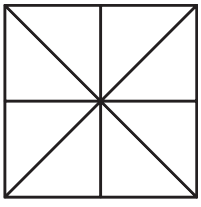
f 

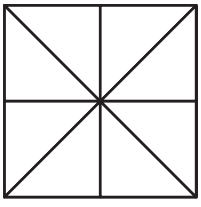
| Shape | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| Fraction that is shaded | ——— | ——— | ——— | ——— | ——— | ——— |
| Fraction that is unshaded | ——— | ——— | ——— | ——— | ——— | ——— |

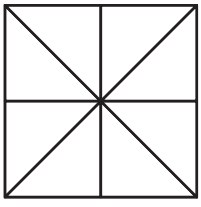


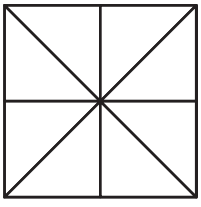


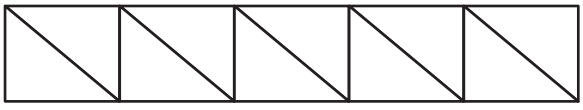

**6** **How many different ways can you show a half?**

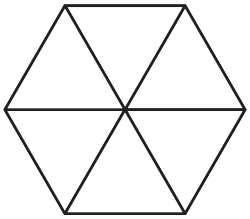


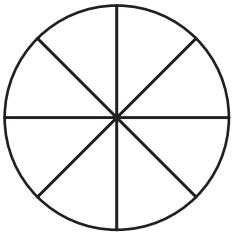














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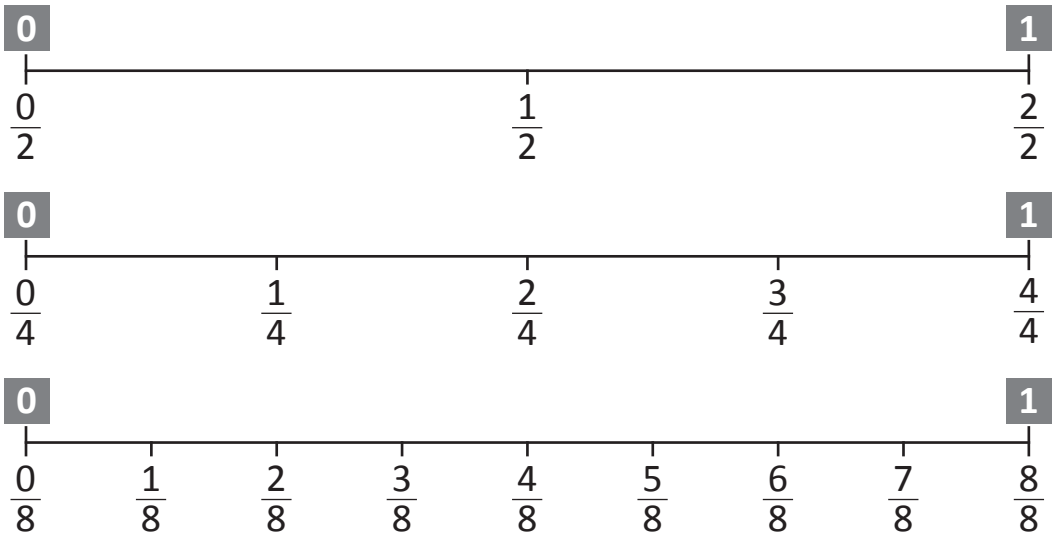
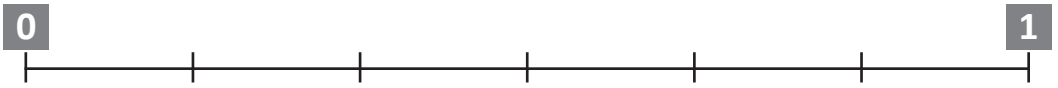
# Working with fractions – comparing and ordering fractions

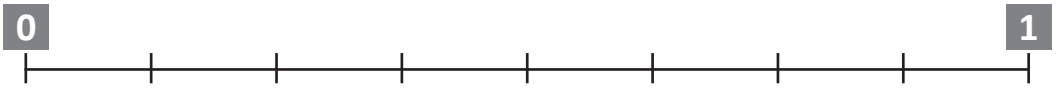



**1** **Connect the fractions to their places on the number lines.**

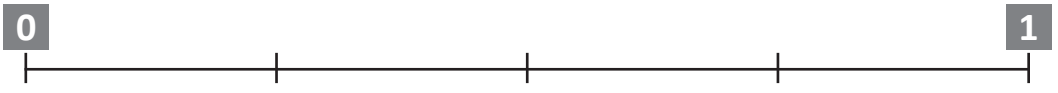
**a** $\frac{1}{3}$ $\frac{1}{6}$



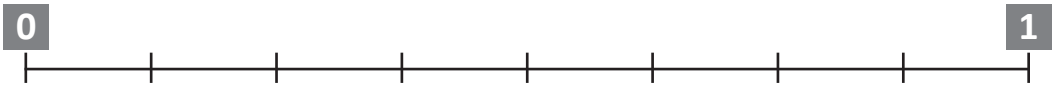

**b** $\frac{1}{2}$ $\frac{1}{4}$ $\frac{5}{8}$




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




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





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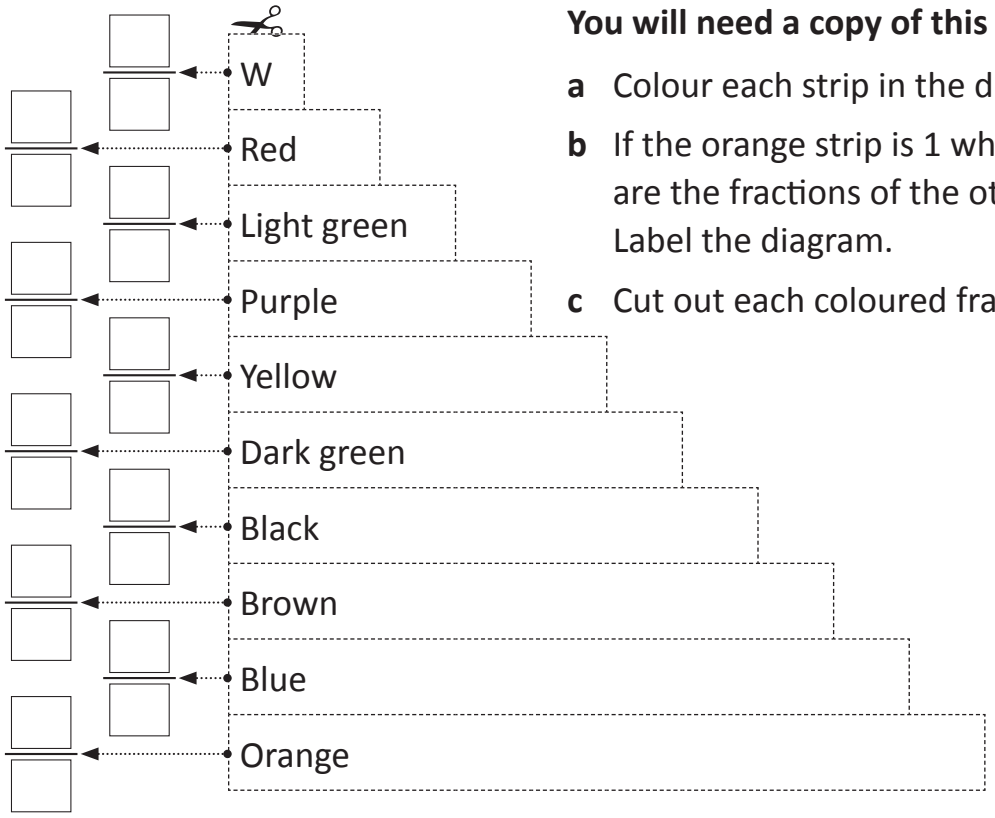
# Working with fractions – comparing and ordering fractions

**2**




**You will need a copy of this page.**

**a** Colour each strip in the diagram.

**b** If the orange strip is 1 whole, what are the fractions of the other strips? Label the diagram.

**c** Cut out each coloured fraction strip.

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

**a** If purple is $\frac{1}{2}$, which colour is 1 whole? _____

**b** If red is $\frac{1}{4}$, which colour is 1 whole? _____

**c** If blue is 1 whole, which colour is $\frac{1}{3}$? _____

**d** If I connected purple and dark green together and they equalled 1 whole, what is the value of each?

Purple = _____ Dark green = _____

**e** If I connected red, light green and purple and they equalled 1 whole, what is the value of each?

Red = _____ Light green = _____

Purple = _____



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

**a** Light green $\frac{\square}{\square}$ **b** Red $\frac{\square}{\square}$ **c** White $\frac{\square}{\square}$

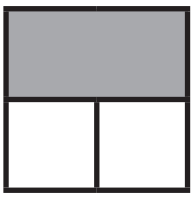
**5** **If the brown strip is equal to 1 whole, what fractions would these strips now be:**

**a** Purple $\frac{\square}{\square}$ **b** White $\frac{\square}{\square}$ **c** Red $\frac{\square}{\square}$

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

**a** Yellow $\frac{\square}{\square}$ **b** Light green $\frac{\square}{\square}$ **c** White $\frac{\square}{\square}$

**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: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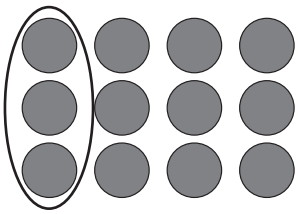
# Working with fractions – fractions of a collection

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.

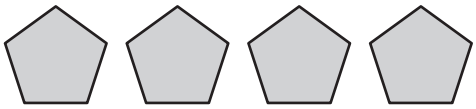


$12 \div 4 = 3$

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

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

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



$\square \div \square = \square$

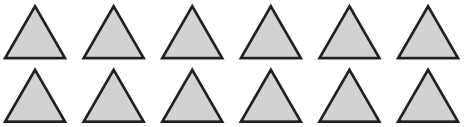
$\frac{1}{2}$ of $\square = \square$

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

$\square \div \square = \square$

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

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

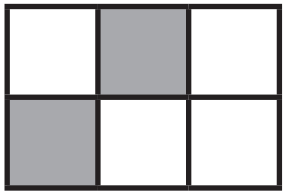


$\square \div \square = \square$

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

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

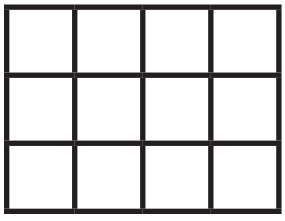
**a**



$6 \div 3 = 2$

$\frac{1}{3}$ of $6 = 2$

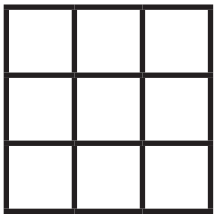
**b**



$\square \div \square = \square$

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

**c**



$\square \div \square = \square$

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



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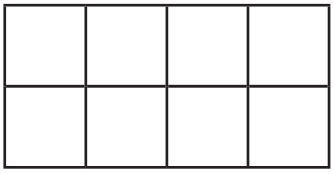
# Working with fractions – fractions of a collection

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

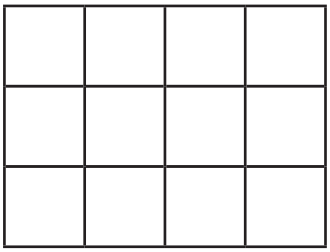
**a**



□ ÷ □ = □

$\frac{1}{4}$ of □ = □

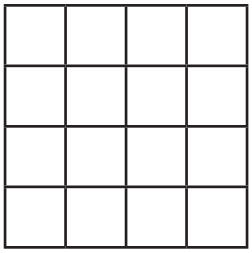
**b**



□ ÷ □ = □

$\frac{1}{4}$ of □ = □

**c**

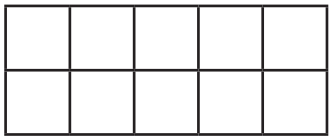


□ ÷ □ = □

$\frac{1}{4}$ of □ = □

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

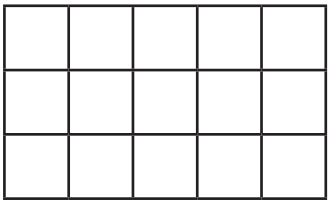
**a**



□ ÷ □ = □

$\frac{1}{5}$ of □ = □

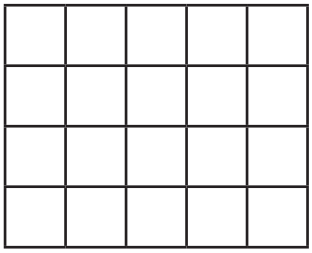
**b**



□ ÷ □ = □

$\frac{1}{5}$ of □ = □

**c**



□ ÷ □ = □

$\frac{1}{5}$ of □ = □

**5** **Find the fractions of these numbers:**

**a** $\frac{1}{2}$ of 8 = □

**b** $\frac{1}{4}$ of 12 = □

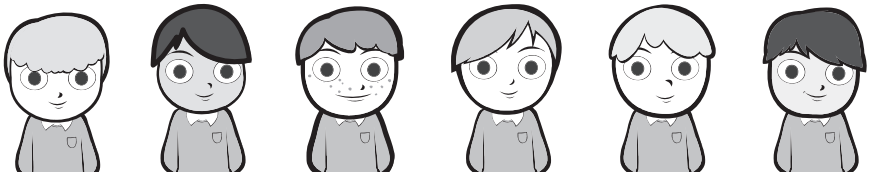
**c** $\frac{1}{3}$ of 9 = □

**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:**



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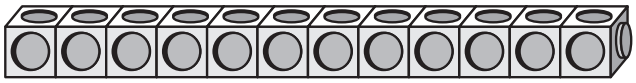
# Working with fractions – fractions of a collection

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



R R R Y Y Y B B B B B B

**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:**

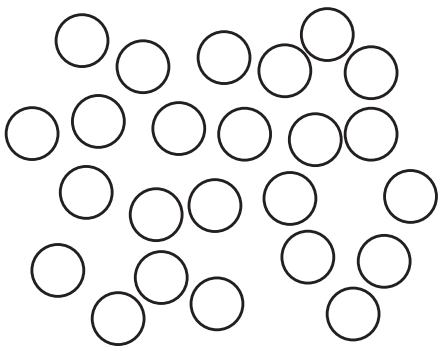
**a** $\frac{1}{4}$ were red = ☐

**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? ☐





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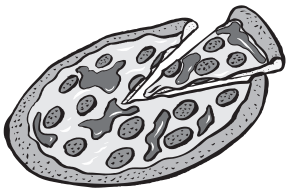
# Working with fractions – fraction word problems

**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?**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# Fraction go fish

apply

**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.

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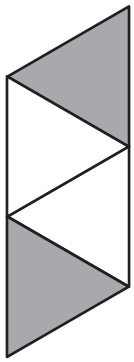
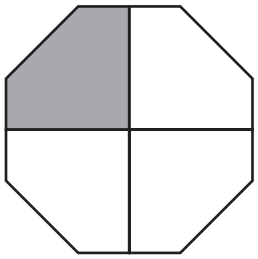
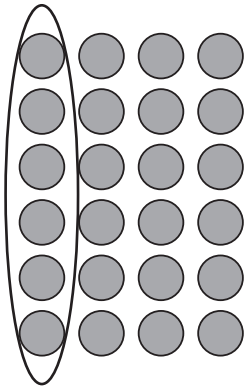
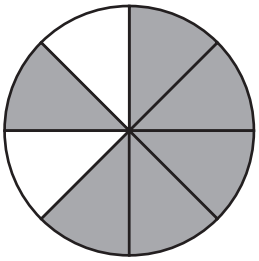
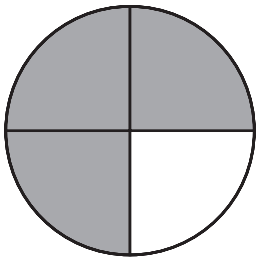
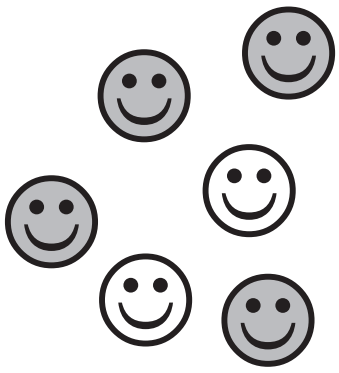
# Fraction go fish

apply

copy

| | | |
|---|---|---|
| |  | $\frac{1}{2}$ |
|  |  | $\frac{1}{4}$ |
|  |  | $\frac{3}{4}$ |
| |  | $\frac{1}{3}$ |



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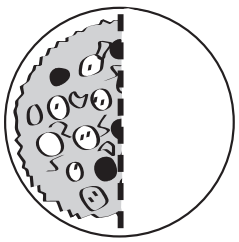
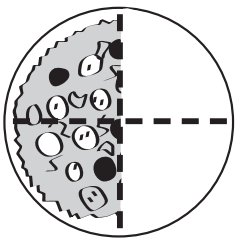
# Types of fractions – equivalent fractions

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.**

**1**

**2**

**3**

**4**

**5**

**6**

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

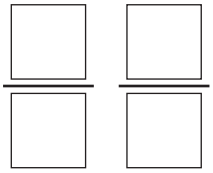
**Strip 1:** Cut out the first strip and write '1 whole'.

**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.



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# 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 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.


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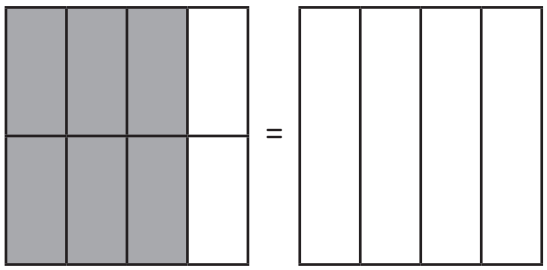
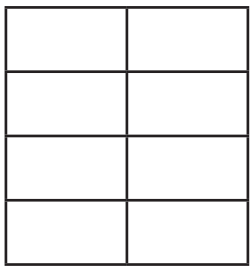
# Types of fractions – equivalent fractions

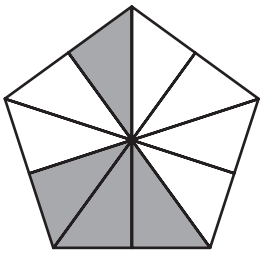
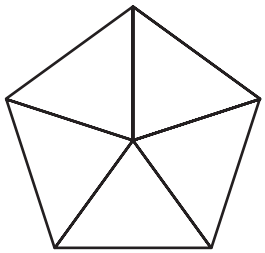
**2** **Shade and label these models to show equivalent fractions:**

**a**  = 

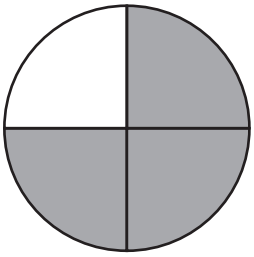
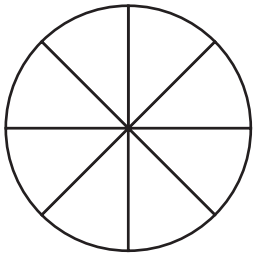
$\frac{\square}{\square} = \frac{\square}{\square}$

**b** = 

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

**c**  = 

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

**d**  = 

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

**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** $\frac{5}{10} < \frac{1}{5}$ ☐



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# Types of fractions – mixed numerals

A mixed numeral is a whole number and a fraction. For example, say we connected 10 multilink cubes and named this as 1 whole.

= 1

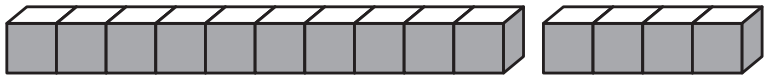
If we then picked up 2 more multilink cubes we have another 2 tenths.

$= \frac{2}{10}$

$= 1\frac{2}{10}$

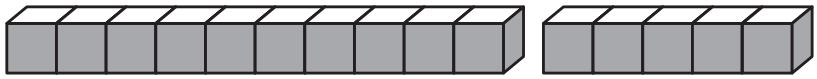
**1** **In each of these problems, 10 multilink cubes represent 1 whole. Write the mixed numeral for each set of multilink cubes.**

**a**



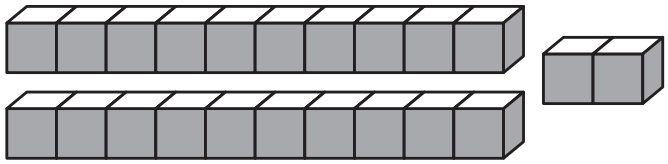
= ☐ $\frac{\square}{\square}$

**b**



= ☐ $\frac{\square}{\square}$

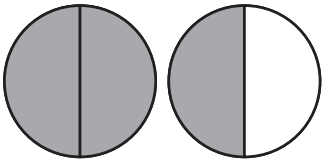
**c**



= ☐ $\frac{\square}{\square}$

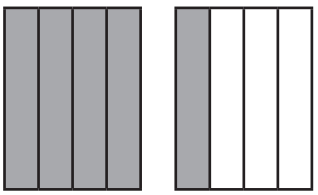
**2** **Write the mixed numerals that these fraction models are showing:**

**a**



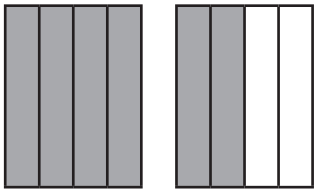
= ☐ $\frac{\square}{\square}$

**b**



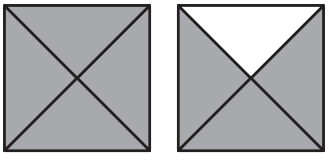
= ☐ $\frac{\square}{\square}$

**c**



= ☐ $\frac{\square}{\square}$

**d**



= ☐ $\frac{\square}{\square}$



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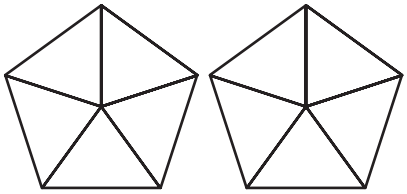
# Types of fractions – mixed numerals

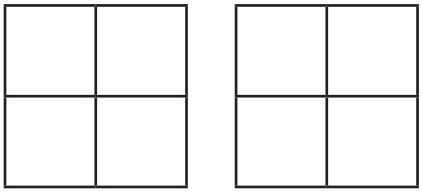
**3** **Shade these fraction models to show the mixed numerals:**

**a**



$1\frac{2}{5}$

**b**

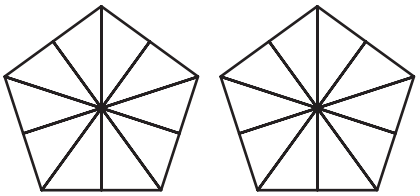


$1\frac{3}{4}$

**c**

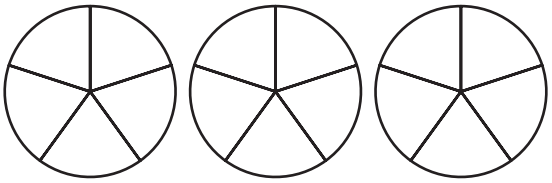
$2\frac{2}{3}$

**d**



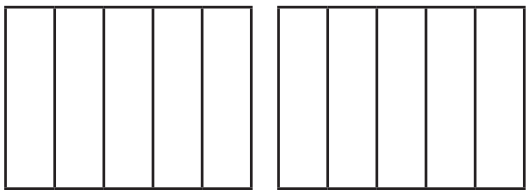
$1\frac{4}{10}$

**e**



$2\frac{4}{5}$

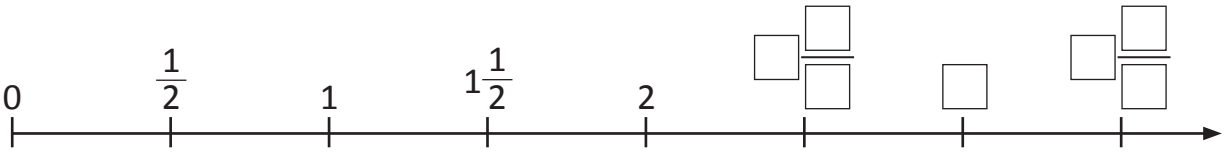
**f**



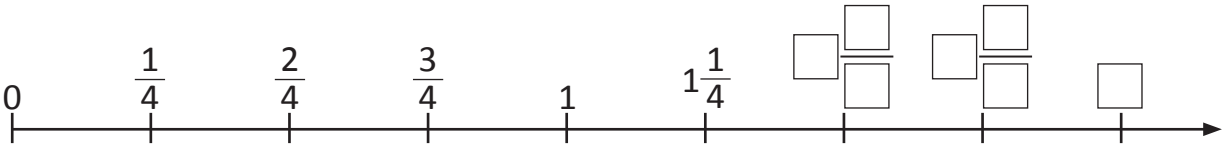
$1\frac{3}{5}$

**4** **Complete these number lines:**

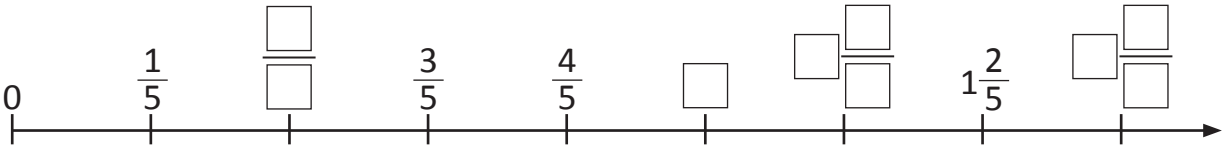
**a**




**b**




**c**



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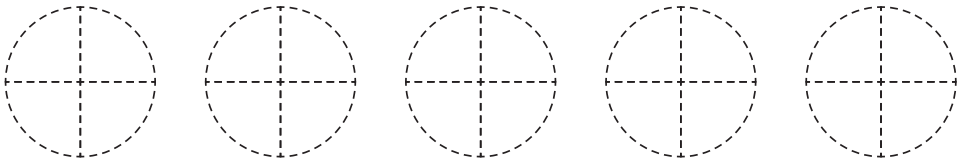
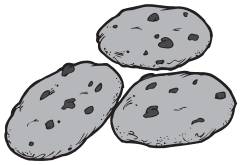
# Types of fractions – mixed numerals activity

A group of friends has formed a Cookie Club. They bake cookies at home and share them in school every Friday. Help the group share the cookies fairly.

You will need a copy of page 20. Cut out the shapes for the following 3 problems and figure out the answers. Once you are happy with your solutions, paste the pieces next to each person and write your answer as a mixed numeral at the bottom of each page.

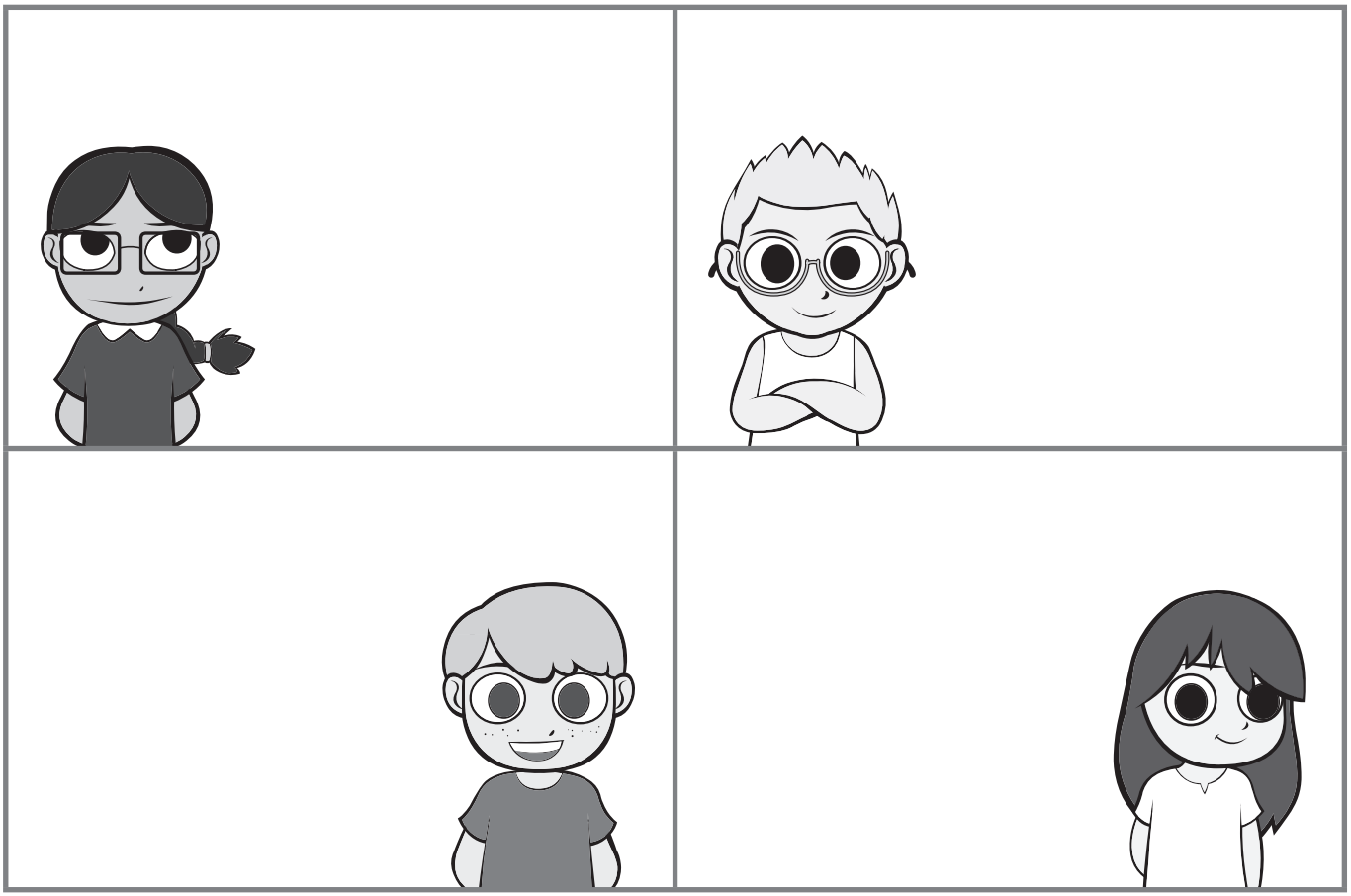


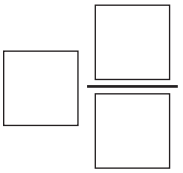
**Problem 1: Saqib brought in 5 double choc chip cookies. Show him how he could share these among 4 Cookie Club members.**



***Hint:*** Cut each cookie into quarters.

This means there are now a total of _____ pieces to share among 4 members.
Share these pieces evenly among 4 members:



How many cookies does each member get? 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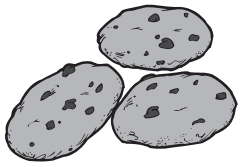
# Types of fractions – mixed numerals activity

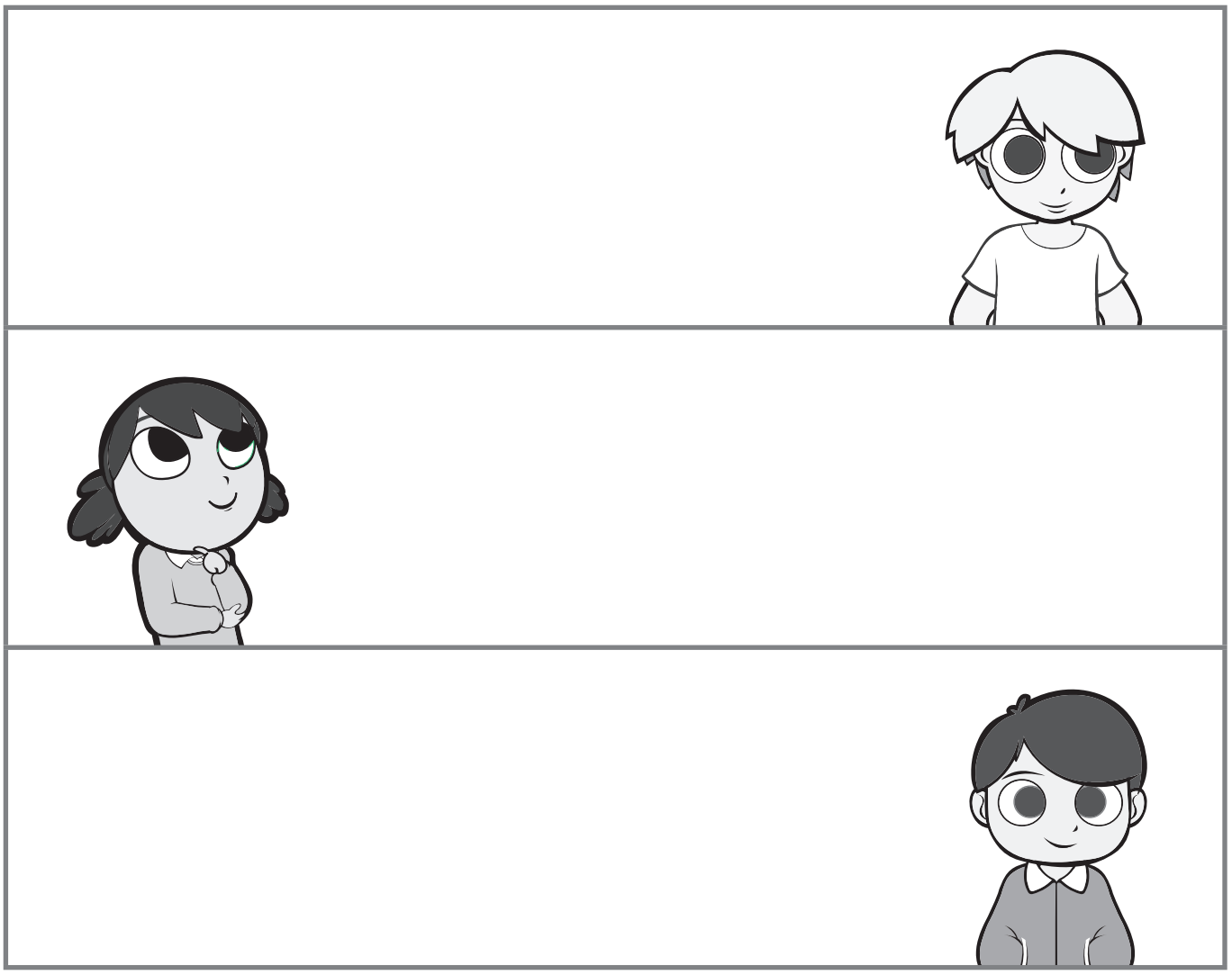
**Problem 2: Vani brought in 7 double choc chip cookies. Show him how he could share these among 3 Cookie Club members.**

***Hint:*** Cut each cookie into _____ pieces.



This means there are now a total of _____ pieces to share among 3 members.

Share these pieces evenly among 3 members:



How many cookies does each member get? $\square \frac{\square}{\square}$



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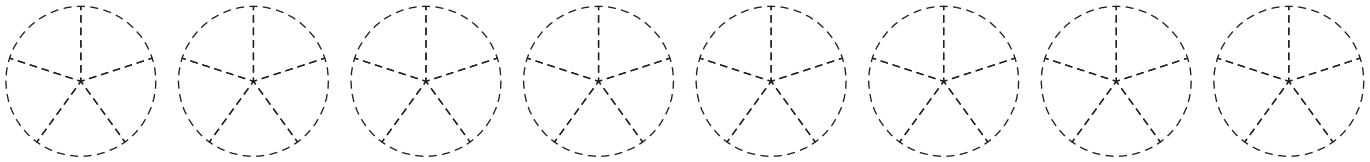
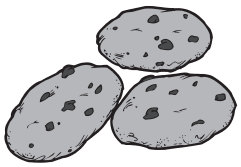
# Types of fractions – mixed numerals activity

**Problem 3: Rex brought in 8 double choc chip cookies. Show him how he could share these among 5 Cookie Club members.**

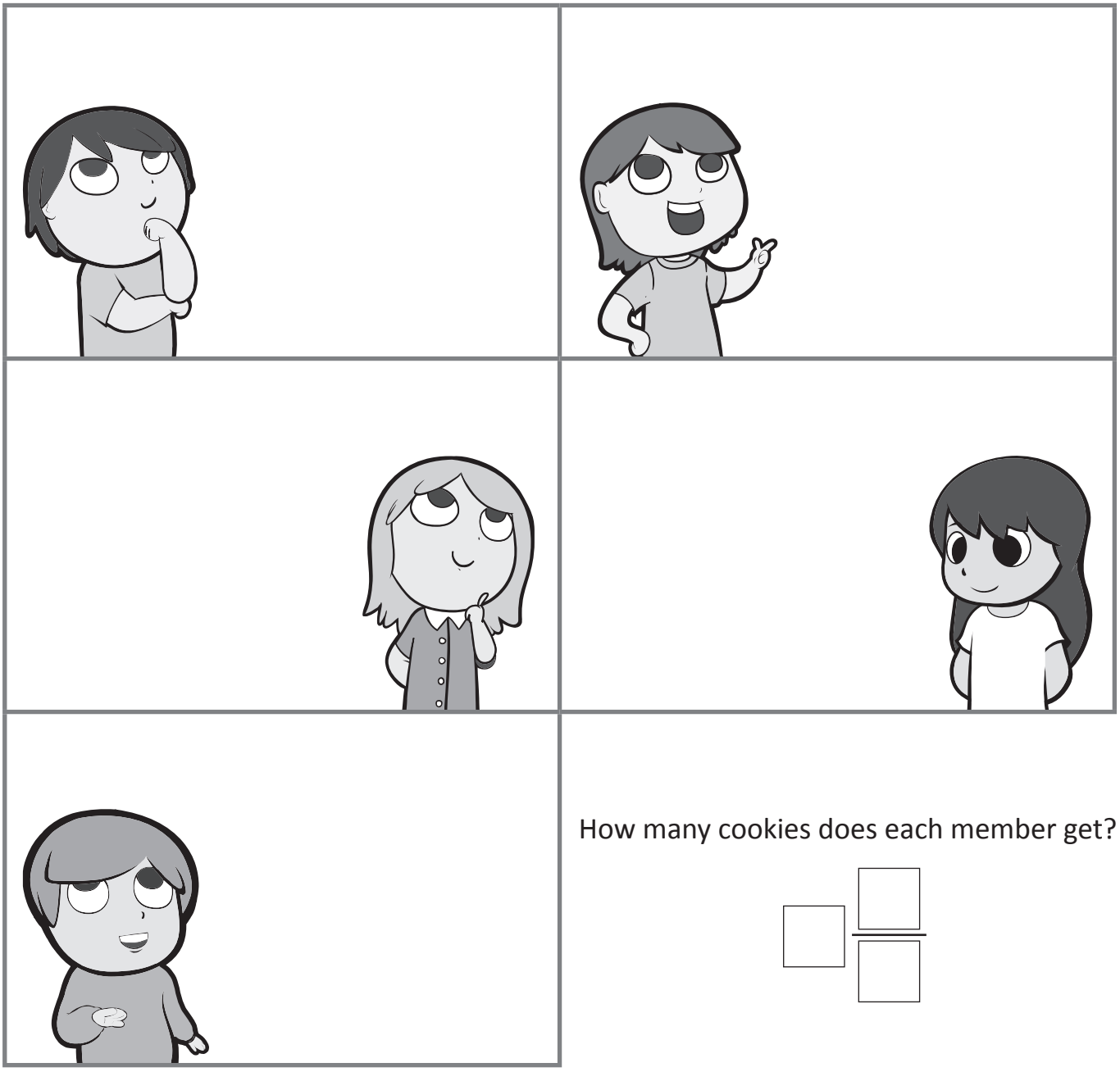


***Hint:*** Cut each cookie into _____ pieces.



This means there are now a total of _____ pieces to share among 5 members.

Share these pieces evenly among 5 members:



How many cookies does each member get?





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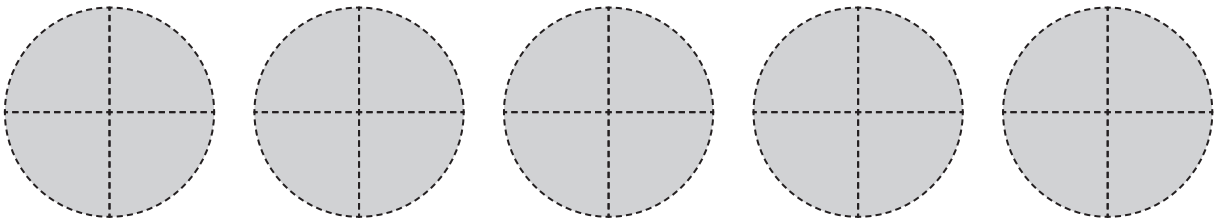
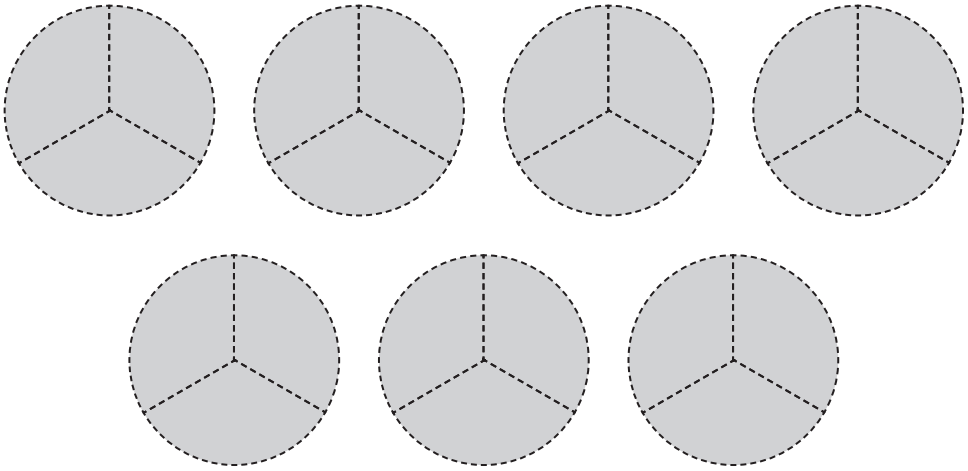
# Types of fractions – mixed numerals activity

Copy and cut out the following shapes:

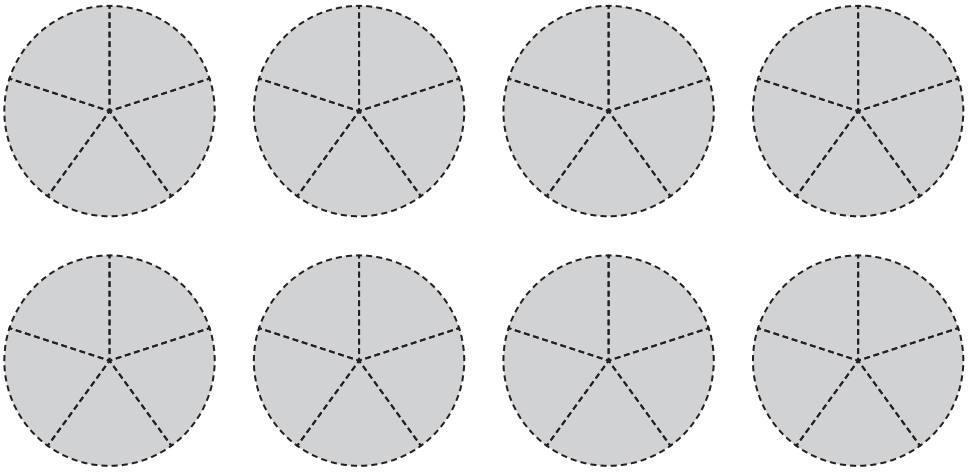
**Problem 1**



**Problem 2**



**Problem 3**

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# Four in a row fractions

apply

**Getting ready**

This is a game for 2 to 4 players. You will need the playing board below, 3 dice and each player will need a different set of coloured counters.

**What to do**

The aim of this game is to claim 4 squares in a row by covering the mixed numbers with your counters. You can go horizontally, vertically or diagonally.

Player 1 rolls 3 dice and creates a mixed number with the 3 numbers. For example, if a player rolled a 3, 4 and 6, they could put their counter on $3\frac{4}{6}$ or $6\frac{3}{4}$ or $4\frac{3}{6}$.

If a player cannot make a fraction to claim or it is already claimed, they miss a turn.

**Note:** Make sure the numerator is smaller than the denominator.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $3\frac{3}{5}$ | $1\frac{1}{5}$ | $6\frac{1}{3}$ | $5\frac{1}{3}$ | $1\frac{1}{2}$ | $3\frac{4}{5}$ | $4\frac{1}{4}$ | $5\frac{2}{3}$ |
| $3\frac{1}{3}$ | $3\frac{2}{3}$ | $5\frac{1}{3}$ | $2\frac{2}{4}$ | $4\frac{2}{5}$ | $1\frac{3}{4}$ | $2\frac{3}{6}$ | $6\frac{2}{5}$ |
| $4\frac{3}{4}$ | $1\frac{4}{6}$ | $3\frac{4}{5}$ | $1\frac{1}{4}$ | $5\frac{1}{5}$ | $2\frac{1}{6}$ | $5\frac{2}{6}$ | $4\frac{2}{6}$ |
| $3\frac{3}{4}$ | $2\frac{2}{3}$ | $4\frac{4}{4}$ | $6\frac{1}{6}$ | $1\frac{1}{3}$ | $4\frac{1}{5}$ | $3\frac{3}{6}$ | $1\frac{2}{3}$ |
| $2\frac{1}{2}$ | $2\frac{3}{4}$ | $4\frac{4}{6}$ | $6\frac{5}{6}$ | $1\frac{5}{6}$ | $3\frac{1}{6}$ | $5\frac{2}{5}$ | $1\frac{1}{6}$ |
| $2\frac{1}{3}$ | $6\frac{4}{6}$ | $4\frac{4}{5}$ | $6\frac{3}{6}$ | $2\frac{2}{5}$ | $5\frac{4}{5}$ | $6\frac{3}{6}$ | $1\frac{2}{4}$ |
| $4\frac{3}{6}$ | $2\frac{3}{4}$ | $5\frac{4}{6}$ | $6\frac{2}{6}$ | $1\frac{1}{5}$ | $3\frac{5}{6}$ | $6\frac{3}{4}$ | $5\frac{5}{6}$ |



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# Fraction frenzy

apply

**Getting ready**

This is a game for 2 players. You will need a copy of the playing cards on this page and page 23. Cut them out and shuffle them well. Players take turns being the dealer.

**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.

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



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| | | | |
|---|---|---|---|
| $\frac{4}{10}$ | $\frac{5}{10}$ | $\frac{6}{10}$ | $\frac{7}{10}$ |
| $\frac{8}{10}$ | $\frac{9}{10}$ | $\frac{1}{8}$ | $\frac{2}{8}$ |
| $\frac{3}{8}$ | $\frac{4}{8}$ | $\frac{5}{8}$ | $\frac{6}{8}$ |
| $\frac{7}{8}$ | $\frac{1}{2}$ | $\frac{1}{4}$ | $\frac{2}{4}$ |
| $\frac{3}{4}$ | $\frac{1}{2}$ | $\frac{4}{8}$ | $\frac{5}{10}$ |


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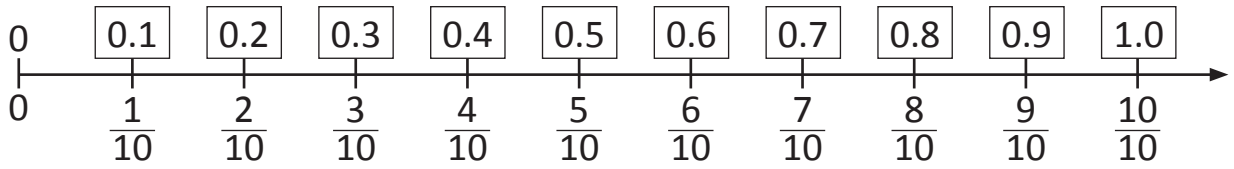
# Fractions, decimals and percentages – writing tenths as decimals

Tenths are written as decimals like this:

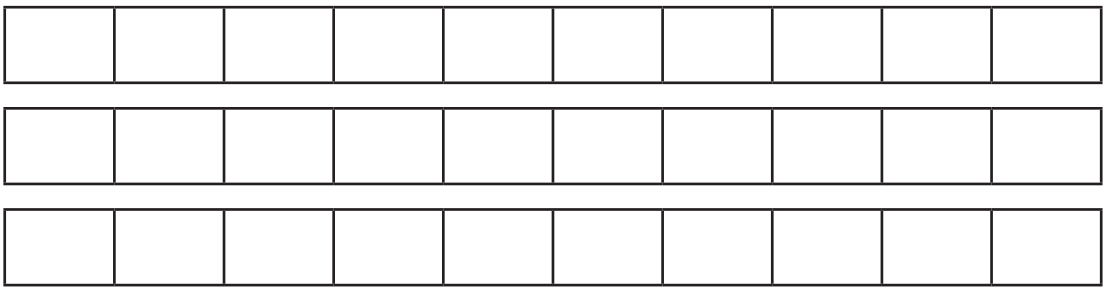



**1** **Shade the fraction strips so each one matches the fraction or the decimal:**

**a** 0.7

**b** $\frac{4}{10}$

**c** 0.5



**2** **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, $\frac{5}{10}$

_____

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

| | | Units | | Tenths |
|---|---|---|---|---|
| **a** | 0.6 | | • | |
| **b** | 2.7 | | • | |
| **c** | 5.1 | | • | |

| Units | | 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**

**4** **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 |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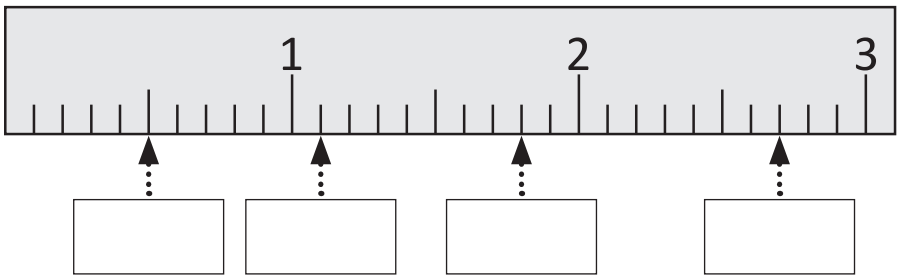
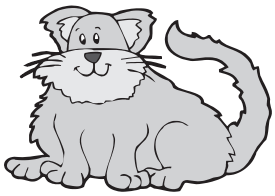
# Fractions, decimals and percentages – writing tenths as decimals

**5** **Label this section of a ruler as centimetres in decimals. The first box has been done for you. (Note this diagram has been enlarged so you can see the lines clearly.)**




**6** **These 3 cats were the finalists in the Fattest Cat Competition. Fill in the blanks below:**



Felix – 12.2 kg

Leroy – 11.9 kg

Mosley – 11.5 kg

**a** _____ is heavier than _____ by $\frac{3}{10}$ of a kilogram.

**b** _____ is heavier than _____ by $\frac{4}{10}$ of a kilogram.

**c** _____ is lighter than _____ by $\frac{7}{10}$ of a kilogram.

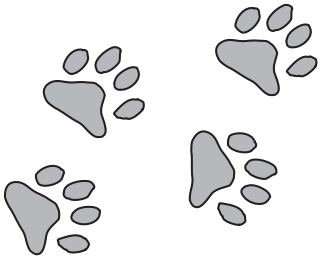
**7** **Write the mass of each cat and < or > to make the sentence true.**

**a** Felix Leroy

**b** Mosley Felix

**8** **The combined weigh of which two cats is 23.7 kg?**

_____ and _____





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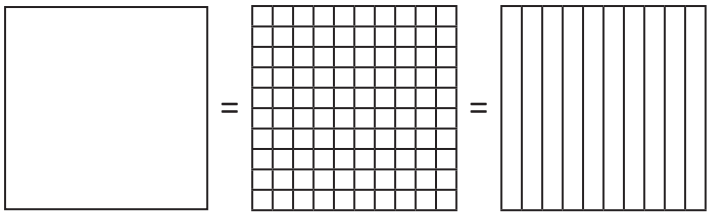
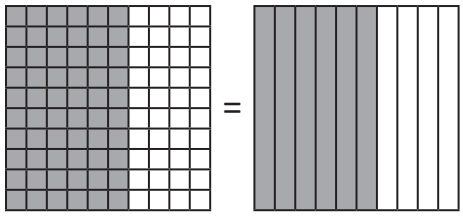
# Fractions, decimals and percentages – writing tenths as decimals



1 whole  100 hundredths  10 tenths

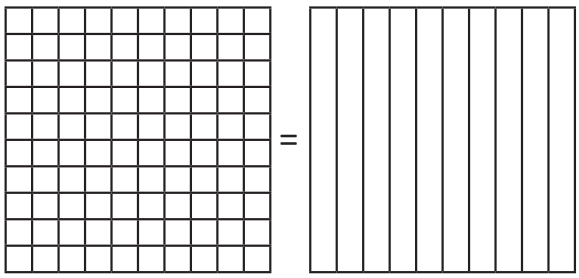


$\frac{60}{100}$ is the same amount as $\frac{6}{10}$.

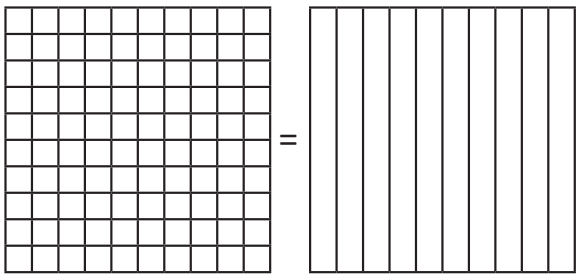
We can divide a whole into one hundred parts. These are called hundredths. Hundredths are made up of 10 lots of tenths.

**1** **Show how these amounts are the same:**

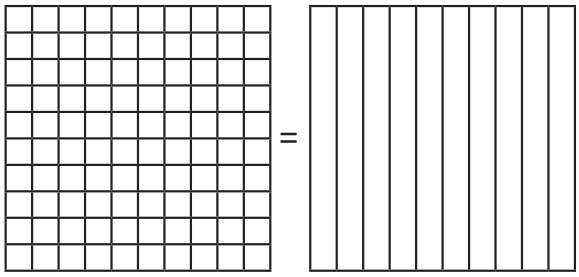
**a** $\frac{80}{100}$ is the same amount as $\frac{8}{10}$.



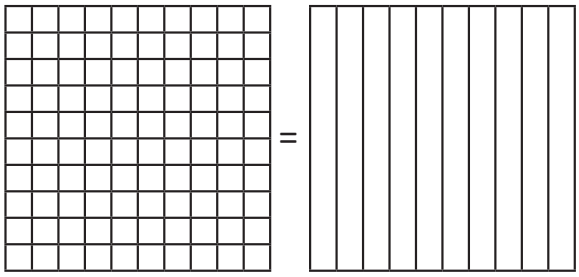
**b** $\frac{20}{100}$ is the same amount as $\frac{2}{10}$.



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

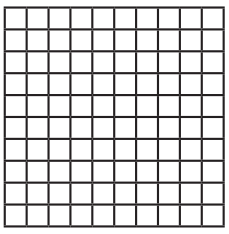


**d** $\frac{70}{100}$ is the same amount as $\frac{7}{10}$.

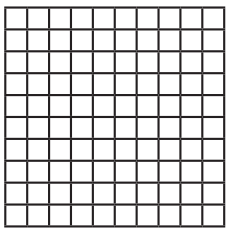


**2** **Shade these amounts on the hundred grids:**

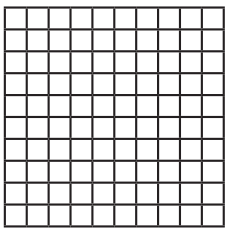
**a** $\frac{5}{10}$



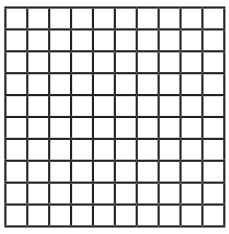
**b** $\frac{9}{10}$



**c** $\frac{10}{10}$



**d** $\frac{1}{10}$

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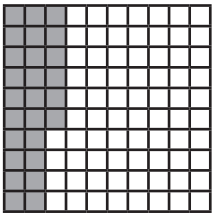
# Fractions, decimals and percentages – relating tenths, hundredths and decimals

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



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

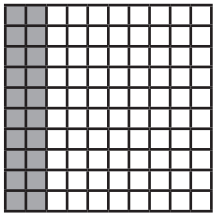
| Units | | Tenths | Hundredths |
|---|---|---|---|
| 0 | • | 2 | 6 |

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

**a** Tenths ☐

Hundredths ☐

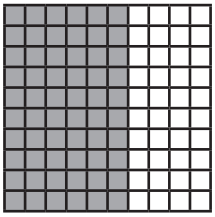
Decimals ☐



**b** Tenths ☐

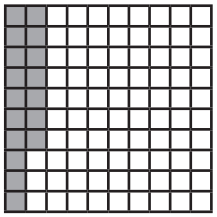
Hundredths ☐

Decimals ☐



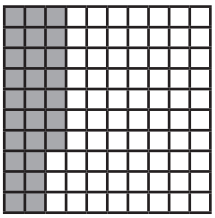
**c** Hundredths ☐

Decimals ☐



**d** Hundredths ☐

Decimals ☐



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

| | | Hundreds | Tens | Units | | Tenths | Hundredths |
|---|---|---|---|---|---|---|---|
| **a** | 2.6 | | | | • | | |
| **b** | 3.76 | | | | • | | |
| **c** | 112.6 | | | | • | | |
| **d** | 45.67 | | | | • | | |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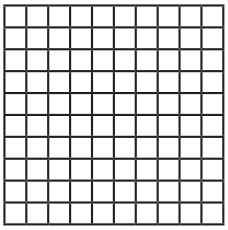
# Fractions, decimals and percentages – relating tenths, hundredths and decimals

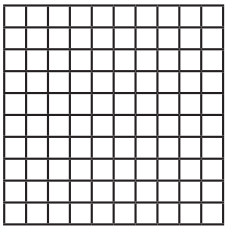
**5** **Shade the fractions on the grid and show them as hundredths and decimals:**

**a** $\frac{1}{2}$



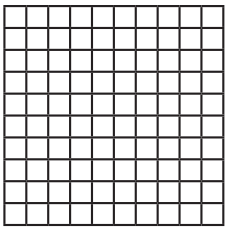
$= \frac{\square}{100} =$ 0.□

**b** $\frac{1}{4}$



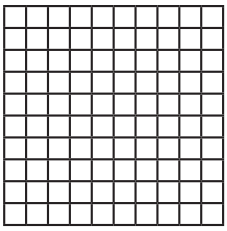
$= \frac{\square}{100} =$ 0.□

**c** $\frac{1}{5}$



$= \frac{\square}{100} =$ 0.□

**d** $\frac{1}{10}$



$= \frac{\square}{100} =$ 0.□

**6** **Express these common fractions as hundredths and as decimals:**

**a** $\frac{1}{2} = \frac{\square}{100} =$ 0.□

**b** $\frac{4}{5} = \frac{\square}{100} =$ 0.□

**c** $\frac{4}{10} = \frac{\square}{100} =$ 0.□

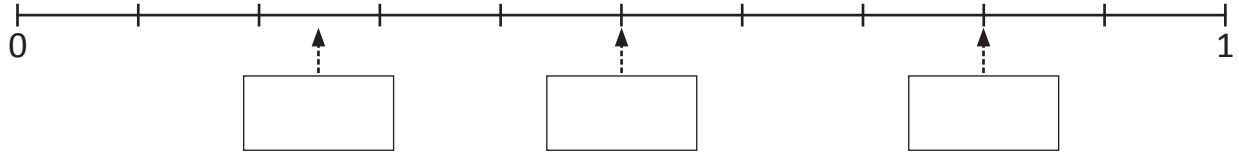
**d** $\frac{3}{4} = \frac{\square}{100} =$ 0.□

**e** $\frac{2}{4} = \frac{\square}{100} =$ 0.□

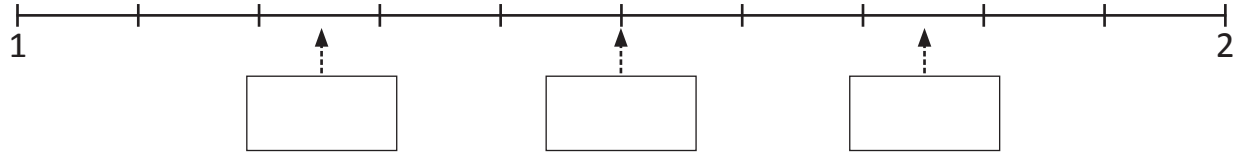
**f** $\frac{5}{10} = \frac{\square}{100} =$ 0.□

**7** **Show where the decimals fit on the number lines:**

**a** 0.5 0.25 0.8




**b** 1.5 1.25 1.75



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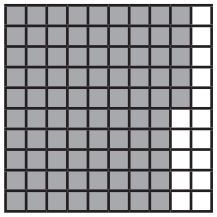
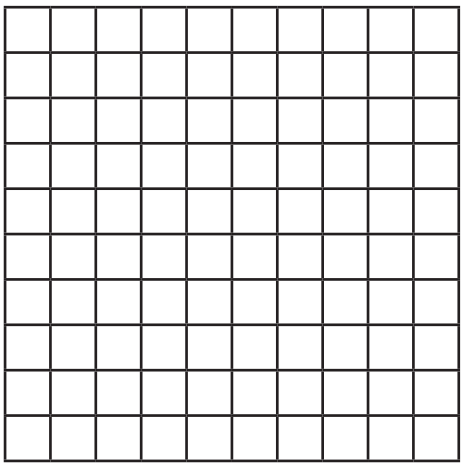
# Fractions, decimals and percentages – introducing percentages

A percentage is an amount out of 100.

$\frac{85}{100} = 85\%$



**1** **Colour this hundred square according to the directions:**



**a** 8% green

**b** 10% pink

**c** 15% brown

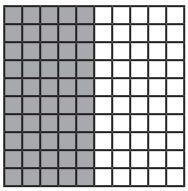
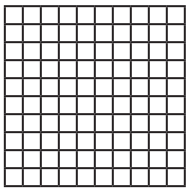
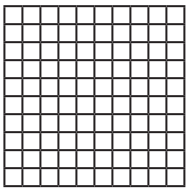
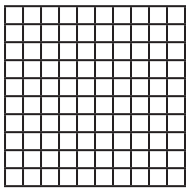
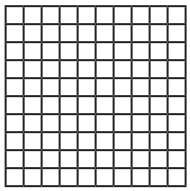
**d** 20% orange

**e** 12% yellow

**f** 20% red

**g** Leave the rest blank.
What percentage is this? ☐

**2** **The most commonly used percentage amounts are in the table below. Complete the table and shade a hundredth grid for each amount. The first one has been done for you.**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| **Percentage** | 50% | 25% | 10% | 75% | 20% |
| **Hundredths** | $\frac{50}{100}$ | | | | |
| **Decimal** | 0.5 | | | | |
| **Fraction** | $\frac{1}{2}$ | | | | |
| **Hundredth grid** |  |  |  |  |  |



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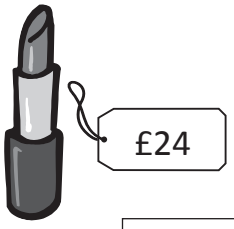
# Fractions, decimals and percentages – introducing percentages

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

**a**

Sale price: ☐

**b**




Sale price: ☐

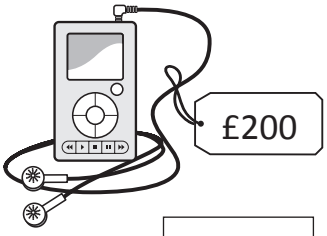
**c**

Sale price: ☐

**d**

Sale price: ☐

**e**

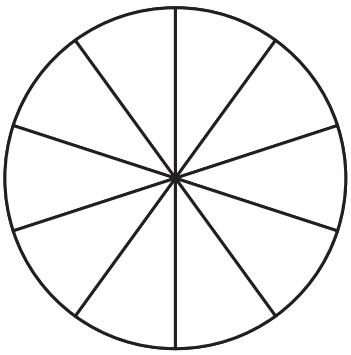



Sale price: ☐

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

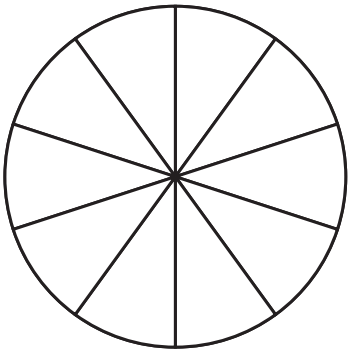
**a** 100 people were surveyed about their favourite weekend activities.

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



**b** 200 people were surveyed about their favourite food.

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



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# 100 hundredths

apply

**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 32.

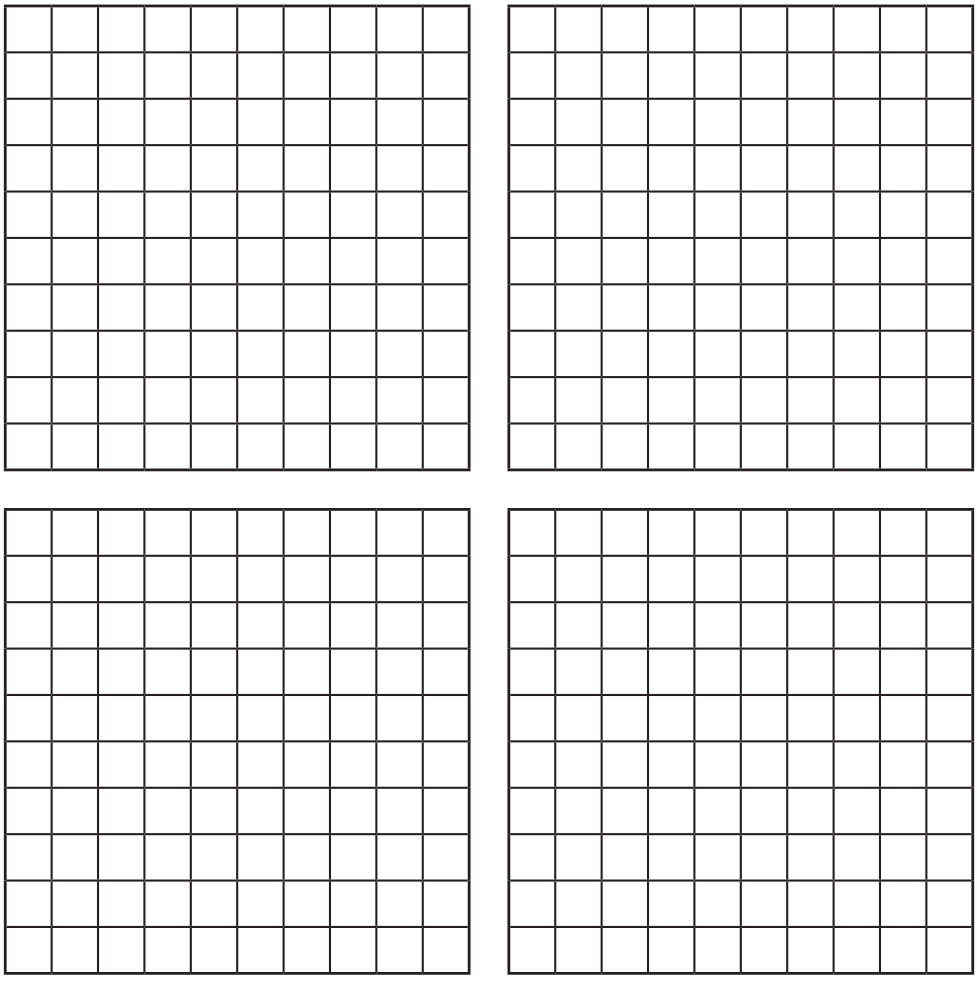
copy

**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.





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| | | | |
|---|---|---|---|
| $\frac{30}{100}$ | 20% | $\frac{50}{200}$ | 0.08 |
| 0.35 | 0.17 | 0.4 | $\frac{10}{200}$ |
| $\frac{6}{10}$ | 10% | 0.19 | 0.05 |
| 0.6 | $\frac{1}{10}$ | $\frac{15}{100}$ | 1% |
| $\frac{12}{100}$ | 2% | 0.15 | $\frac{4}{200}$ |
| $\frac{20}{200}$ | 0.8 | 0.2 | 5% |


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