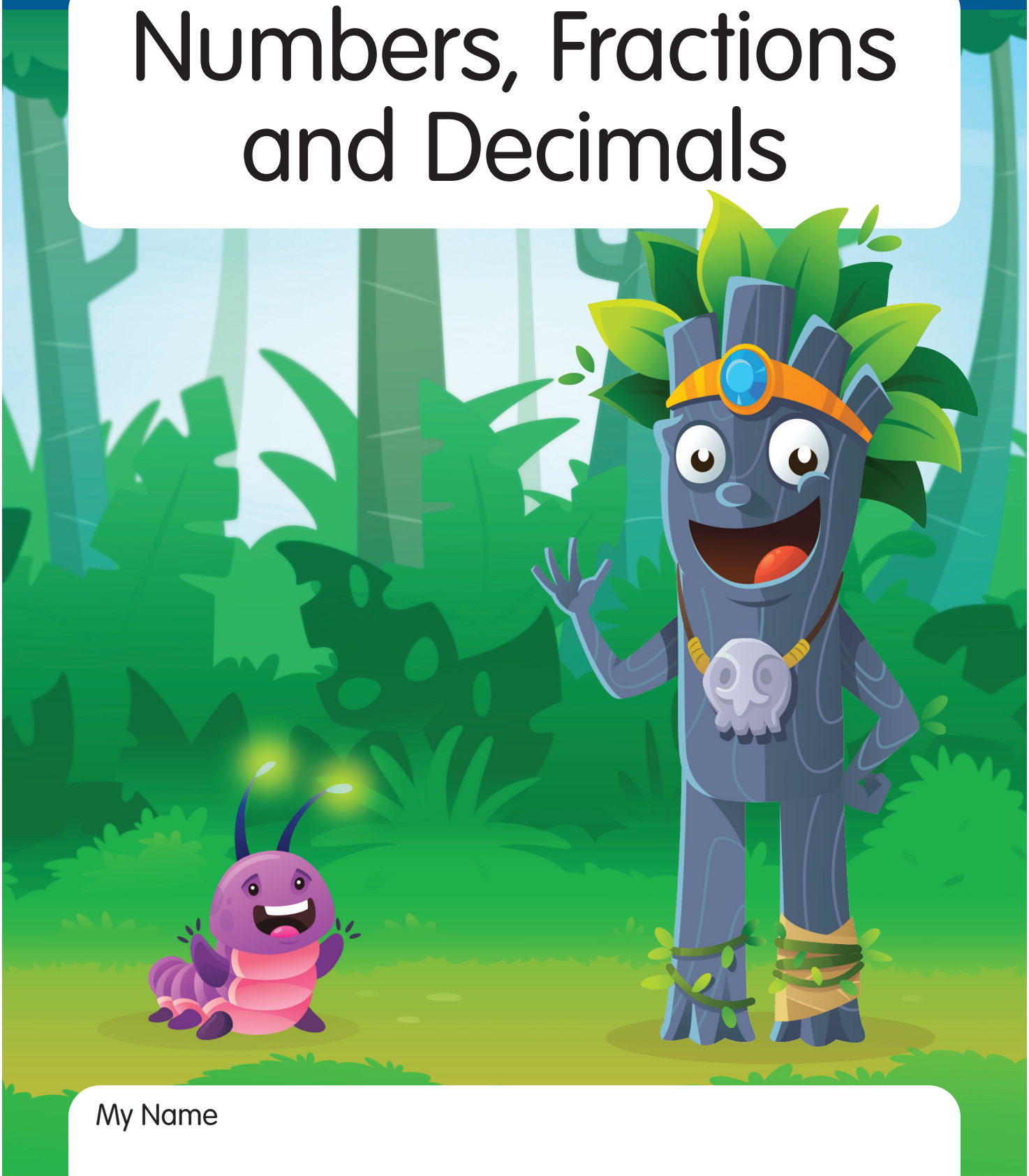
YEAR 4 STUDENT BOOK

Mathseeds PRIME

Numbers, Fractions and Decimals



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Mathseeds Prime Year 4: Numbers, Fractions and Decimals Student Book

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3P Learning Pty Ltd
655 Parramatta Rd
Leichhardt NSW 2040

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Publisher: Katy Pike
Written by Megan Smith and Liz Spielman
Design and layout by the Modern Art Production Group
Cover illustration by Tony Lowe

In this book

The **Mathseeds Prime** program teaches children the core maths and problem solving skills needed to be successful at school. Each online lesson begins with a quick quiz on prerequisite knowledge to warm up. The lesson video introduces and models a mathematical concept. The child then completes a fun activity to practise the new skill. Each lesson ends with a quiz to test that they can apply the skills and knowledge they have learned in a variety of question types.

This book is designed to supplement the online program with more exercises in the core mathematical concepts. Each unit focuses on a topic within one of the five learning strands, presenting a series of pen and paper activities, a review quiz, word problems and games to practise their skills and understanding.

The topics in this book align with the following components of the Australian Curriculum version 9:

Australian Curriculum content codes and descriptions

AC9M4N01 Students will recognise and extend the application of place value to tenths and hundredths and use the conventions of decimal notation to name and represent decimals.

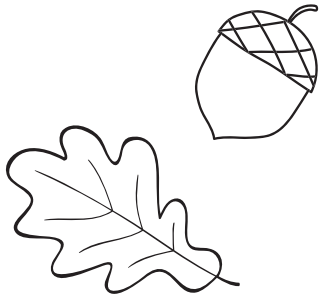
AC9M4N02 Students will explain and use the properties of odd and even numbers.

AC9M4N03 Students will find equivalent representations of fractions using related denominators and make connections between fractions and decimal notation.

AC9M4N04 Students will count by fractions including mixed numerals; locate and represent these fractions as numbers on number lines.

Contents

Contents



Numbers to 100 000

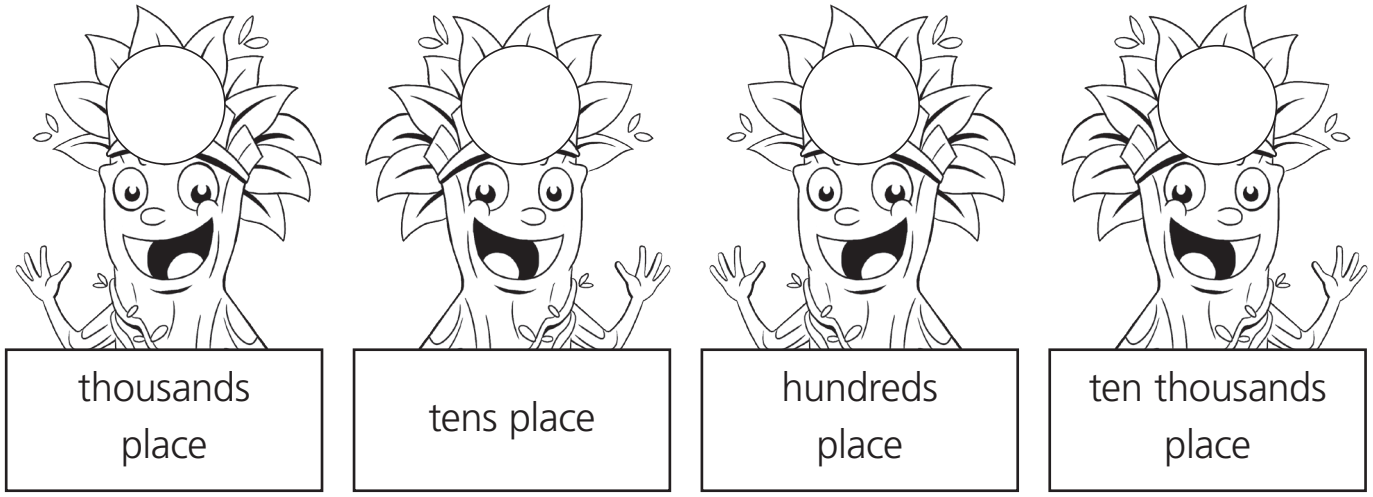
Activity 1

Circle the answer.

a	400 + 70 + 3 =	4073	473	4703	40 703
b	5000 + 600 + 70 =	5670	5067	50 670	50 607
c	90 000 + 6000 + 3 =	9063	90 603	906 003	96 003
d	400 000 + 70 000 + 80 =	4780	407 080	470 080	470 800
e	70 000 + 3000 + 80 + 5 =	7385	73 085	73 805	70 385

Activity 2

Write the matching digit on each Woodling's head for the number: **28 934**.



thousands place	tens place	hundreds place	ten thousands place

Activity 3

Use the digits 1, 2, 3, 4 and 5 to make five different numbers.

Write each number in its expanded form.

a _____ = _____ + _____ + _____ + _____ + _____

b _____ = _____ + _____ + _____ + _____ + _____

c _____ = _____ + _____ + _____ + _____ + _____

d _____ = _____ + _____ + _____ + _____ + _____

e _____ = _____ + _____ + _____ + _____ + _____

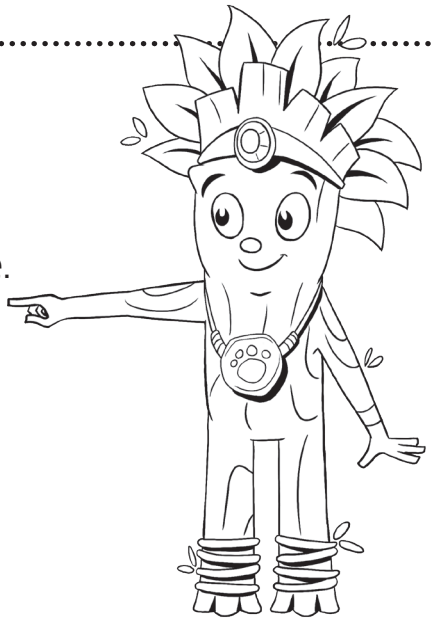
Numbers to 100 000

Activity 4

Match the number to the words.

a	6724	Sixty thousand, seven hundred and twenty-four
b	67 240	Sixty-seven thousand and twenty-four
c	67 024	Six thousand, two hundred and seventy-four
d	60 724	Six thousand, seven hundred and twenty-four
e	6274	Sixty-seven thousand, two hundred and forty

Activity 5



Write these numbers in the place value table.

a Twenty-three thousand, six hundred and forty-five.

b Two thousand, three hundred and fifty-one.

c Sixty thousand and fifty-three.

d Thirty thousand, nine hundred and twenty-eight.

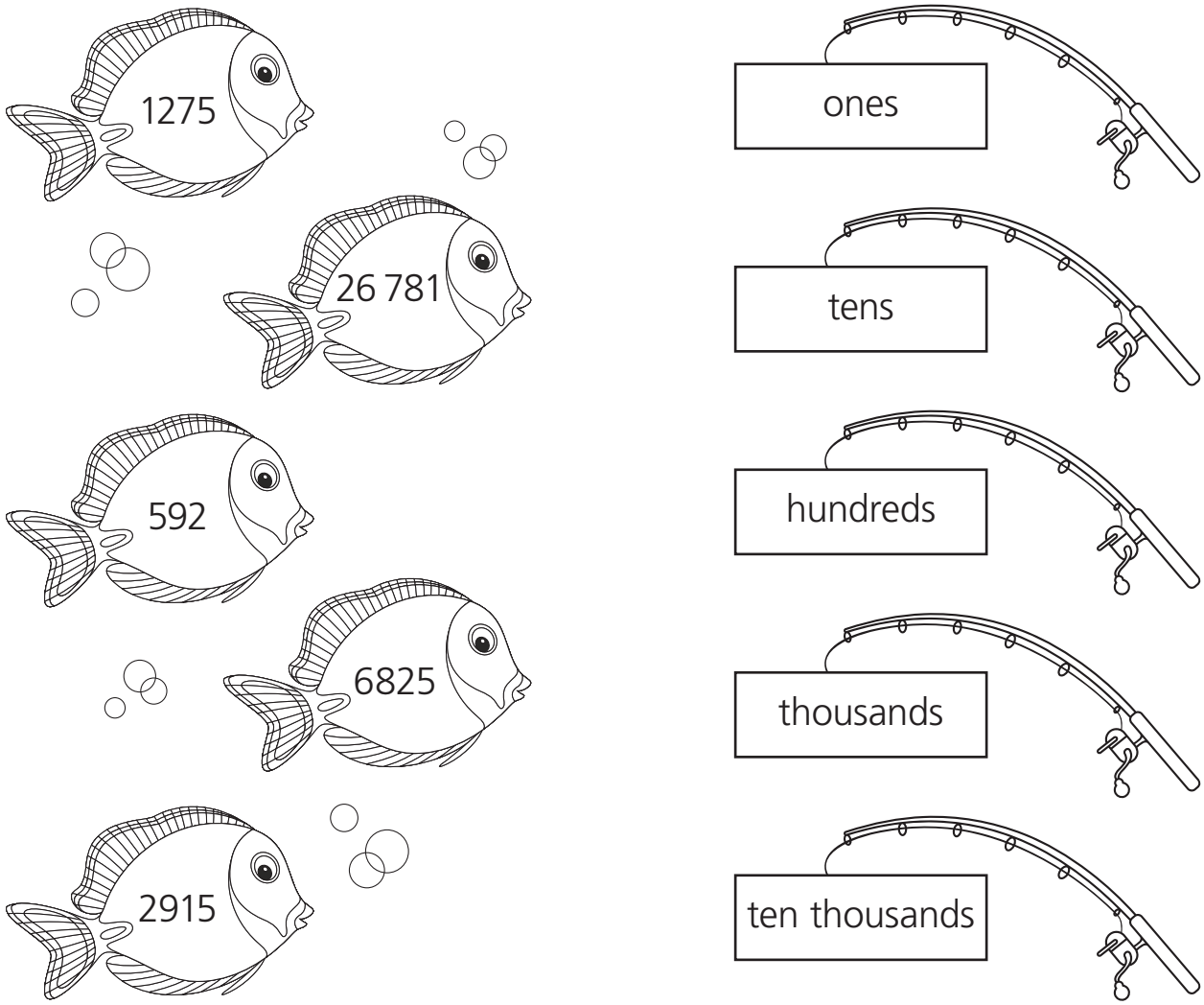
e Seventy-three thousand, eight hundred and two.

	Ten thousands	Thousands	Hundreds	Tens	Ones
a					
b					
c					
d					
e					

Place Value

Activity 1

Catch the fish by drawing a fishing line to the rod that matches the place of the 2.



Activity 2

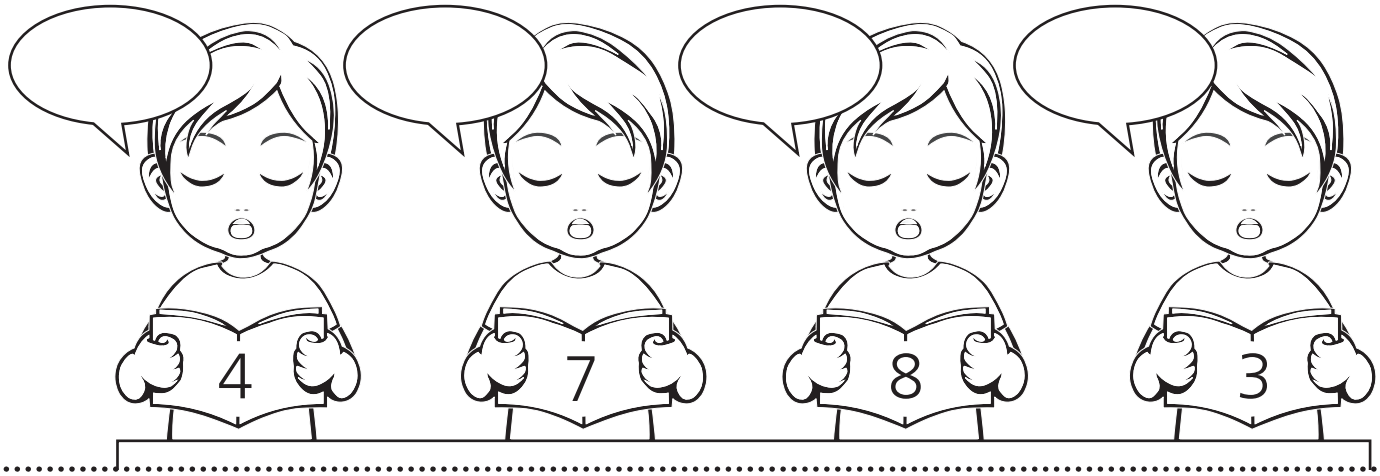
Circle the number in which the given digit has the greatest value.

a	Given digit: 3	35 782	3019
b	Given digit: 5	95 761	98 506
c	Given digit: 7	83 079	78 002
d	Given digit: 2	3728	28 051
e	Given digit: 6	86 382	62 497

Place Value

Activity 3

Each boy is singing the value of one digit in the number 34 875.
Write its value in the bubble.



Activity 4

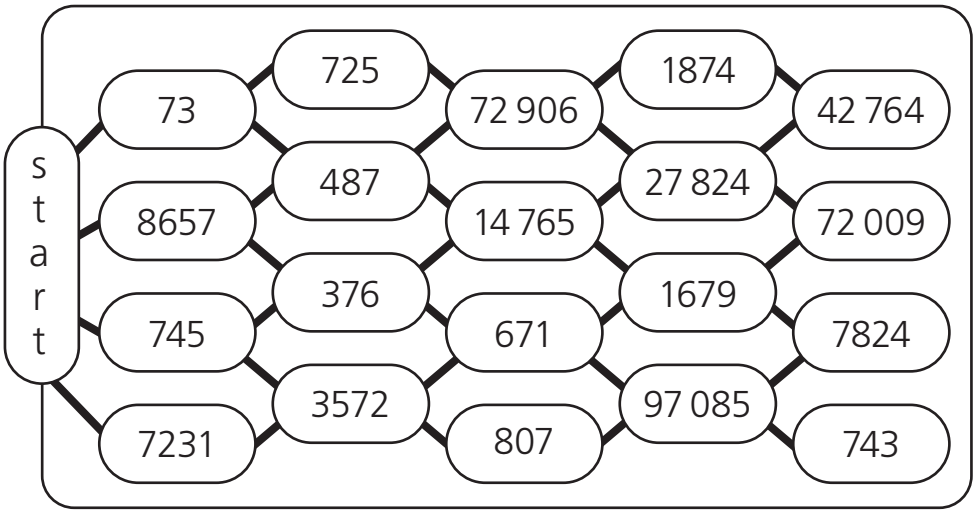
Draw a line to match the value of the digit to the number.

3 is worth 300	45 981
5 is worth 5000	92 637
1 is worth 100 000	69 153
6 is worth 60 000	54 309
9 is worth 90 000	128 245

Activity 5

The Woodling can only step on linked rocks.

The value of the 7 must be 10 times the value of the previous 7. Colour the path.

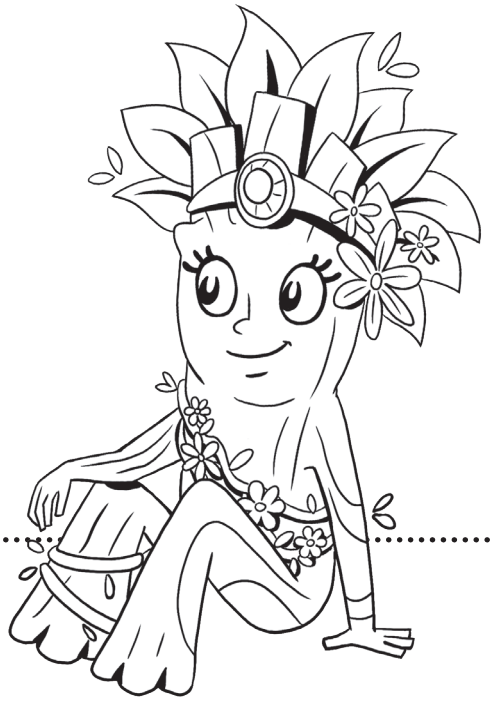


Comparing Digits

Activity 1

Match each number with the given digit 10× larger than the value of the:

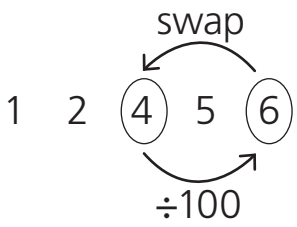
a	3 in 57 326	25 736
b	5 in 73 563	37 625
c	7 in 37 563	63 572
d	2 in 36 752	36 572
e	6 in 73 635	72 635



Activity 2

Swap two digits in 12 456 to make numbers in which the value of the 4 is

eg. 100× smaller 12 654 since



a 100× larger _____

b 10× smaller _____

c 10× larger _____

Activity 3

Circle the digits that have

10 × the value in 25 461 compared to their value in 31 246.

1 2 3 4 5 6

100 × the value in 25 461 compared to their value in 14 256.

1 2 3 4 5 6

Comparing Digits

Activity 4

Use a ruler to draw a line to the answers to solve the riddle.

Each line crosses through a letter and a number.

What can you catch but never throw?

1000× less than the value of the 1 in **1**5 409	8 A	49 251
100× less than the value of the 2 in **2**3 596	F 1	97 364
1000× more than the value of the 3 in 62 50**3**	3 I	78 625
10× less than the value of the 4 in 23 0**4**1	U 6	8317
10× more than the value of the 5 in 4**5** 813	Z 7	58 430
10× less than the value of the 6 in **6**1 802	E 5	23 681
100× more than the value of the 7 in 4**7**19	N 2 4	82 609
10× more than the value of the 8 in 4**8** 063	L	16 523

1	2	3	4	5	6	2	7	8

Comparing Numbers

Activity 1

Which is larger? Count the digits. Circle the answer.

a 34 762 or 9358

b 4763 or 35 175

c 54 287 or 9576

d 72 709 or 8915

Activity 2

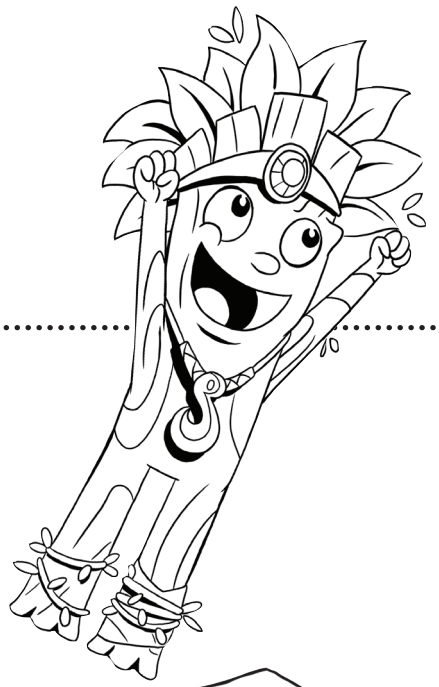
Which is smaller? Compare the digits from the left. Circle the answer.

a 53 098 or 61 981

b 71 834 or 70 997

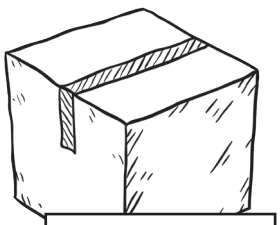
c 82 091 or 82 109

d 76 225 or 76 219

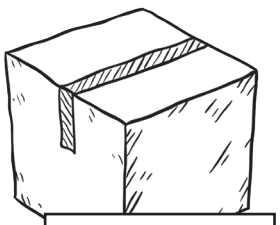


Activity 3

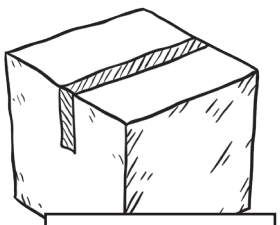
This super Woodling picked up the lightest box first. She then picked up the next lightest box each time until she had picked up the heaviest box.



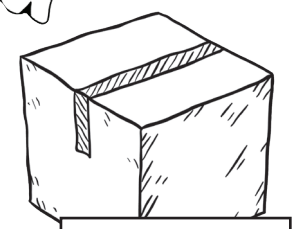
9065 kg
Box 1



32 570 kg
Box 2



8976 kg
Box 3



14 528 kg
Box 4

Lightest to heaviest:

Box _____ , Box _____ , Box _____ , Box _____

Comparing Numbers

Activity 4

The hungry fish always turns to the largest number. Join each number to the fish that makes the statement true.

a 36 092

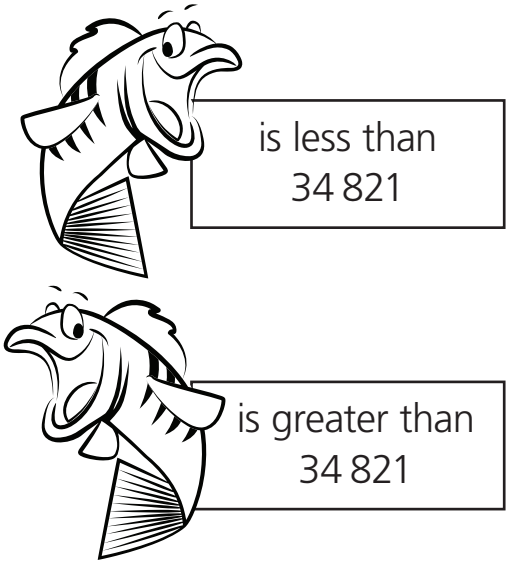
b 33 867

c 34 605

d 41 958

e 97 543

f 34 819



Activity 5

Circle three numbers between 30 000 and 40 000.

3468 32 468 39 075 40 091 3891 30 028

Activity 6

There are five very long flights. Arrange them from longest to shortest.

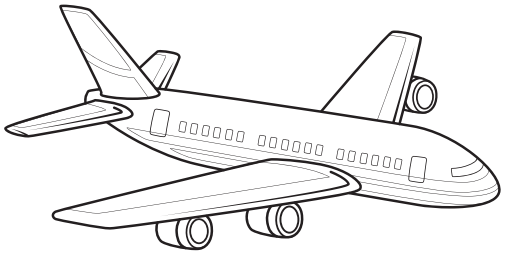
Flight 1: Paris to Auckland 19 277 km

Flight 2: Sydney to London 17 016 km

Flight 3: Singapore to NJ 15 344 km

Flight 4: Seattle to KL 20 044 km

Flight 5: Brussels to Melbourne 17 157 km



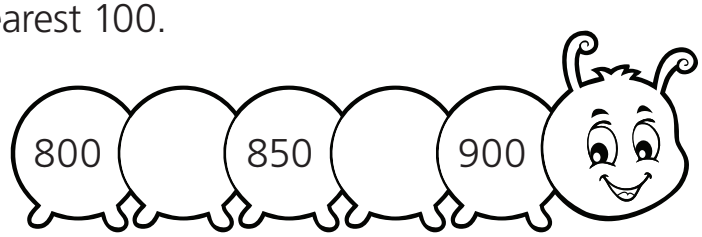
Longest **Shortest**

Flight _____ Flight _____ Flight _____ Flight _____ Flight _____

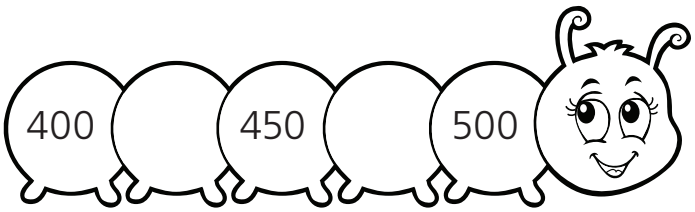
Rounding Numbers

Activity 1

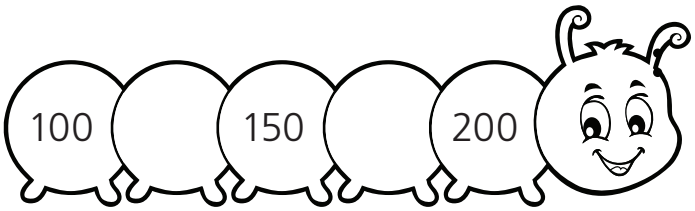
Write the number in the correct position of each worm then round the number to the nearest 100.



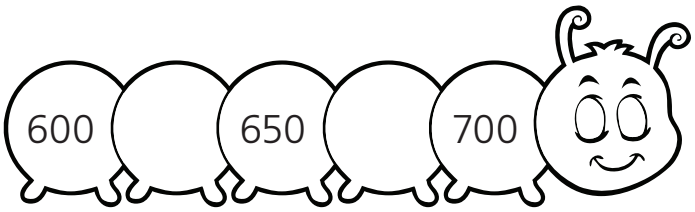
826 rounds to _____



473 rounds to _____



187 rounds to _____



619 rounds to _____

Activity 2

The midpoint is the number halfway between two numbers.
Write the midpoints of the two given numbers.

	Numbers	Midpoint
a	300 and 400	
b	70 and 80	
c	4000 and 5000	
d	500 and 600	
e	8000 and 9000	

Rounding Numbers

Activity 3

Estimate the sums by rounding each number to one digit followed by zeros.

For example, 5723 + 6290 is close to 6000 + 6000 = 12 000

a 49 + 32 is close to _____ + _____ = _____

b 498 + 181 is close to _____ + _____ = _____

c 4790 + 5310 is close to _____ + _____ = _____

d 781 + 243 is close to _____ + _____ = _____

e 39 + 87 is close to _____ + _____ = _____

Activity 4

A: Round each number to the nearest 10.

a 89 _____

b 21 _____

c 57 _____

d 43 _____

e 75 _____

B: Round each number to the nearest 100.

a 289 _____

b 312 _____

c 450 _____

d 735 _____

e 891 _____

C: Round each number to the nearest 1000.

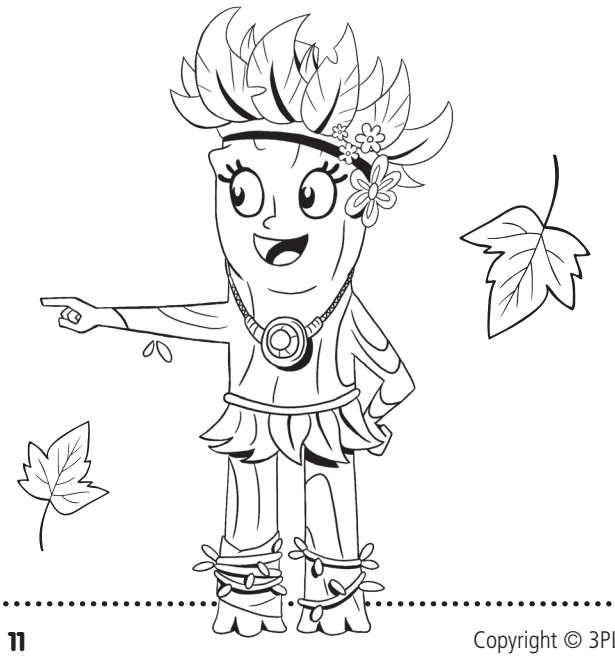
a 2800 _____

b 3690 _____

c 6276 _____

d 7198 _____

e 4892 _____



Review

1 Write 24 623 in words.

_____

_____

2 Write the same number in expanded form.

_____

_____

3 Write six numbers using the digits 1, 4, 7, 0, 5.

_____ _____ _____

_____ _____ _____

4 Circle the largest number in question 3.

5 Tick the smallest number in question 3.

6 Write the numbers from question 3 in order from smallest to largest.

_____ _____ _____

_____ _____ _____

Using the list from question 6:

7 Circle the largest ones digit.

8 Highlight the smallest thousands digit.

9 Underline the largest tens digit.

10 Tick the smallest hundreds digit.

Review

11 What is the value of the underlined digit in each number?

a 15 <u>6</u>70 _____ **b** 95 43<u>2</u> _____

c 64 3<u>0</u>8 _____ **d** 46 9<u>7</u>8 _____

e <u>8</u>4 796 _____ **f** 5<u>7</u> 513 _____

12 Rewrite each answer from question 11:

a 10× larger _____ **b** 100× larger _____

c 10× smaller _____ **d** 1000× larger _____

e 100× smaller _____ **f** 1000× smaller _____

13 Round each number to the nearest:

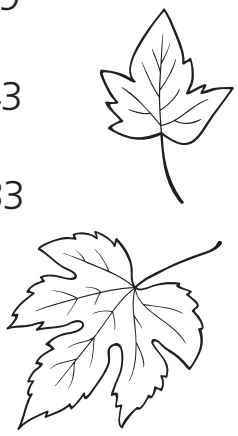
	10	**100**	**1000**	**10 000**
a 95 277				
b 60 803				
c 49 495				
d 11 206				

14 Compare the numbers. Write **<**, **>** or **=** in the box.

a 67 398 ☐ 67 298 **b** 75 420 ☐ 75 419

c 84 435 ☐ 94 436 **d** 13 637 ☐ 15 843

e 46 705 ☐ 46 706 **f** 33 773 ☐ 33 733



Number Problems

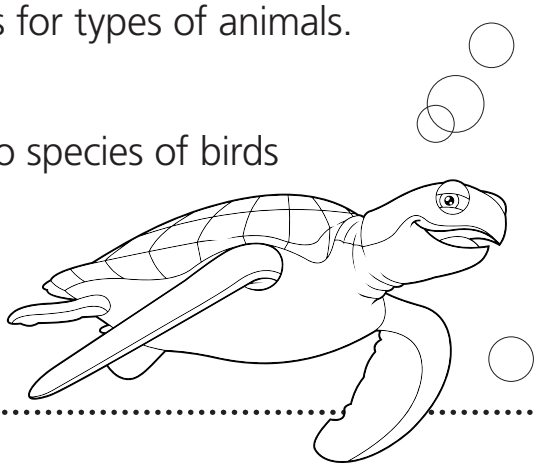
I asked my friends to look up the species numbers for types of animals.
Here are their replies.

Ben: eleven thousand, one hundred and sixty-two species of birds

Jill: 11 thousand, 6 hundred and 90 reptiles

Kim: 6000 + 500 + 70 + 8 mammals

Lee: thirty-six thousand and fifty-eight fishes



1 Write all these numbers in numerals.

birds _____ reptiles _____ mammals _____ fish _____

2 Round the numbers to the nearest thousand.

birds _____ reptiles _____ mammals _____ fish _____

3 The number of species of arachnids (spiders) is 10 times larger than the number of birds.

How many species of arachnids is that? _____

4 The number of species of insects is about 100 times larger than the number of birds.

How many species of insects is that? _____

5 Put the types of animals into order from the smallest to the largest number.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Problem Solving: More or Less Than

1 My car is about 4 metres long. My street is around ten times longer than my car. The distance to school is 100 times more than the length of my car. Grandma's house is 10 times the distance to school. How many times longer than my car is the trip to grandma's house?

a Show your working.

b Answer: The trip to grandma's house is _____ times longer than my car.

2 Metro Football Club games get around 190 000 spectators. Games at Western FC have about 10 times less than that. Northern FC games get 100 times less than Metro games. And the Far West games have 100 times less spectators than Northern. How many more spectators would you expect at a Metro game than at a Far West game?

a Show your working.

b Answer: A Metro game will have _____ times more spectators than a Far West game.

Number Games

GO LARGE

Play in pairs ☺☺. You both need pencil and paper,
plus a 10-sided spinner labelled 0-9 (see page 71).

1 Each draw five boxes to write a 5-digit number in. Hide your numbers from each other.

2 Take turns spinning a digit. In secret, decide which place to put the digit in and write it in one of your boxes. Once written, you can't change it.

3 After five spins, both reveal your 5-digit numbers. The winner is the player with the larger number.

Variation: Aim to make the smallest 5-digit number.

SPIN AND SCORE

Play in pairs ☺☺ or trios ☺☺☺.
You each need a pencil and a score sheet (see next page).
You also need 5 10-sided spinners labelled 0-9 (see page 71).

1 Mark a spinner for each place: 1s, 10s, 100s, 1000s, 10 000s.

2 **Player A:** Spin the spinners and write the 5-digit number in a matching category on the score sheet. Calculate your score.

3 **Player B:** Spin. Write the number in a category. Score it.

4 Continue to take turns spinning and matching numbers to categories to earn points until all the lines are full.

5 If you cannot match your number to a category, place an X in an empty category. You get no points for that turn.

6 When all the categories are full add up the total scores and the person with the most points is the winner.

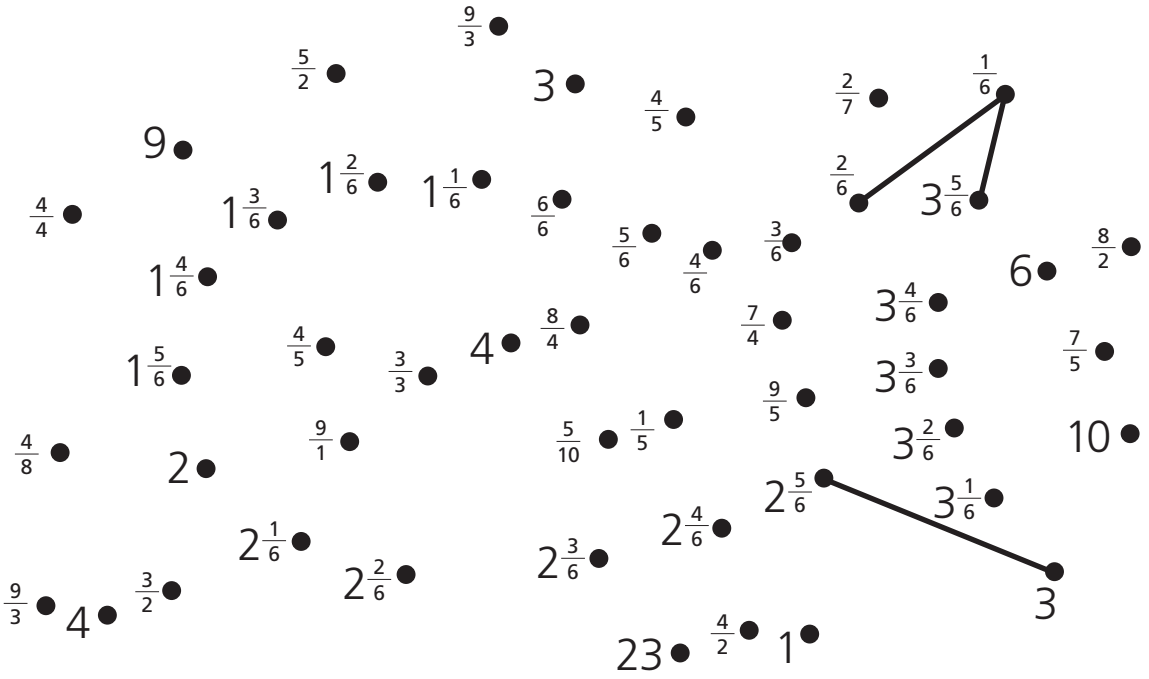
Spin and Score Sheet

Categories	5-digit number	How to score	Score
Even number		Ones digit × 2	
Odd digit in the tens place		Tens digit × 3	
Hundreds digit < 5 (0, 1, 2, 3, 4)		Hundreds digit × 4	
Thousands digit > 5 (6, 7, 8, 9)		Thousands digit × 5	
Ten thousands digit = 5		50 points	
Number with 2 digits the same		Multiply those 2 digits	
Number with 3 digits the same		Multiply those 3 digits	
Number with digit sum < 25		25 points	
Number with digit sum > 25		50 points	
Number with digit sum = 25		100 points	
		Total score	

Mixed Numbers

Activity 1

Join the sixths from smallest to largest. What shape have you drawn? _____



Activity 2

What mixed number is shaded?

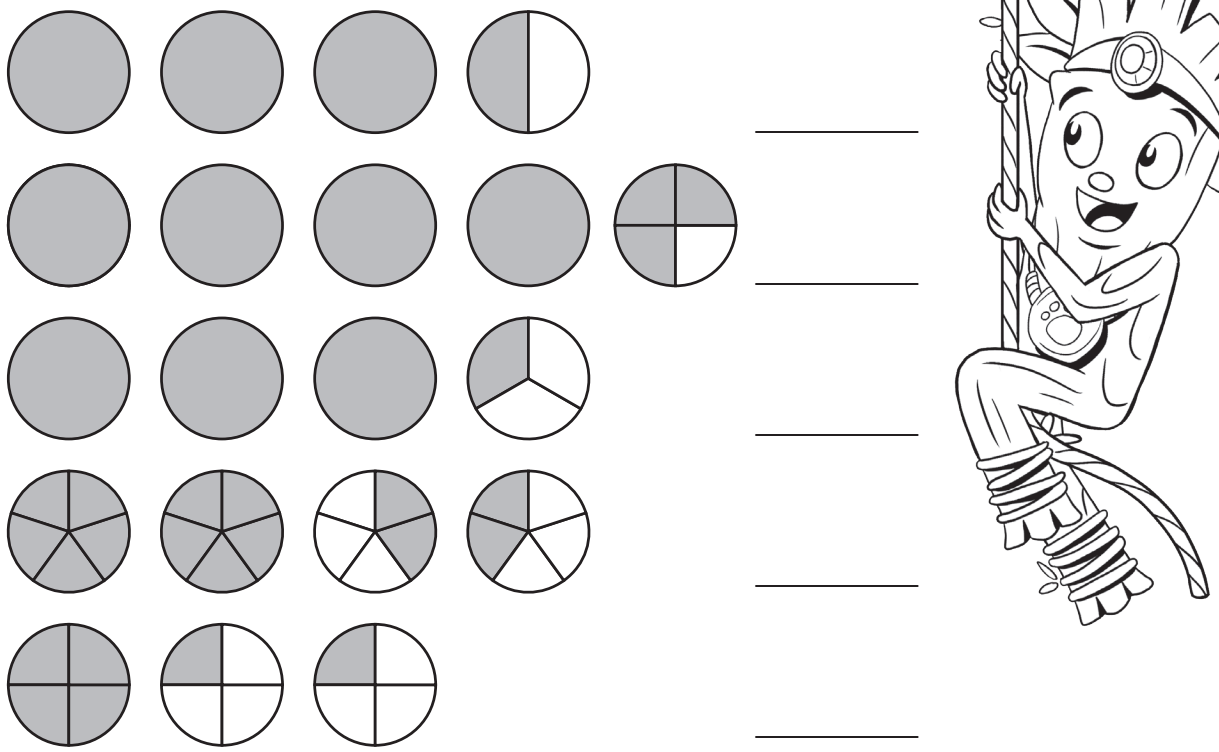
a

b

c

d

e

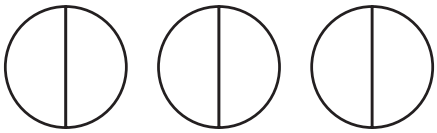


Mixed Numbers

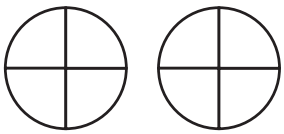
Activity 3

Shade the mixed numbers.

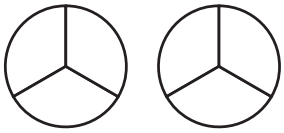
a $2\frac{1}{2}$



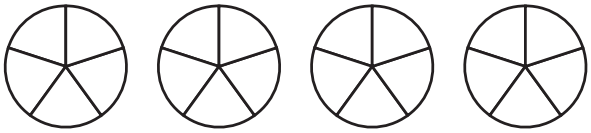
b $1\frac{3}{4}$



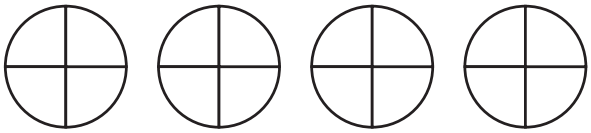
c $1\frac{1}{3}$



d $3\frac{3}{5}$



e $3\frac{1}{2}$



Activity 4

$\frac{x}{c}$, $\frac{2}{c}$, $\frac{f}{c}$ and $\frac{7}{c}$ How do we know these fractions aren't found in our country?

R: $1 + 1 + 1 + \frac{1}{3}$

E: $2 + 1 + \frac{2}{3}$

P: $1 + \frac{1}{3} + \frac{1}{3}$

Y: $1 + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$

L: $2 + 2 + \frac{1}{2}$

I: $2 + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$

F: $2 + 1 + \frac{1}{2}$

G: $1 + 1 + \frac{1}{2}$

U: $1 + 2 + \frac{3}{4}$

B: $1 + 2 + 1 + \frac{1}{3}$

N: $2 + 2 + \frac{1}{3} + \frac{1}{3}$

Find the mixed numbers then decode the puzzle.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**

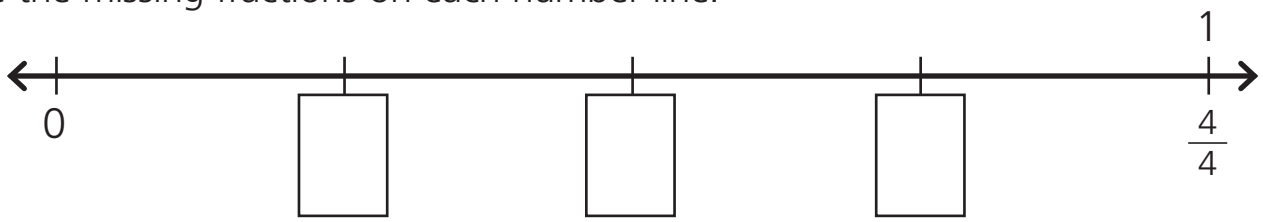
$\overline{2\frac{1}{2}}$ $\overline{3\frac{3}{4}}$ $\overline{3\frac{1}{3}}$ $\overline{4\frac{1}{2}}$ $\overline{4\frac{2}{3}}$ $\overline{3\frac{2}{3}}$ $\overline{3\frac{1}{3}}$ $\overline{4\frac{2}{3}}$ $\overline{1\frac{3}{4}}$ $\overline{1\frac{3}{4}}$ $\overline{4\frac{1}{3}}$ $\overline{2\frac{3}{4}}$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

Fraction Number Lines

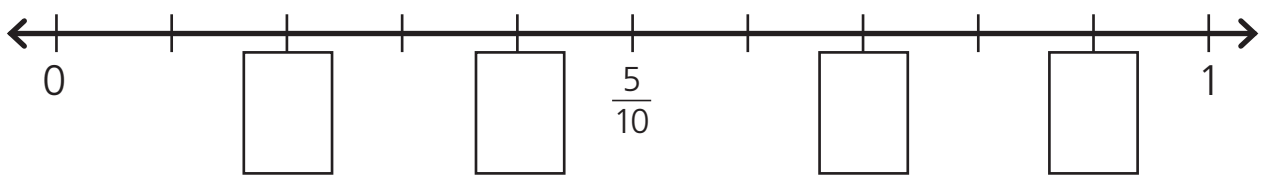
Activity 1

Write the missing fractions on each number line.

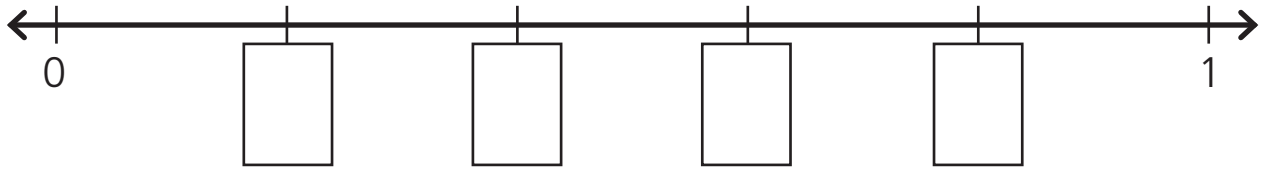
a



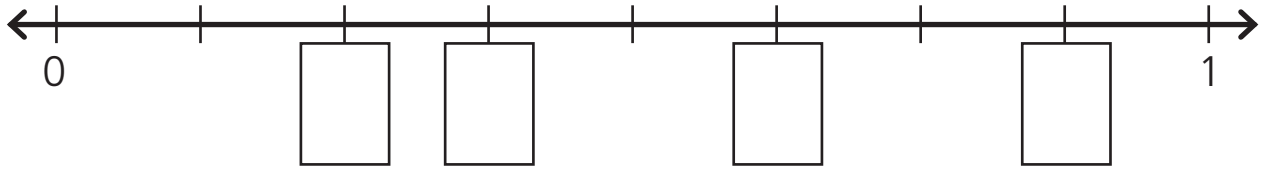
b



c



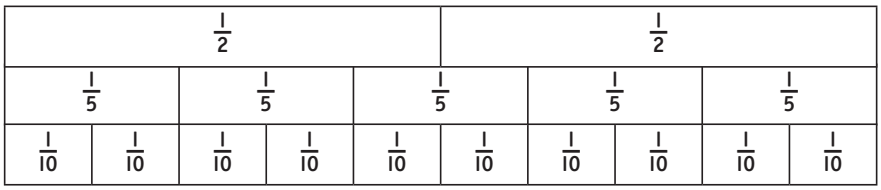
d

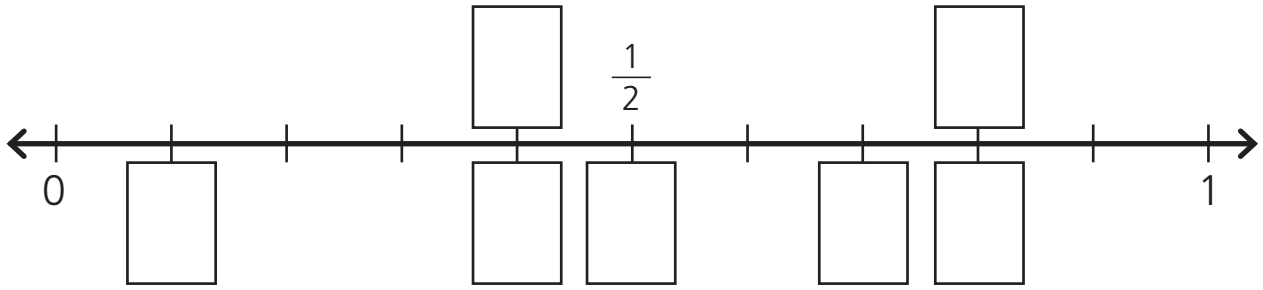


Activity 2

Use the fraction wall to help you to put these fractions on the number line.

$\frac{1}{10}$ $\frac{2}{5}$ $\frac{4}{5}$ $\frac{4}{10}$ $\frac{5}{10}$ $\frac{7}{10}$ $\frac{8}{10}$





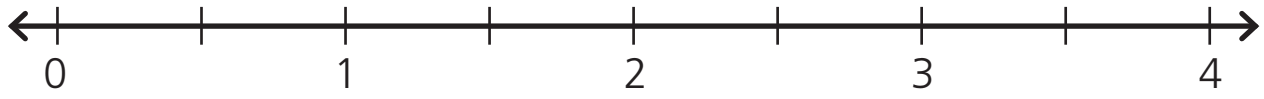
Fraction Number Lines

Activity 3

Write two of these mixed numerals on each number line.

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

a



b

c

Activity 4

Count the jumps on the matching number line above to solve the riddle.

How did the dog cross the river without getting wet?

___	___	___	___	___	___	___	___	___	___	___
9	5	3	4	8	10	11	7	12	2	6

W: Halves in $1\frac{1}{2}$ = 3

S: Thirds in $2\frac{2}{3}$ = _____

O: Quarters in $1\frac{3}{4}$ = _____

N: Halves in 3 = _____

I: Thirds in 3 = _____

R: Quarters in $2\frac{3}{4}$ = _____

A: Halves in 2 = _____

T: Thirds in $1\frac{2}{3}$ = _____

F: Quarters in $2\frac{2}{4}$ = _____

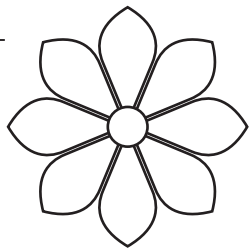
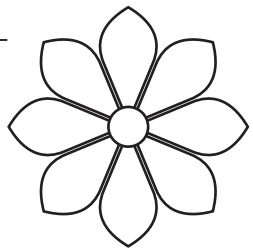
E: Halves in 1 = _____

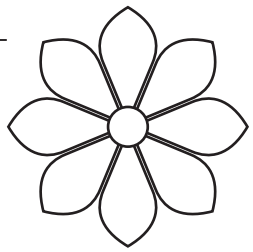
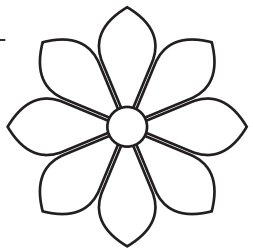
Z: Thirds in 4 = _____

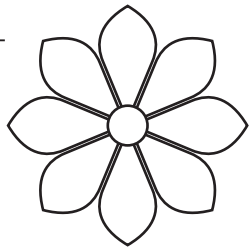
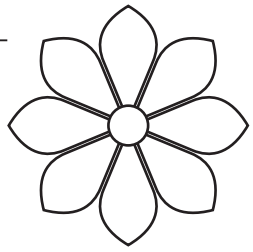
Compare Fractions: Draw a Picture

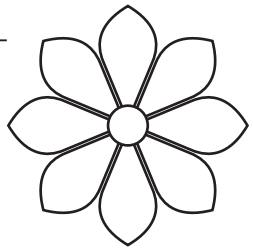
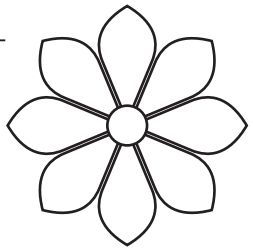
Activity 1

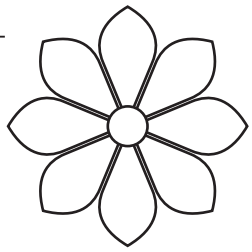
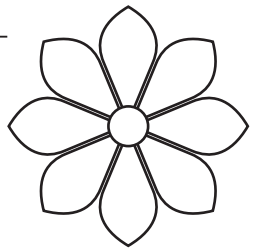
Colour the petals to show each fraction then circle the largest fraction.

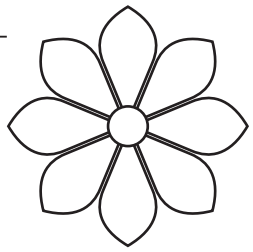
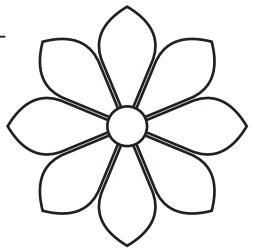
a $\frac{3}{8}$  $\frac{2}{8}$ 

b $\frac{1}{8}$  $\frac{3}{8}$ 

c $\frac{5}{8}$  $\frac{4}{8}$ 

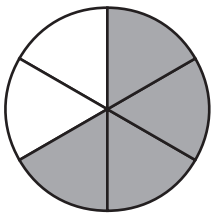
d $\frac{7}{8}$  $\frac{5}{8}$ 

e $\frac{4}{8}$  $\frac{6}{8}$ 

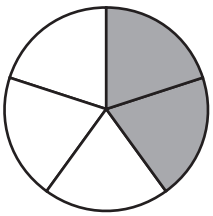
f $\frac{2}{8}$  $\frac{4}{8}$ 

Activity 2

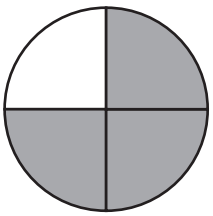
Compare each fraction to $\frac{1}{2}$. In each box write < or >.

a 

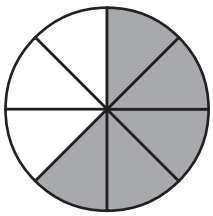
$\frac{4}{6}$ ☐ $\frac{1}{2}$

b 

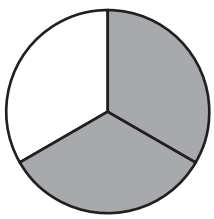
$\frac{2}{5}$ ☐ $\frac{1}{2}$

c 

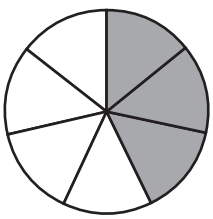
$\frac{3}{4}$ ☐ $\frac{1}{2}$

d 

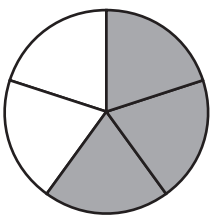
$\frac{5}{8}$ ☐ $\frac{1}{2}$

e 

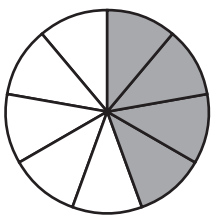
$\frac{2}{3}$ ☐ $\frac{1}{2}$

f 

$\frac{3}{7}$ ☐ $\frac{1}{2}$

g 

$\frac{3}{5}$ ☐ $\frac{1}{2}$

h 

$\frac{4}{9}$ ☐ $\frac{1}{2}$

Compare Fractions: Draw a Picture

Activity 3

Circle the groups. Shade the fraction below. Circle the largest fraction.

a

4 groups of 5

$\frac{3}{4}$

5 groups of 4

$\frac{4}{5}$

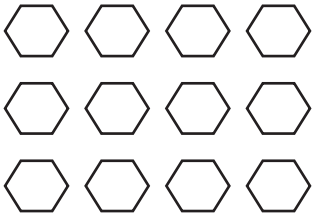
10 groups of 2

$\frac{7}{10}$

---

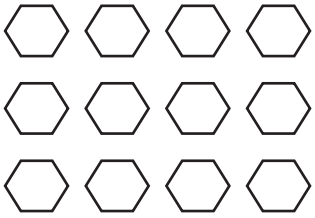
b

3 groups of 4



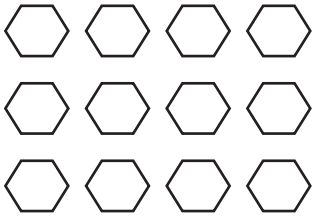
$\frac{2}{3}$

2 groups of 6



$\frac{1}{2}$

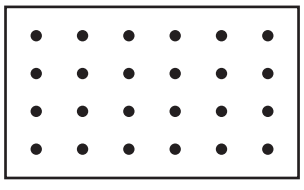
6 groups of 2

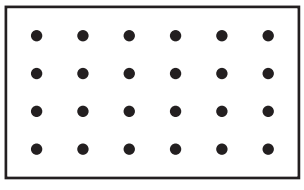


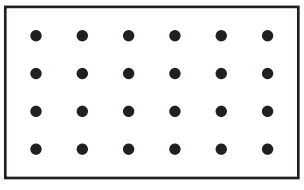
$\frac{5}{6}$

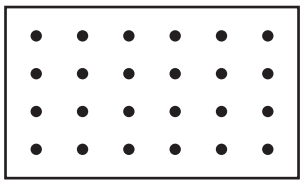
Activity 4

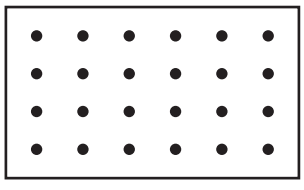
Divide each array to match the denominator. A denominator of 6 = 6 groups. Shade the given fraction. Write the fractions in order from smallest to largest.

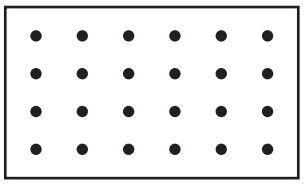
$\frac{5}{6}$ 

$\frac{5}{8}$ 

$\frac{2}{3}$ 

$\frac{3}{4}$ 

$\frac{7}{12}$ 

$\frac{1}{2}$ 

smallest _____ , _____ , _____ , _____ , _____ , _____ largest

Compare Fractions: Draw a diagram

Activity 1

Shade the diagrams. Use < or > to compare the two fractions.

a $\frac{3}{4}$

$\frac{1}{3}$

$\frac{3}{4} \square \frac{1}{3}$

b $\frac{1}{2}$

$\frac{2}{3}$

$\frac{1}{2} \square \frac{2}{3}$

c $\frac{2}{3}$

$\frac{4}{5}$

$\frac{2}{3} \square \frac{4}{5}$

d $\frac{3}{5}$

$\frac{3}{4}$

$\frac{3}{5} \square \frac{3}{4}$

Activity 2

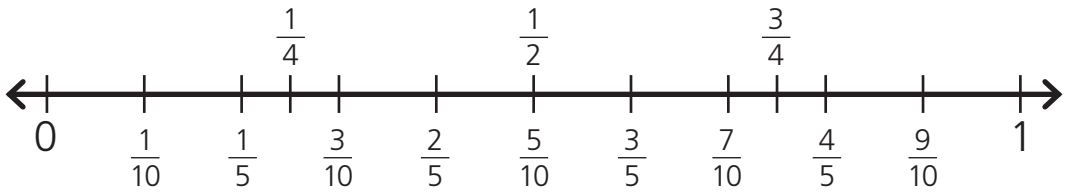
Shade $\frac{1}{2}$, $\frac{3}{4}$, $\frac{2}{5}$ and $\frac{3}{10}$ then complete the comparisons.

One whole									
$\frac{1}{2}$					$\frac{1}{2}$				
$\frac{1}{4}$			$\frac{1}{4}$			$\frac{1}{4}$			$\frac{1}{4}$
$\frac{1}{5}$			$\frac{1}{5}$			$\frac{1}{5}$		$\frac{1}{5}$	$\frac{1}{5}$
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

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

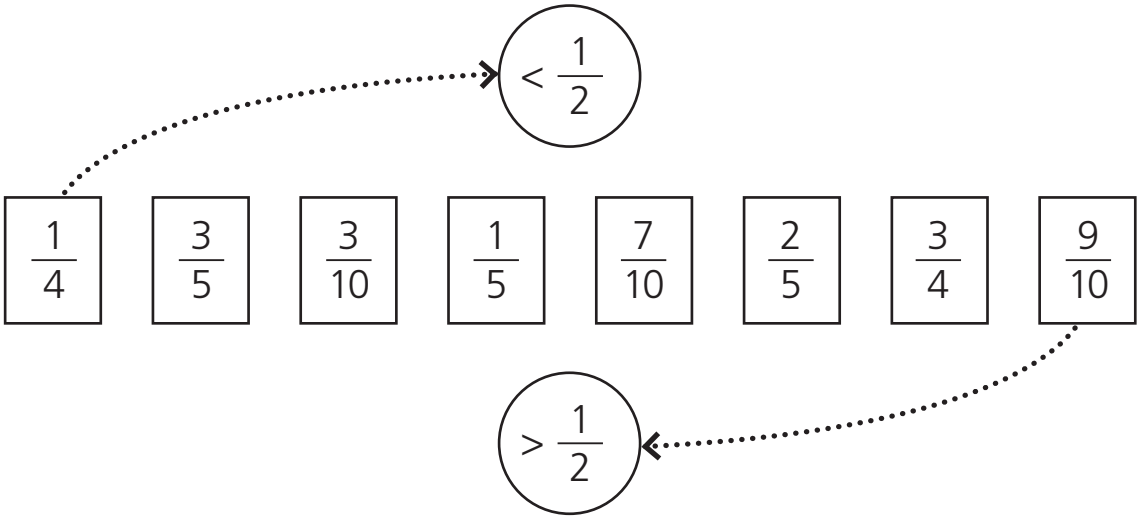
$\frac{3}{4} \square \frac{3}{10}$ $\quad \frac{1}{2} \square \frac{2}{5}$ $\quad \frac{3}{4} \square \frac{2}{5}$

Compare Fractions: Draw a diagram



Activity 3

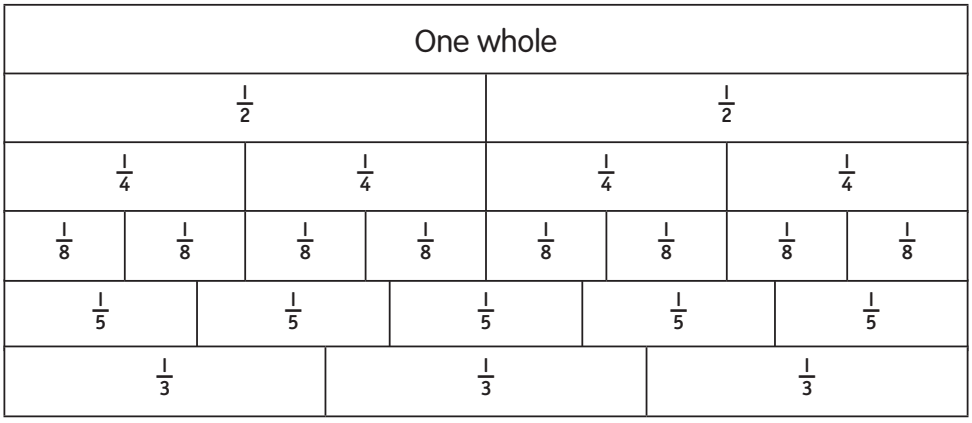
Use the number line to compare each fraction to one half. Draw a line from each fraction to complete the comparison with $\frac{1}{2}$. Two have been done for you.



Activity 4

Shade the fractions, then order them from smallest to largest to solve the riddle:

What am I? I have a mouth and can run but cannot walk or talk.



R = $\frac{7}{8}$ V = $\frac{3}{5}$ E = $\frac{3}{4}$ R = $\frac{2}{5}$ I = $\frac{1}{2}$ A = $\frac{1}{3}$

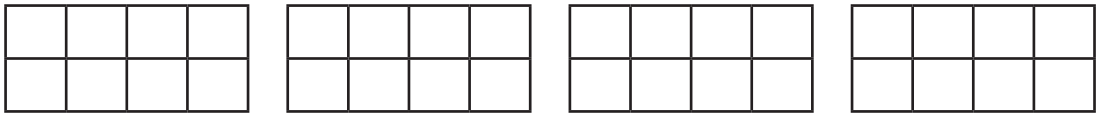
____ ____ ____ ____ ____ ____

Review

1 Shade the mixed number.

a $2\frac{4}{6}$

b $3\frac{7}{8}$

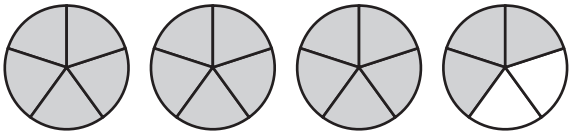


2 What are the mixed numbers?

a

_____

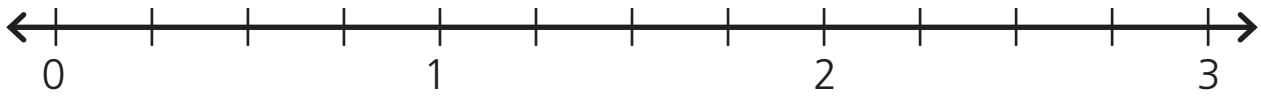
b



_____

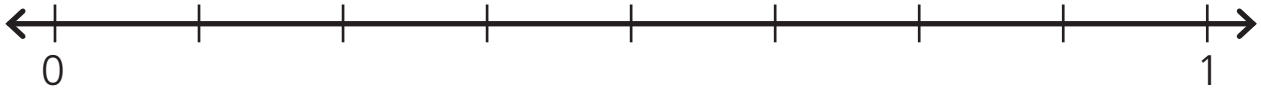
3 Place the mixed numbers on the number line.

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

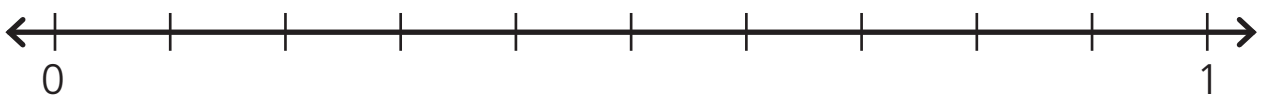


4 Place the fractions on the number line.

a $\frac{1}{2}$ **b** $\frac{3}{8}$ **c** $\frac{1}{4}$ **d** $\frac{3}{4}$ **e** $\frac{7}{8}$



a $\frac{1}{2}$ **b** $\frac{3}{10}$ **c** $\frac{1}{5}$ **d** $\frac{7}{10}$ **e** $\frac{3}{5}$



Review

5 Shade shapes to compare fractions.

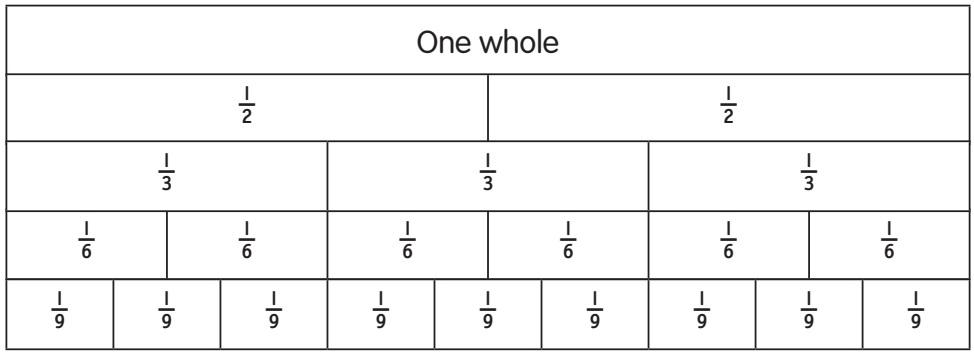
a $\frac{1}{2}$ ☐ $\frac{3}{6}$ **b** $\frac{2}{3}$ ☐ $\frac{5}{6}$ **c** $\frac{3}{4}$ ☐ $\frac{4}{6}$

6 Minh and Juan each have 24 cupcakes. Minh sold $\frac{1}{2}$ of her cupcakes. Juan sold $\frac{5}{6}$ of his. Circle the person who sold the most cupcakes. Shade the picture to prove your answer.

Minh

Juan

7 Shade three fractions larger than $\frac{1}{2}$.



8 Use the fraction wall to compare fractions using **<**, **>** or **=** .

a $\frac{3}{6}$ ☐ $\frac{3}{9}$ **b** $\frac{4}{6}$ ☐ $\frac{2}{3}$ **c** $\frac{1}{3}$ ☐ $\frac{1}{9}$

Comparing Fractions Problems

Mathseeds PRIME

1 Alex completed three quarters of a starry night puzzle and eight tenths of a landscape. Which puzzle is closer to being finished?

a Draw a diagram to show the answer.

b Answer: Which puzzle is closer to being finished? _____

2 Wes ate one and two thirds of a pizza. Mia ate one and six eighths of a pizza. Who ate more?

a Draw a different type of diagram to show the answer.

b Answer: Who ate more? _____

3 Lyn painted two and half metres of the fence. Dan painted two and three fifths. Who painted less?

a Draw a different type of diagram to show the answer.

b Answer: Who painted less? _____

Problem Solving: Testing Time

Mathseeds PRIME

A class is given 30 minutes to do a 36 question test. Ben answers $\frac{3}{4}$ of the questions. Penny gets $\frac{2}{3}$ of the test done and Marie does $\frac{7}{9}$. Lee gets to $\frac{5}{6}$ of the questions. Kwesi answers $\frac{11}{12}$. Who answered the most questions? Who did the least? Put the children in order from most to least questions answered.

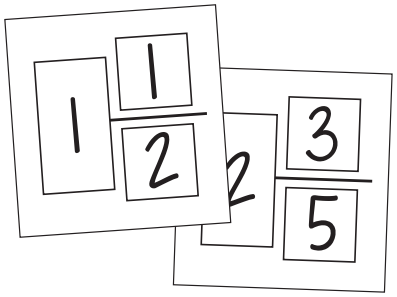
Most _____ _____ _____ _____ _____ Least

Fractions Games

GO LARGE

Play in pairs ☺☺. You each need a pen and a piece of paper. You also need one 8-sided spinner numbered 1, 2, 3, 4, 5, 6, 8, 10 (see page 70).

Aim of the game:
Make the largest mixed number.



1 Each person draws up 3 blank mixed numbers. Hide your sheets from each other.

2 Take turns spinning a digit on the spinner.

3 Everyone decides which box to put the digit in, making it a whole number, a numerator or denominator. Once written it can't be changed.

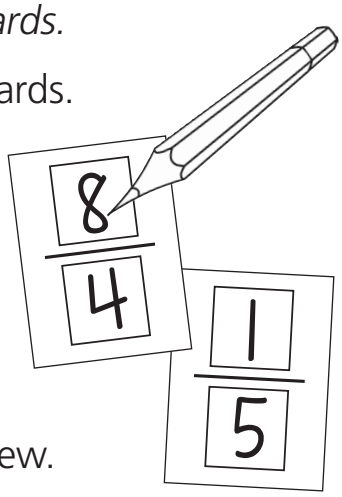
4 After 9 spins you should both have 3 mixed numbers. Compare them. You may want to draw fraction diagrams.

5 The winner has the largest mixed number.

Variation: Aim to make the smallest mixed number.

FRACTION FAMILIES

Play as a class. You need 2 class sets of empty fractions (see next page) cut into separate fraction cards.



1 Make a class set of fraction cards. Give each person 2 cards. They write two fractions using denominators 1-10.

2 Shuffle all the cards and deal 1 card to each person.

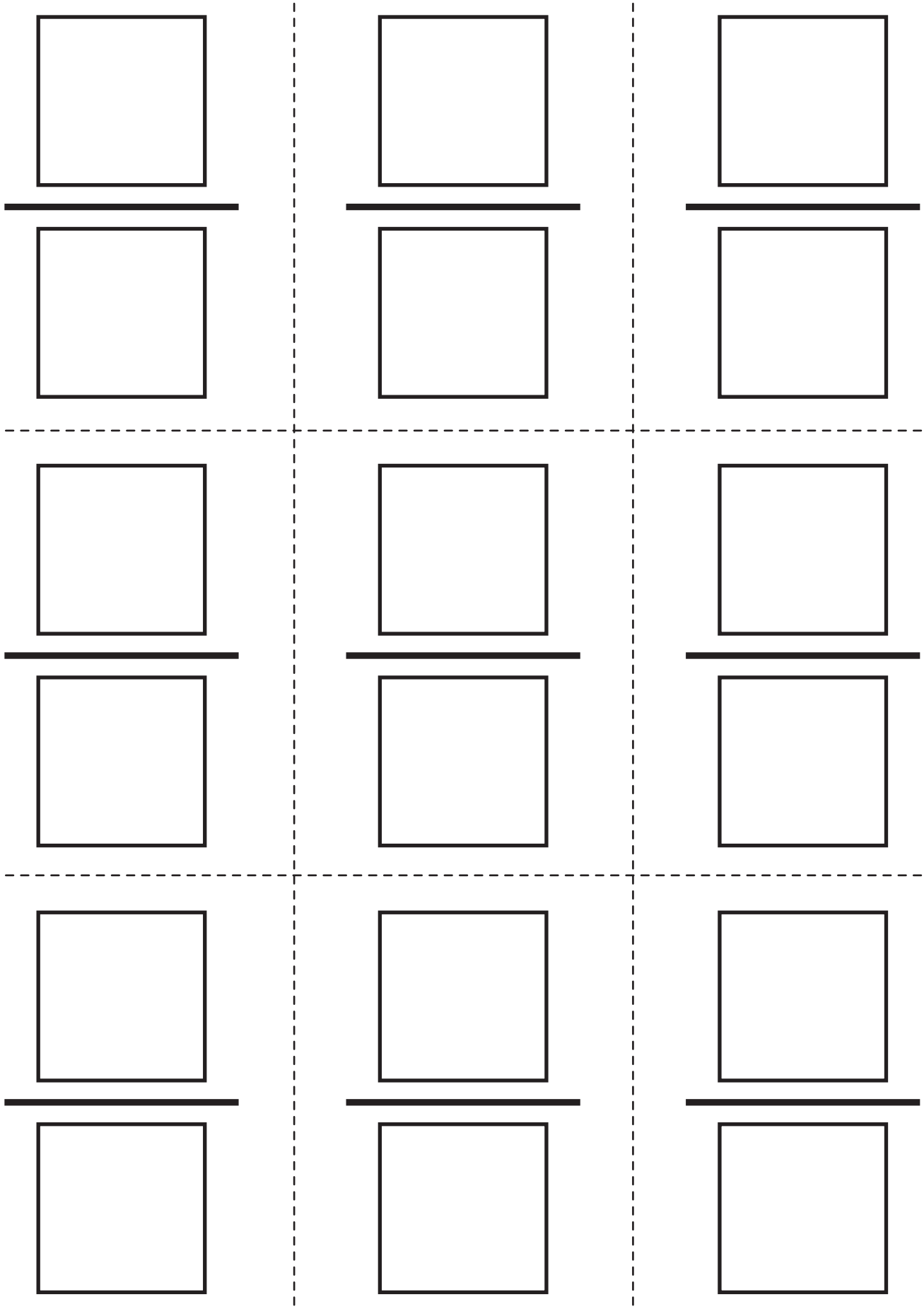
3 Pair up and compare your fractions. Draw pictures or diagrams on the back of the card to help compare.

4 If you have the smaller fraction, sit down.
If you have the bigger fraction, pair up with someone new.

5 Keep pairing up and comparing fractions until one person is left. The winner has the largest fraction.

Variation: The winner has the smallest fraction.

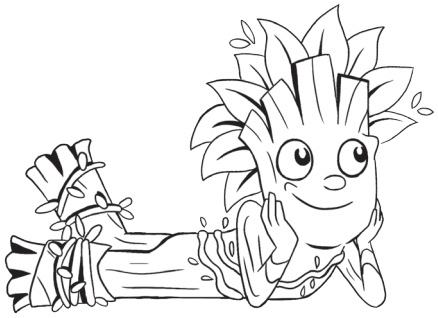
Blank Fractions

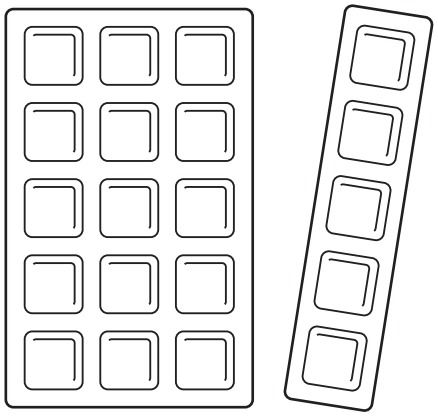


Equivalent Fractions: Draw a Diagram

Activity 1

Jane had a block of chocolate with 20 pieces. She broke off a column and ate it.





What fraction of the whole block of chocolate did Jane eat? $\frac{\square}{4} = \frac{5}{\square}$

Activity 2

Use the fraction wall to find equivalent fractions.

1 whole									
$\frac{1}{2}$				$\frac{1}{2}$					
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$			
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$		
$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$			
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$				
$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	

a $\frac{1}{2} = \frac{\square}{8}$ **b** $\frac{1}{2} = \frac{\square}{6}$ **c** $\frac{6}{9} = \frac{\square}{3}$

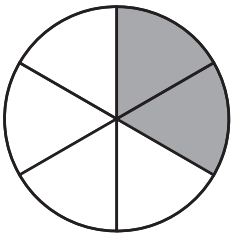
d $\frac{1}{4} = \frac{\square}{8}$ **e** $\frac{1}{3} = \frac{\square}{9}$ **f** $\frac{3}{4} = \frac{\square}{8}$

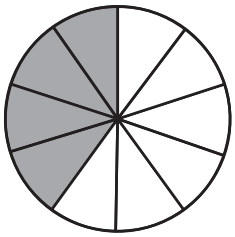
g $\frac{1}{3} = \frac{\square}{6}$ **h** $\frac{2}{8} = \frac{\square}{4}$ **i** $\frac{4}{6} = \frac{\square}{3}$

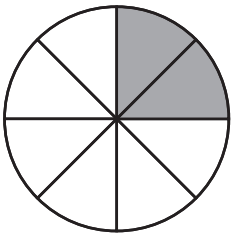
Equivalent Fractions: Draw a Diagram

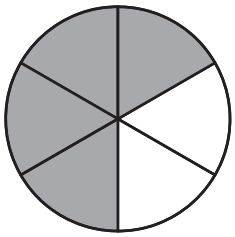
Activity 3

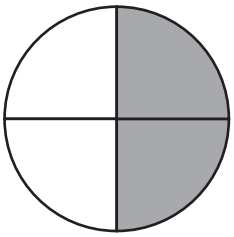
Write two equivalent fractions for each diagram.

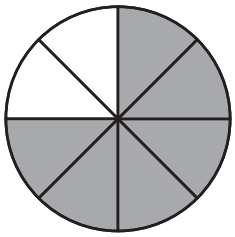
a  $\square = \square$

b  $\square = \square$

c  $\square = \square$

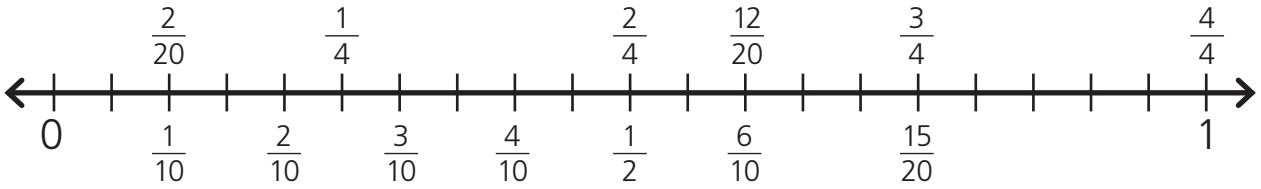
d  $\square = \square$

e  $\square = \square$

f  $\square = \square$

Activity 4

Use the number line to solve the riddle.



What can only be used if it is broken?

a $\frac{2}{4} = \_\_\_\_\_$ **b** $\frac{1}{10} = \_\_\_\_\_$

c $\frac{12}{20} = \_\_\_\_\_$ **d** $\frac{15}{20} = \_\_\_\_\_$

$\frac{6}{10}$ N	$\frac{3}{4}$ G
$\frac{1}{2}$ A	$\frac{2}{20}$ E

____ ____ ____ ____ ____

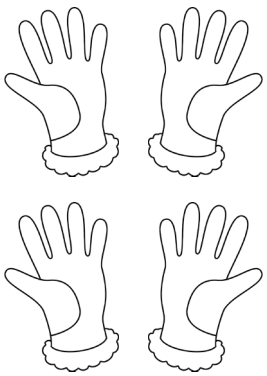
a **b** **c** **d** **d**

Fraction Families

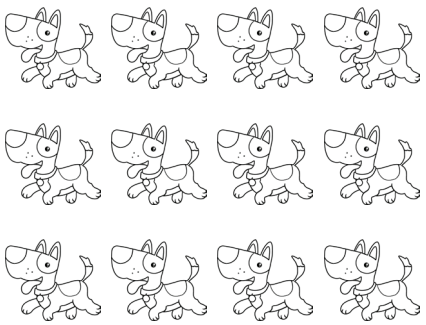
Activity 1

Circle <u>half</u> of each collection. Count the number in the circle and the total number and write this as an equivalent fraction.

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



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



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

Activity 2

Use the fraction wall to find families of fractions.

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

$\frac{1}{2} = \frac{\square}{4} = \frac{\square}{8}$

$\frac{3}{4} = \frac{\square}{8}$

$\frac{2}{2} = \frac{\square}{4} = \frac{\square}{8}$

$\frac{1}{3}$		$\frac{1}{3}$		$\frac{1}{3}$	
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$
$\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$		$\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$		$\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$	

$\frac{1}{3} = \frac{\square}{6} = \frac{\square}{9}$

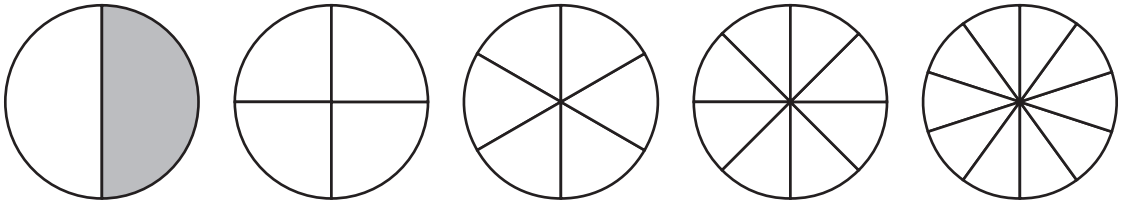
$\frac{2}{3} = \frac{\square}{6} = \frac{\square}{9}$

$\frac{3}{3} = \frac{\square}{6} = \frac{\square}{9}$

Fraction Families

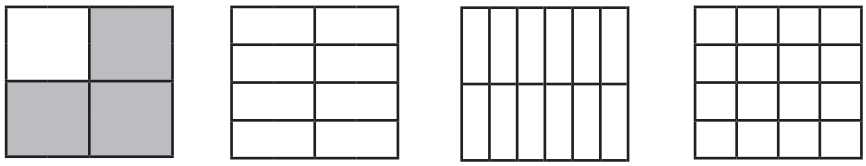
Activity 3

a Shade half of each shape and write a family of equivalent fractions.



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

b Shade $\frac{3}{4}$ of each shape and write a family of equivalent fractions.

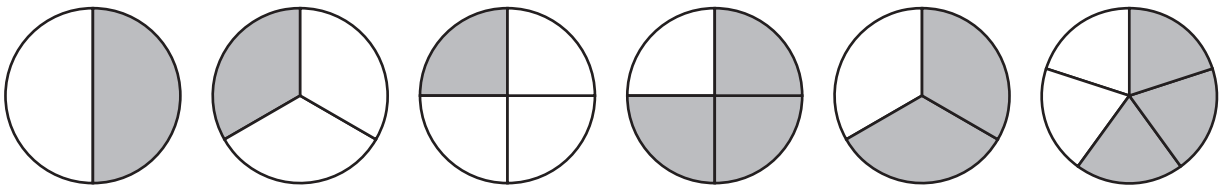


$\frac{3}{4} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

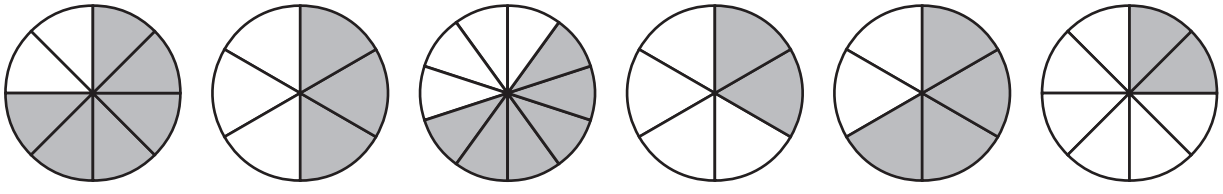
Activity 4

Match the equivalent fractions to solve the riddle.

What has teeth but cannot bite?



1 2 3 4 5 6



P A R Z E I

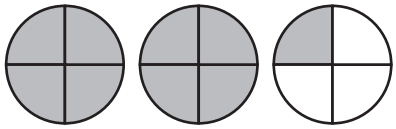
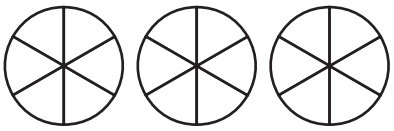
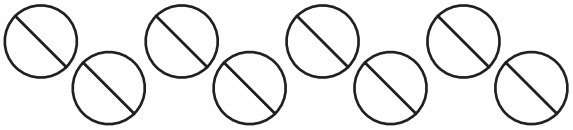
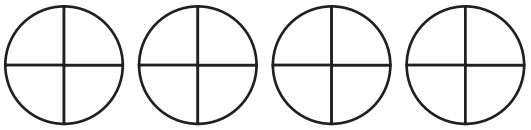
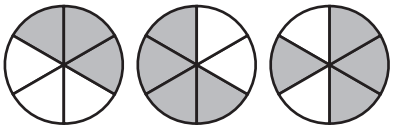
___ ___ ___ ___ ___ ___ ___

1 2 3 4 4 5 6

Convert Fractions: Count the Parts

Activity 1

Complete the missing two parts of each question.

	Picture	Mixed numeral	Fraction over 1
a		$2\frac{\square}{4}$	$\frac{\square}{4}$
b			$\frac{16}{6}$
c		$7\frac{1}{2}$	
d			$\frac{13}{4}$
e		$\frac{6}{6} + \frac{\square}{6} = \square$	$\frac{\square}{6}$

Activity 2

Count the jumps to find the fraction over one or the mixed numeral.

a

$\frac{8}{3} = \square$ $2\frac{1}{3} = \square$ $\frac{5}{3} = \square$ $3 = \frac{\square}{3}$

b

$\frac{9}{4} = \square$ $2\frac{3}{4} = \square$ $\frac{7}{4} = \square$ $3 = \frac{\square}{4}$

c

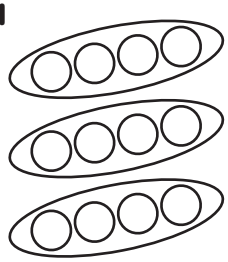
$\frac{8}{5} = \square$ $2\frac{3}{5} = \square$ $\frac{14}{5} = \square$ $2 = \frac{\square}{5}$

Convert Fractions: Count the Parts

Activity 3

Shade the mixed numeral then complete each equation.

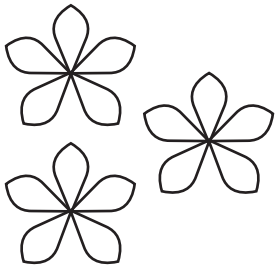
a



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

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

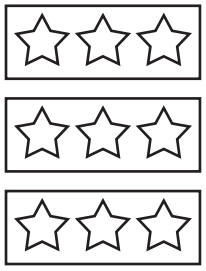
b



$1 + 1 + \frac{2}{5} = \square\frac{\square}{\square}$

$\frac{5}{5} + \frac{5}{5} + \frac{2}{5} = \frac{\square}{\square}$

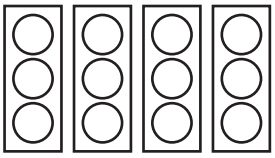
c



$1 + 1 + \frac{2}{3} = \square\frac{\square}{\square}$

$\frac{3}{3} + \frac{3}{3} + \frac{2}{3} = \frac{\square}{\square}$

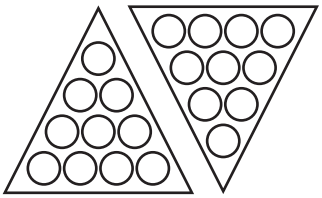
d



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

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

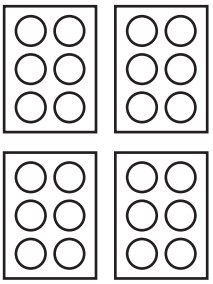
e



$1 + \frac{3}{10} = \square\frac{\square}{\square}$

$\frac{10}{10} + \frac{3}{10} = \frac{\square}{\square}$

f



$1 + 1 + 1 + \frac{2}{6} = \square\frac{\square}{\square}$

$\frac{6}{6} + \frac{6}{6} + \frac{6}{6} + \frac{2}{6} = \frac{\square}{\square}$

Activity 4

Colour the pathway through the maze.

START

$\frac{4}{4} + \frac{4}{4} + \frac{3}{4}$	$5\frac{3}{5}$	$\frac{5}{5} + \frac{5}{5} + \frac{3}{5}$	$1\frac{5}{6}$	$\frac{6}{6} + \frac{5}{6}$	$\frac{13}{6}$	$1 + 1 + \frac{1}{6}$
$\frac{11}{4}$		$2\frac{3}{5}$		$\frac{6}{11}$		$2\frac{3}{6}$
$1 + 1 + 1 + \frac{1}{2}$	$\frac{7}{2}$	$\frac{3}{3} + \frac{3}{3} + \frac{2}{3}$	$\frac{8}{3}$	$\frac{4}{4} + \frac{4}{4} + \frac{2}{4}$	$\frac{12}{4}$	$\frac{5}{5} + \frac{5}{5} + \frac{3}{5}$
$2\frac{1}{3}$		$3\frac{2}{3}$		$2\frac{2}{4}$		$\frac{13}{5}$

Review

1 Draw and shade fraction shapes to complete the equations.

a $\frac{1}{3} = \frac{\square}{6}$ **b** $\frac{1}{5} = \frac{\square}{10}$

2 Draw fraction shapes and count the parts to write mixed numbers as fractions greater than 1.

a $3\frac{1}{2} = \frac{\square}{2}$ **b** $2\frac{1}{4} = \frac{\square}{4}$ **c** $1\frac{3}{5} = \frac{\square}{5}$

3 Shade these fractions on the fraction wall and write a fraction equal to each one.

a $\frac{1}{2} = \frac{\square}{\square}$ **b** $\frac{8}{10} = \frac{\square}{\square}$ **c** $\frac{2}{5} = \frac{\square}{\square}$

<table>
<tr><td colspan="10">One whole</td></tr>
<tr><td colspan="5">$\frac{1}{2}$</td><td colspan="5">$\frac{1}{2}$</td></tr>
<tr><td colspan="2">$\frac{1}{5}$</td><td colspan="2">$\frac{1}{5}$</td><td colspan="2">$\frac{1}{5}$</td><td colspan="2">$\frac{1}{5}$</td><td colspan="2">$\frac{1}{5}$</td></tr>
<tr><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td><td>$\frac{1}{10}$</td></tr>
</table>

Review

4 Complete the fraction wall to show the fraction family for 2, 4, 8, 12.

One whole	
$\frac{1}{2}$	$\frac{1}{2}$

5 Use the fraction wall above to write 2 equivalent fractions for:

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

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

6 Use the number line to show a fraction equivalent to $\frac{2}{3}$.

7 Use the number line to count the parts and write $\frac{8}{5}$ as a mixed number.

8 Decompose the wholes to convert a mixed number into a fraction greater than one.

a $3\frac{5}{6} = \frac{\_\_\_\_\_}{\_\_\_\_\_} = \frac{\square}{\square}$

b $2\frac{4}{9} = \frac{\_\_\_\_\_}{\_\_\_\_\_} = \frac{\square}{\square}$

Fraction Sharing Problems

1 Ping has a packet of 24 sour worms. He wants to share it with his 3 siblings.

a There are 4 children altogether, what fraction $\frac{1}{\square}$ of the packet will they each get?

b How many worms does each child get? Draw a picture or diagram to help you work it out.

□ worms each

c Complete: $\frac{1}{\square} = \frac{\square}{24}$

2 Two of Ping's friends show up and now there are 6 children to share the sour worms.

a How many worms does each child get now?

□ worms each

b Complete: $\frac{1}{\square} = \frac{\square}{24}$

Problem Solving: Working Backwards

Mathseeds PRIME

1 Year 4 is going to the beach for surf school. Two thirds of the grade fit onto three full size buses. The other one third is split between three minibuses. A minibus carries 10 students. How many students are in Year 4?

a Work out how many students are in one third. Show your working.

Answer: One third of the grade is _____ students.

b Calculate how many students are in three thirds (one whole). Show your working.

Answer: There are _____ students in Year 4.

2 One teacher is on each minibus. That's a quarter of the total number of teachers going. How many people are going on this trip altogether?

a Work out how many teachers are going to the beach altogether. Show your working.

Answer: The number of teachers is _____ .

b Calculate how many students and teachers in total. Show your working.

Answer: There are _____ people going on this trip.

Fraction Family Games

FRACTION FAMILY FEUD

Play in groups or as a class. You need 2 class sets of empty fractions (see page 31) cut into separate fraction cards.

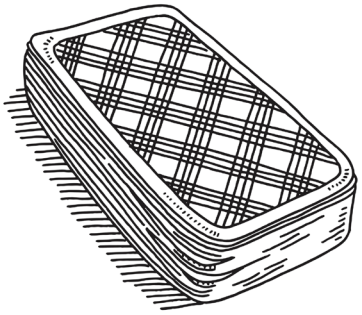
1 Make a class set of fraction cards. Give each person 2 cards. They write a pair of equivalent fractions.

2 Shuffle all the cards and deal 1 card to each person.

3 Find someone with an equivalent fraction to yours. Draw a diagram on the back of the card if necessary.

4 Can you find any other equivalent fractions?

5 The biggest fraction family wins.



FRACTION WALL BINGO

Play in groups or as a class. You need an 8-sided spinner and a 10-sided spinner (see pages 70 and 71). Each person needs a fraction wall (see next page), a coloured pencil and a marker.

1 Number the 10-sided spinner 1-10 for numerators. Write 2, 3, 4, 5, 6, 8, 9, 10 on the 8-sided spinner for denominators.

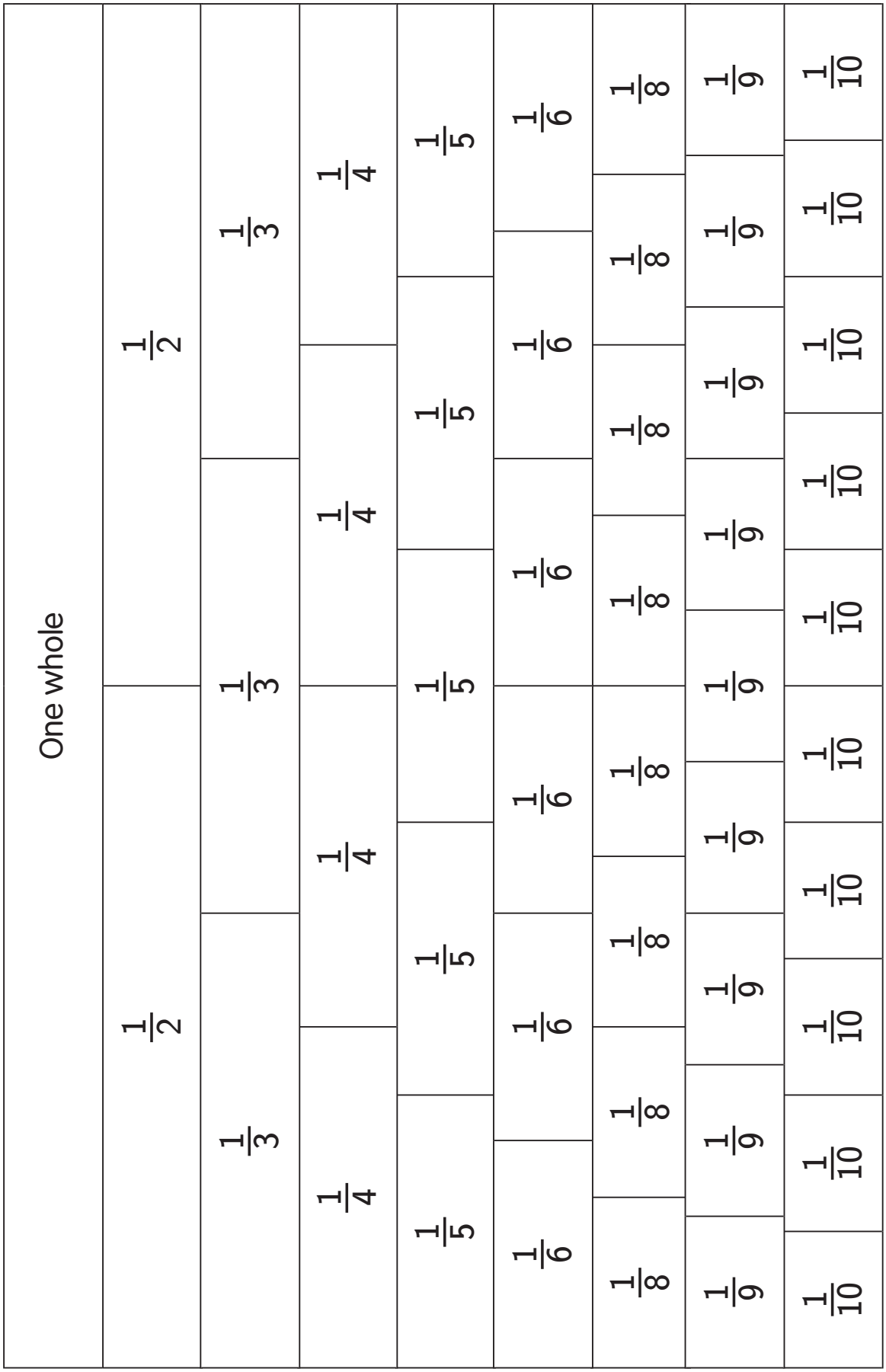
2 Each person colours in a fraction on each row. Choose $\frac{1}{2}$ or $\frac{2}{2}$ in the first row. Colour $\frac{1}{3}$, or $\frac{2}{3}$ or $\frac{3}{3}$ in the second row. And so on for every row.

3 Spin both spinners to make a fraction. If you get a fraction over 1, swap the numbers, eg $\frac{5}{2}$ ➔ $\frac{2}{5}$.

4 If a player has the fraction on their sheet, they cross it out. If they have an equivalent fraction, they can also cross it out.

5 The winner is the first person to cross out all their fractions and call out 'Bingo!'

Fraction Wall

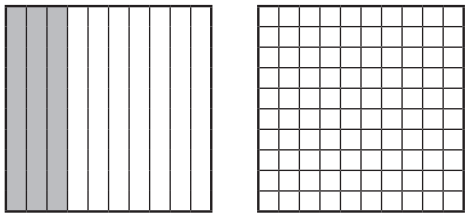


Tenths and Hundredths

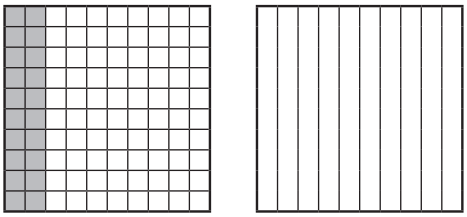
Activity 1

Shade the same area to find the equivalent fraction.

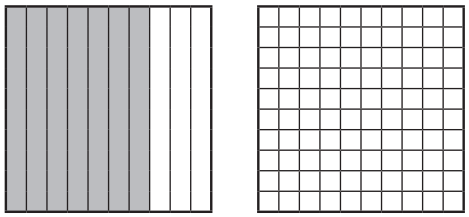
a $\frac{3}{10} = \frac{\square}{100}$



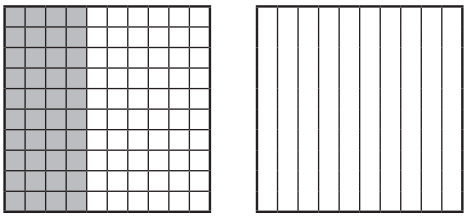
b $\frac{20}{100} = \frac{\square}{10}$

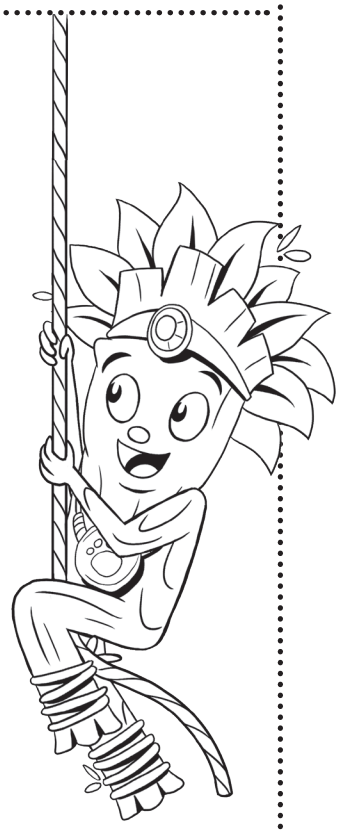


c $\frac{7}{10} = \frac{\square}{100}$



d $\frac{40}{100} = \frac{\square}{10}$





Activity 2

a $\frac{\square}{\square}$ comes before $\frac{3}{10}$

b $\frac{\square}{\square}$ comes before $\frac{76}{100}$

c $\frac{\square}{\square}$ comes after $\frac{5}{10}$

d $\frac{\square}{\square}$ comes after $\frac{84}{100}$

e $\frac{\square}{\square}$ comes before $\frac{8}{10}$

f $\frac{\square}{\square}$ comes before $\frac{60}{100}$

g $\frac{\square}{\square}$ comes after $\frac{1}{10}$

h $\frac{\square}{\square}$ comes after $\frac{79}{100}$

i $\frac{\square}{\square}$ comes before $\frac{9}{10}$

j $\frac{\square}{\square}$ comes before $\frac{18}{100}$

Tenths and Hundredths

Activity 3

Write the working, $\boxed{\begin{matrix}\times\ 10\\ \times\ 10\end{matrix}}$ or $\boxed{\begin{matrix}\div\ 10\\ \div\ 10\end{matrix}}$, to find an equivalent fraction.

a $\frac{40}{100} \square = \frac{4}{10}$

b $\frac{3}{10} \square = \frac{\square}{\square}$

c $\frac{8}{10} \square = \frac{80}{100}$

d $\frac{50}{100} \square = \frac{\square}{\square}$

e $\frac{2}{10} \square = \frac{20}{100}$

f $\frac{90}{100} \square = \frac{\square}{\square}$

g $\frac{70}{100} \square = \frac{7}{10}$

h $\frac{1}{10} \square = \frac{\square}{\square}$

i $\frac{6}{10} \square = \frac{60}{100}$

j $\frac{80}{100} \square = \frac{\square}{\square}$

Activity 4

Circle the fractions that can be changed to tenths.

$\frac{23}{100}$ $\frac{80}{100}$ $\frac{35}{100}$ $\frac{70}{100}$ $\frac{30}{100}$ $\frac{52}{100}$ $\frac{81}{100}$ $\frac{20}{100}$

Activity 5

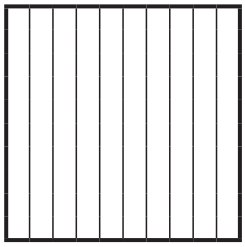
Count by hundredths. Write in the missing fractions.

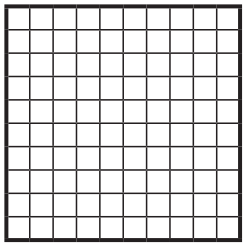
$\frac{1}{100}$	___	___	$\frac{4}{100}$	___	$\frac{6}{100}$	___	___	___	$\frac{1}{10}$
___	$\frac{12}{100}$	___	___	$\frac{15}{100}$	___	$\frac{17}{100}$	___	___	$\frac{2}{10}$
___	___	___	___	___	$\frac{26}{100}$	___	___	___	___
___	___	$\frac{33}{100}$	___	___	___	___	___	___	___
___	$\frac{42}{100}$	___	___	___	___	$\frac{47}{100}$	___	___	$\frac{5}{10}$

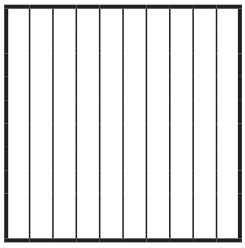
Converting Fractions and Decimals

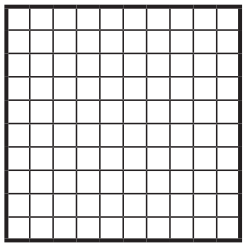
Activity 1

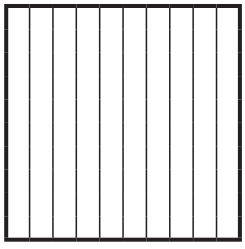
Shade the decimal and write the fraction out of 10 or 100.

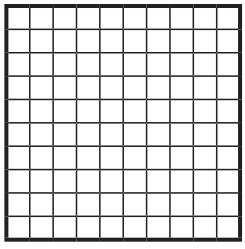
a 0·4 =  = $\frac{\square}{\square}$

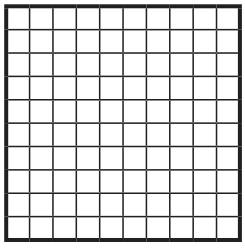
b 0·05 =  = $\frac{\square}{\square}$

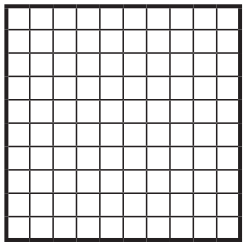
c 0·8 =  = $\frac{\square}{\square}$

d 0·35 =  = $\frac{\square}{\square}$

e 0·5 =  = $\frac{\square}{\square}$

f 0·72 =  = $\frac{\square}{\square}$

g 0·07 =  = $\frac{\square}{\square}$

h 0·58 =  = $\frac{\square}{\square}$

Activity 2

Write each decimal as the sum of tenths and hundredths.

a 0·35 = $\frac{\square}{\square} + \frac{\square}{\square}$ **b** 0·84 = $\frac{\square}{\square} + \frac{\square}{\square}$ **c** 0·25 = $\frac{\square}{\square} + \frac{\square}{\square}$

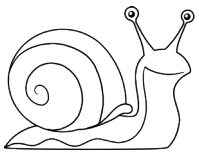
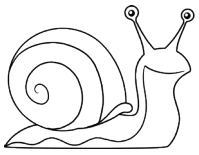
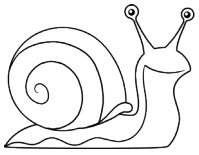
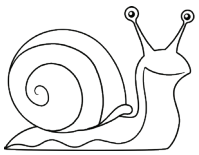
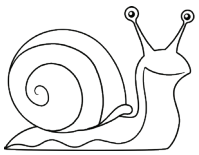
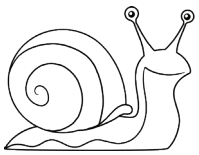
d 0·72 = $\frac{\square}{\square} + \frac{\square}{\square}$ **e** 0·91 = $\frac{\square}{\square} + \frac{\square}{\square}$ **f** 0·63 = $\frac{\square}{\square} + \frac{\square}{\square}$

g 0·58 = $\frac{\square}{\square} + \frac{\square}{\square}$ **h** 0·46 = $\frac{\square}{\square} + \frac{\square}{\square}$ **i** 0·17 = $\frac{\square}{\square} + \frac{\square}{\square}$

Converting Fractions and Decimals

Activity 3

Post each letter by SNAIL MAIL and follow the snail to the answer.

0·68	= $\frac{\square}{10}$ + $\frac{\square}{100}$		= $\frac{\square}{100}$ + $\frac{\square}{100}$	= $\frac{\square}{\square}$
0·83	= $\frac{\square}{10}$ + $\frac{\square}{100}$		= $\frac{\square}{100}$ + $\frac{\square}{100}$	= $\frac{\square}{\square}$
0·29	= $\frac{\square}{10}$ + $\frac{\square}{100}$		= $\frac{\square}{100}$ + $\frac{\square}{100}$	= $\frac{\square}{\square}$
$\frac{32}{100}$	= $\frac{\square}{100}$ + $\frac{\square}{100}$		= $\frac{\square}{10}$ + $\frac{\square}{100}$	= 0·_____
$\frac{53}{100}$	= $\frac{\square}{100}$ + $\frac{\square}{100}$		= $\frac{\square}{10}$ + $\frac{\square}{100}$	= 0·_____
$\frac{86}{100}$	= $\frac{\square}{100}$ + $\frac{\square}{100}$		= $\frac{\square}{10}$ + $\frac{\square}{100}$	= 0·_____

Activity 4

What goes up but never goes down?

_____	_____	_____	_____		_____	_____	_____
0·2	0·08	0·82	0·02		0·8	0·28	0·42

Y: $\frac{2}{10}$ A: $\frac{8}{10}$ R: $\frac{2}{100}$ O: $\frac{8}{100}$ E: $\frac{42}{100}$ U: $\frac{82}{100}$ G: $\frac{28}{100}$

Decimal Number Lines

Activity 1

Write the 9 decimals between each pair of outer numbers.

a 0 ____ ____ ____ ____ 0·5 ____ ____ ____ ____ 1

b 0·1 ____ ____ ____ ____ 0·15 ____ ____ ____ ____ 0·2

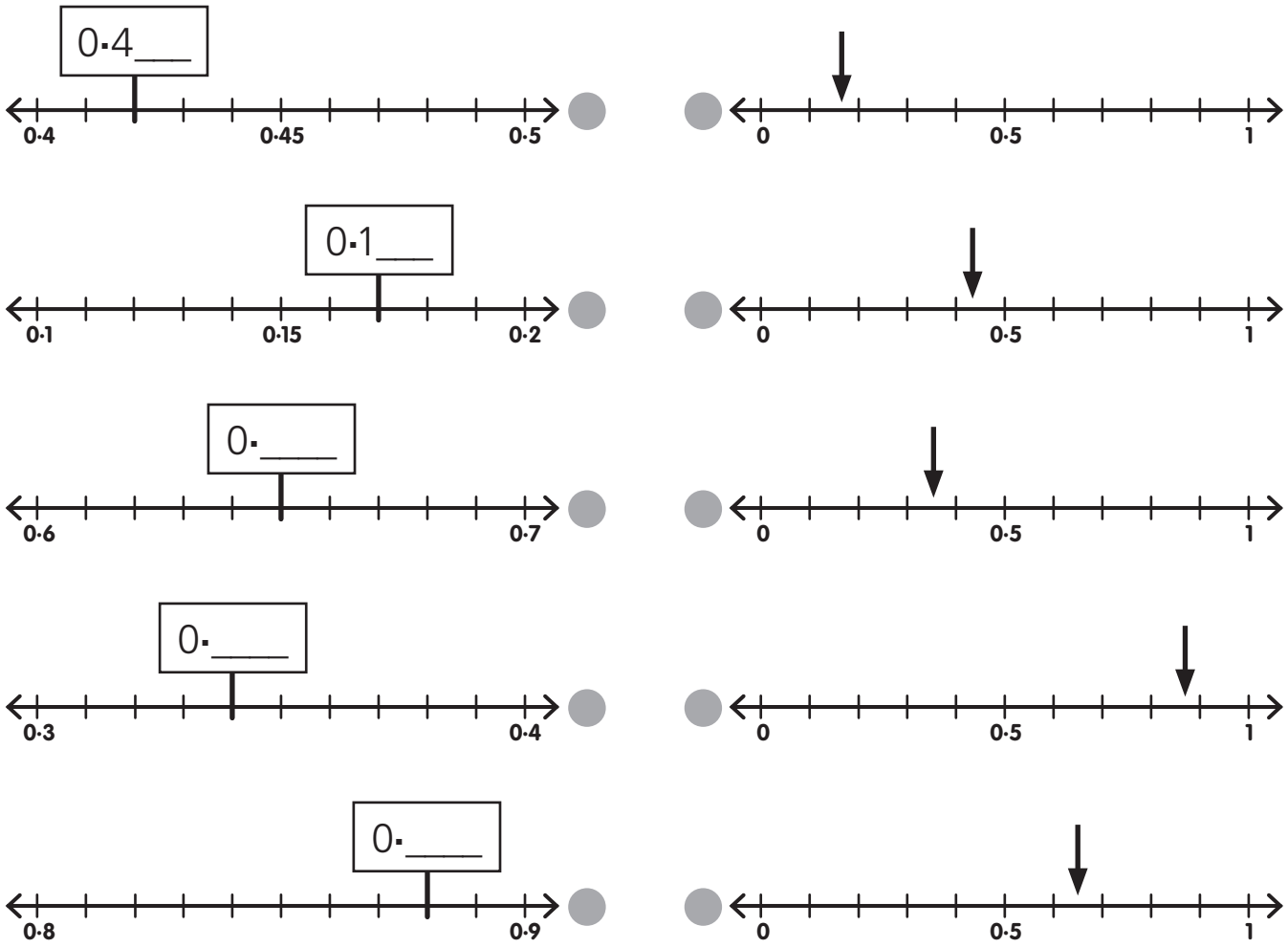
c 0·3 ____ ____ ____ ____ ____ ____ ____ ____ ____ 0·4

d 0·8 ____ ____ ____ ____ ____ ____ ____ ____ ____ 0·9

e 0·6 ____ ____ ____ ____ ____ ____ ____ ____ ____ 0·7

Activity 2

Write the decimal in the box then join the grey dots to match the decimals on the number lines.

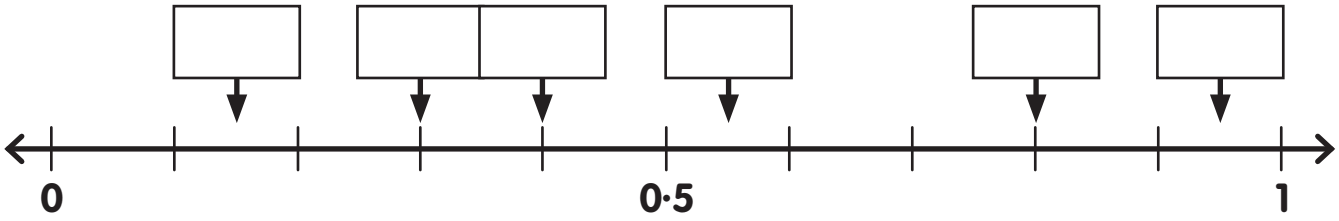


Decimal Number Lines

Activity 3

Write these points in their correct position on the number line.

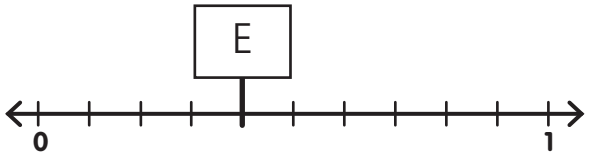
0·8 0·3 0·55 0·15 0·95 0·4

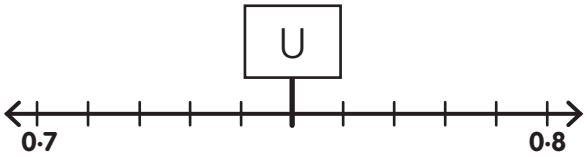


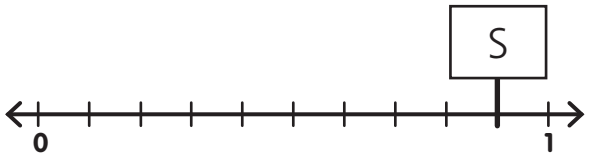
Activity 4

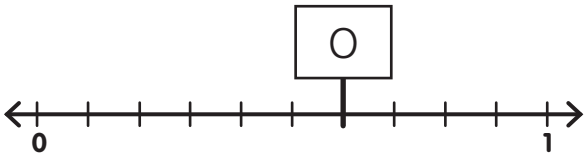
To which question can you never answer 'Yes'?

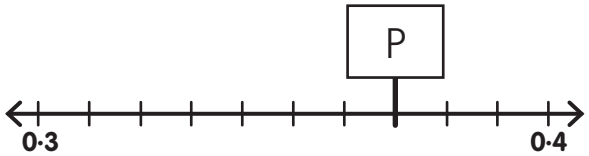
___	___	___	___	___	___	___	___	___	___	___	___	?
0·52	0·18	0·4	0·45	0·6	0·75	0·52	0·9	0·29	0·4	0·4	0·37	

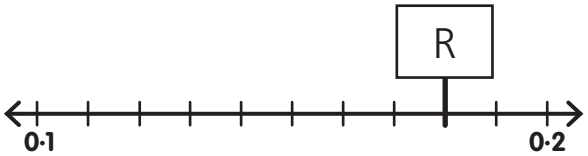


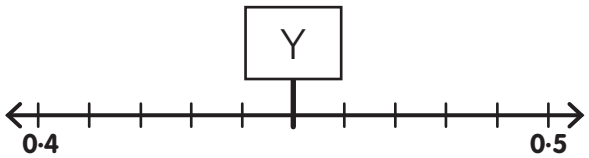


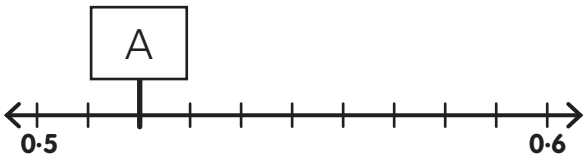


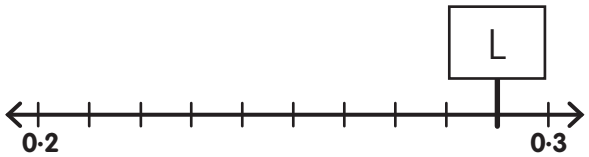








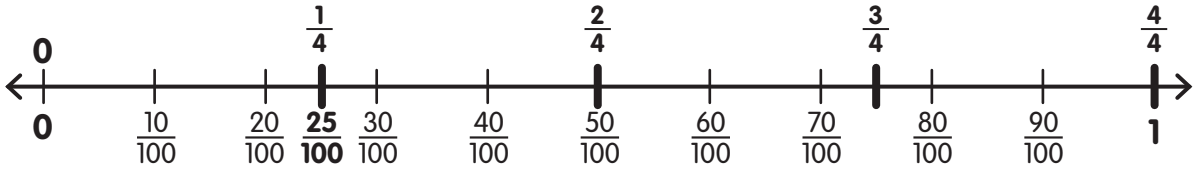




Equivalent Decimals and Fractions

Activity 1

Use the number line to convert these fractions and decimals.



a $\frac{1}{4} = \frac{\square}{100} = 0\cdot\_\_\_\_$ **b** $\frac{30}{100} = \frac{\square}{10} = 0\cdot\_\_\_\_$ **c** $0\cdot25 = \frac{\square}{100} = \frac{\square}{4}$

d $\frac{10}{100} = \frac{\square}{10} = 0\cdot\_\_\_\_$ **e** $\frac{3}{4} = \frac{\square}{100} = 0\cdot\_\_\_\_$ **f** $0\cdot75 = \frac{\square}{100} = \frac{\square}{4}$

g $\frac{2}{4} = \frac{\square}{100} = 0\cdot\_\_\_\_$ **h** $0\cdot50 = \frac{\square}{100} = \frac{\square}{4}$ **i** $0\cdot80 = \frac{\square}{100} = \frac{\square}{10}$

Activity 2

Use the fraction wall to convert these fractions and decimals.

$\frac{1}{2}$					$\frac{1}{2}$				
$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
0·1	0·1	0·1	0·1	0·1	0·1	0·1	0·1	0·1	0·1

a $\frac{1}{5} = \frac{\square}{10} = 0\cdot\_\_\_\_$ **b** $\frac{4}{5} = \frac{\square}{10} = 0\cdot\_\_\_\_$ **c** $0\cdot8 = \frac{\square}{10} = \frac{\square}{\square}$

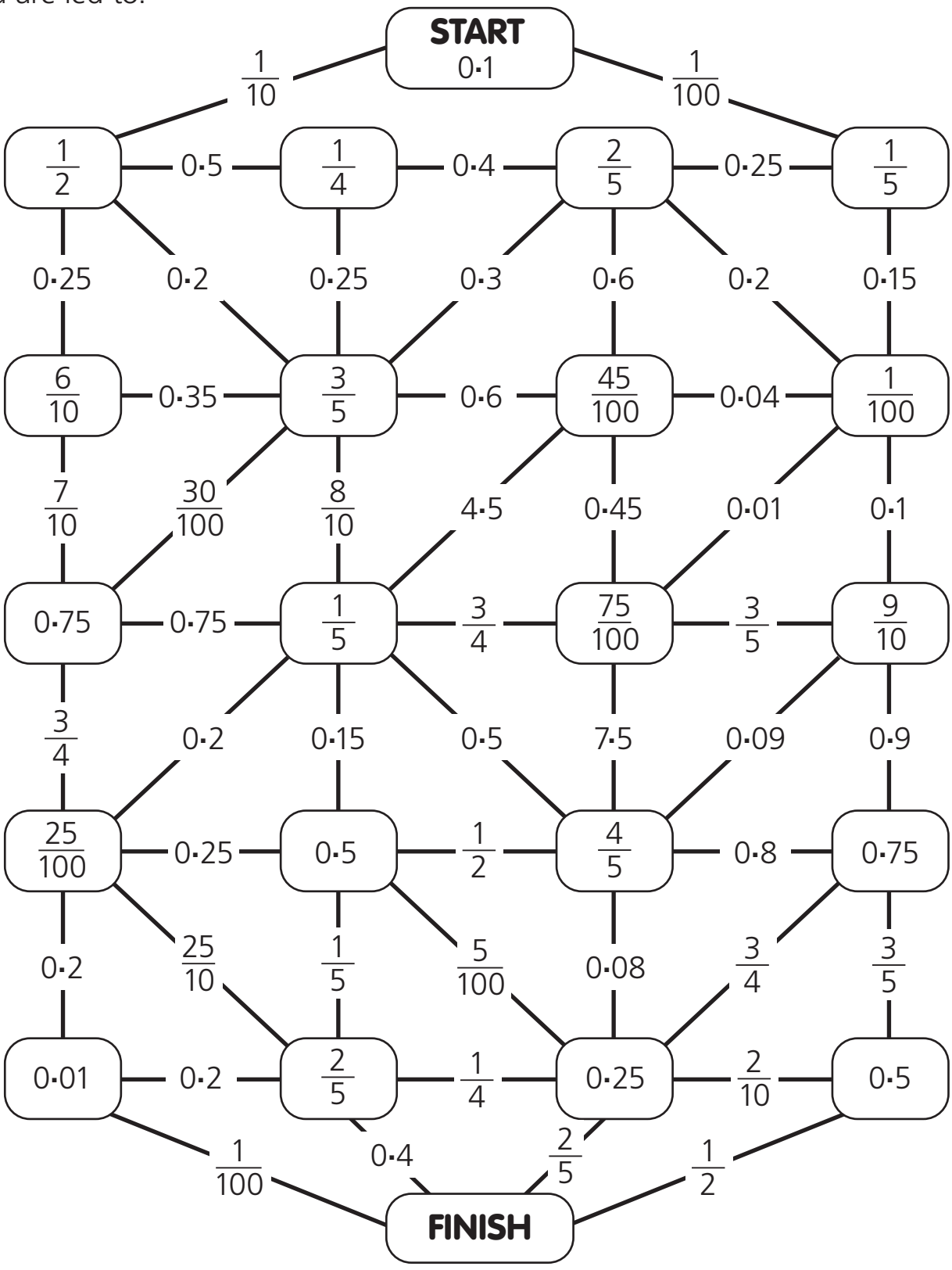
d $\frac{2}{5} = \frac{\square}{10} = 0\cdot\_\_\_\_$ **e** $\frac{1}{2} = \frac{\square}{10} = 0\cdot\_\_\_\_$ **f** $0\cdot5 = \frac{\square}{10} = \frac{\square}{\square}$

g $\frac{3}{5} = \frac{\square}{10} = 0\cdot\_\_\_\_$ **h** $0\cdot4 = \frac{\square}{10} = \frac{\square}{\square}$ **i** $0\cdot2 = \frac{\square}{\square} = \frac{\square}{\square}$

Equivalent Decimals and Fractions

Activity 3

Find your way through the maze! Start with the shape and follow the line with the equivalent fraction or decimal. Colour each path you follow and each shape you are led to.



Review

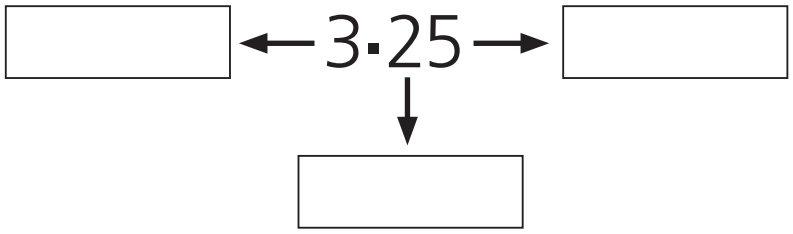
1 Complete: **a** 10ths × ☐ = 100ths **b** 100ths ☐ 10 = 10ths

2 Convert:

a $\frac{2}{10} = \frac{\square}{100}$ **b** $\frac{8}{10} = \frac{\square}{100}$ **c** $\frac{5}{10} = \frac{\square}{100}$

d $\frac{40}{100} = \frac{\square}{10}$ **e** $\frac{90}{100} = \frac{\square}{10}$ **f** $\frac{60}{100} = \frac{\square}{10}$

3 Name the places.



4 Convert:

a $\frac{3}{10}$ = 0·____ **b** $\frac{7}{10}$ = 0·____ **c** $\frac{5}{10}$ = 0·____

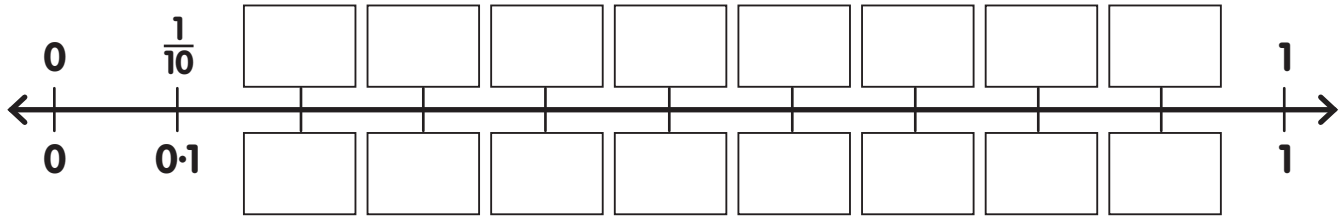
d $\frac{10}{100}$ = 0·____ **e** $\frac{60}{100}$ = 0·____ **f** $\frac{30}{100}$ = 0·____

g $\frac{89}{100}$ = 0·____ ____ **h** $\frac{24}{100}$ = 0·____ ____ **i** $\frac{16}{100}$ = 0·____ ____

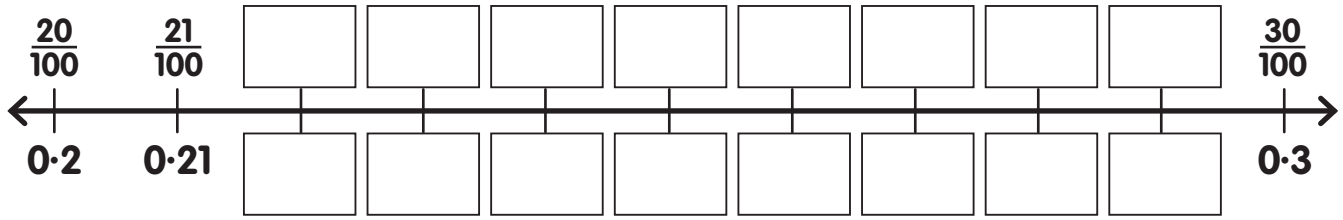
j $\frac{5}{100}$ = 0·____ ____ **k** $\frac{9}{100}$ = 0·____ ____ **l** $\frac{8}{100}$ = 0·____ ____

Review

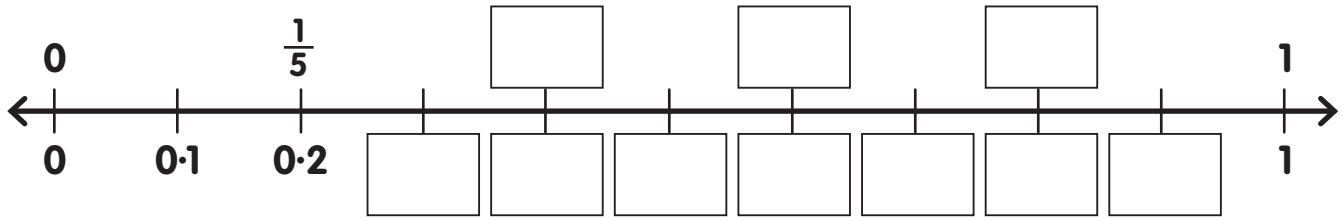
5 Write the 10ths along the top and the equivalent decimals along the bottom.



6 Write the decimals along the bottom and the equivalent 100ths along the top.

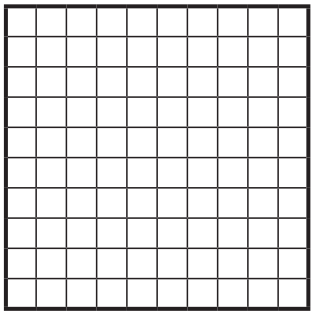


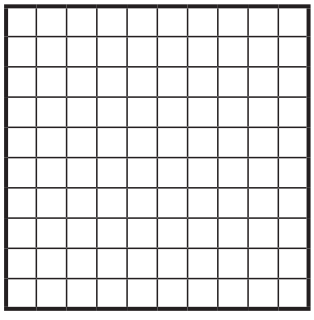
7 Write the decimals along the bottom and the equivalent 5ths along the top.

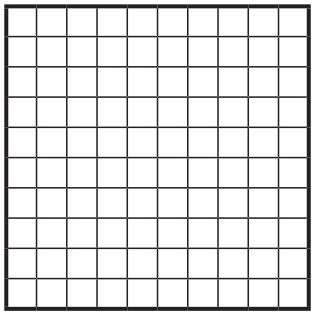


8 Shade and write the equivalent 100ths and decimals for these fractions.

a $\frac{1}{4} = \frac{\square}{100} = 0\cdot\_\_\_\_$ **b** $\frac{1}{2} = \frac{\square}{100} = 0\cdot\_\_\_\_$ **c** $\frac{3}{4} = \frac{\square}{100} = 0\cdot\_\_\_\_$







Who am I? Problems

1 I have all even digits. I have no zeros. My ones place has the smallest digit. My tenths and tens are the same number. My tens digit is twice my ones digit. My hundredths is twice my tenths digit.

Who am I?

2 My digits go from largest to smallest, left to right. They are all odd digits. My ones digit is half of 10. My tens digit is 3 times my tenths digit.

Who am I?

3 My digits only have straight lines – no curves. My ones and tenths are the same digit. My tens and hundredths are the same digit. My digit sum is 10. My ones digit multiplied by itself gives an answer of itself.

Who am I?

Problem Solving: Convert to Calculate

Mathseeds PRIME

1 Milly has 100 beads. One quarter of them are blue. Four tenths are pink and 0·22 are green. The rest are purple. How many beads are purple?

a Show your working.

b Answer: There are _____ purple beads.

2 Billy buys 100 new plants for his garden. One fifth of them are ferns and 0·2 are bushes. Three tenths are flowers and 0·09 are cacti. The rest are succulents. How many of each type of plant did Billy buy?

a Show your working.

b Answer: There are _____ ferns, _____ bushes, _____ flowers, _____ cacti and _____ succulents.

Decimal Games

BIG, BIGGER, BIGGEST

Play as a class. You need a set of decimal cards (see next page).

1 Make a class set of decimal cards:

- **a** Give each person 2 cards.
- **b** They write a decimal number with tenths.
- **c** And a decimal number with tenths and hundredths.

2 Shuffle all the cards and deal 1 card to each person.

3 Pair up and compare your decimals.

4 If you have the smaller decimal, sit down.

If you have the bigger decimal, pair up with someone new.

5 Keep pairing up and comparing decimals until one person is left.

The winner has the largest decimal.

Variation: The winner has the smallest decimal.

LINE UP

Play in groups. You need the set of decimal cards (see next page).

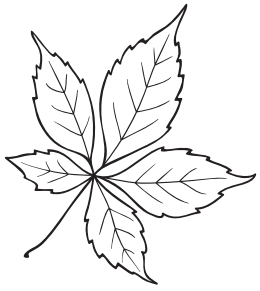
1 Shuffle all the cards and deal 1 card to each person.

2 Tell the groups that in this activity there is no speaking or gesturing, no communicating at all.

3 Each person holds their card up in front of them so it can be seen.

Each group moves to form a number line going from smallest to largest decimal.

The first group to get their numbers in order wins.



Decimal Cards

0._____	0._____
0._____	0._____
0._____	0._____
0._____	0._____
0._____ _____	0._____ _____
0._____ _____	0._____ _____
0._____ _____	0._____ _____
0._____ _____	0._____ _____

Decimal Places

Activity 1

Circle TWO numbers with

a 3 in the tenths place.

32·45 9·38 3·76 209·38 235

b 8 in the hundredths place.

0·28 3·85 803 9·08 72·8

Activity 2

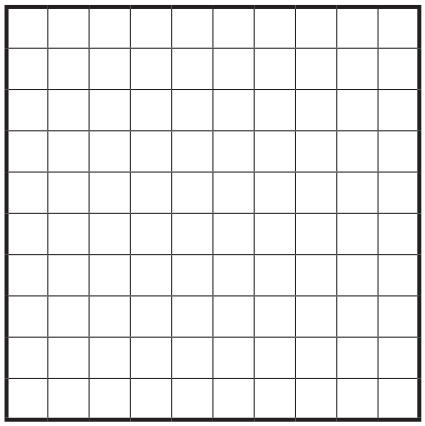
Write these numbers in the place value table.

5·09 0·37 78·3 672 6·8

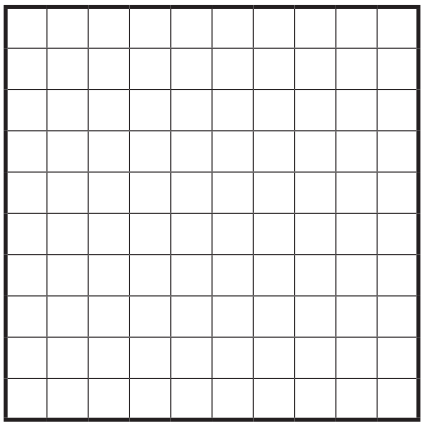
Hundreds	Tens	Ones	Tenths	Hundreths

Activity 3

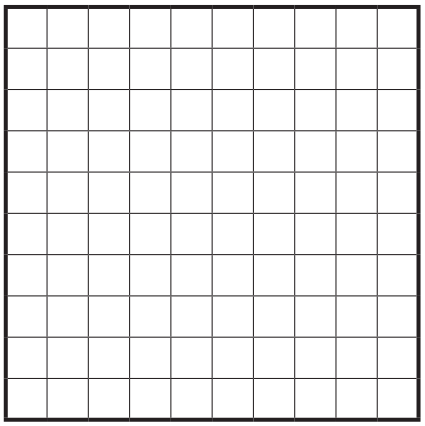
Colour in these decimals.



0·4



0·08



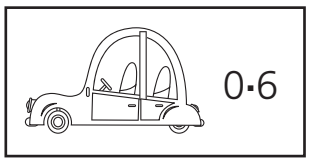
0·53

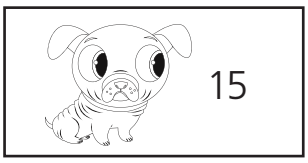
Decimal Places

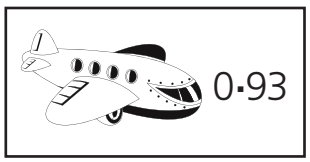
Activity 4

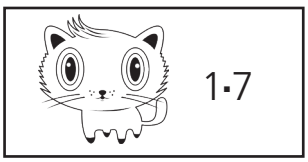
Use the code to colour in the picture.

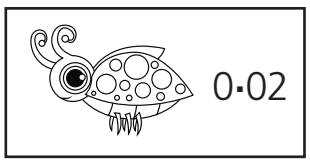
Tens and ones:	yellow
Tenths:	blue
Hundreds and tens:	green
Hundredths:	red
Tenths and hundredths:	pink
Ones and tenths:	orange

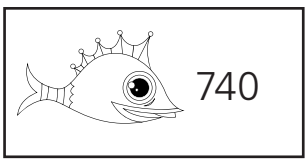












Activity 5

Use a ruler to match the value of the 4 or 5 in each number to solve the riddle.

Where do ghosts avoid going into?

2·46	five tenths
52·08	five tens
403	four tenths
1·57	four hundredths
1·94	four tens
503·7	four hundreds
23·85	five hundreds
346·2	five hundredths

V I R 6 3 2 O N 4 7 L G 5 1 8 M

The '____ ____ ____ ____ ____ ____ ____ ____ ____ ____'

1 2 3 2 4 5 6 7 7 8

Comparing Decimals

Activity 1

Circle THREE numbers that are less than 1.

2·1 0·7 3·89 0·56 8·02 0·04

Activity 2

Join each decimal to the alien that makes the statement true.

a 0·08 **b** 0·9 **c** 0·62 **d** 0·47 **e** 0·03 **f** 0·95

Activity 3

The awards measured 0·52 m, 0·8 m, 0·6 m and 0·76 m.

The better the award, the longer the ribbon.

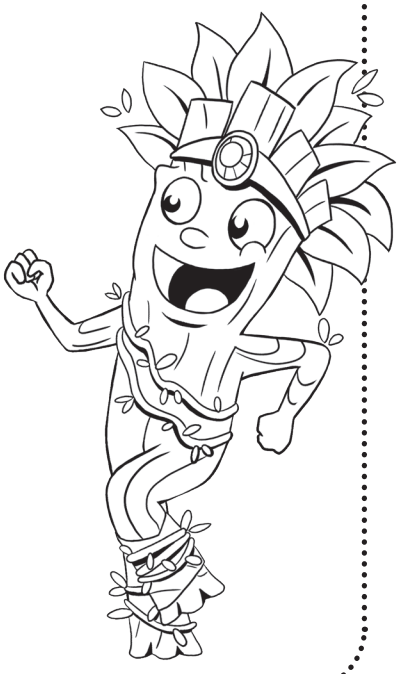
Write the measurement next to each award.

Ist Place = _____ m

2nd Place = _____ m

3rd Place = _____ m

Participation = _____ m

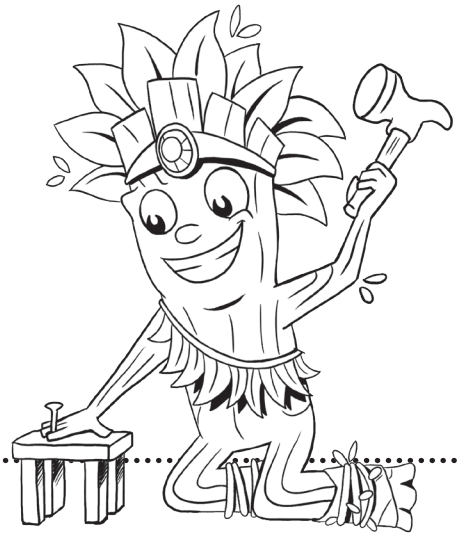


Comparing Decimals

Activity 4

Write these numbers in the place value table.

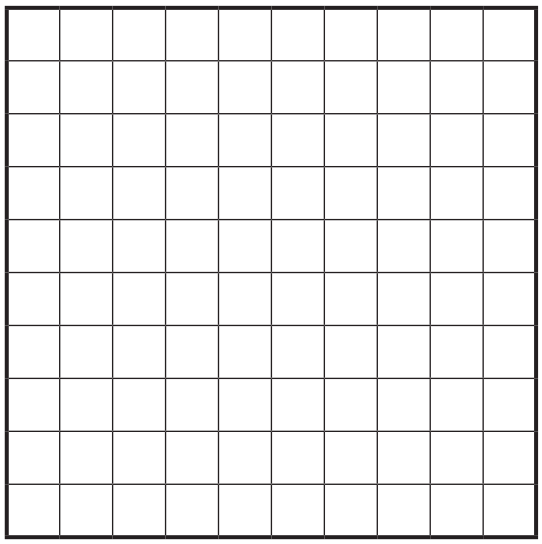
		Ones	Tenths	Hundreths
a	0·08			
b	0·9			
c	1·3			



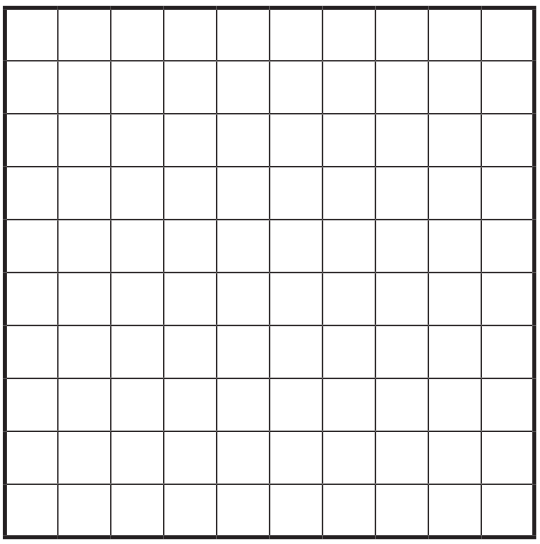
Activity 5

a Colour in each decimal.

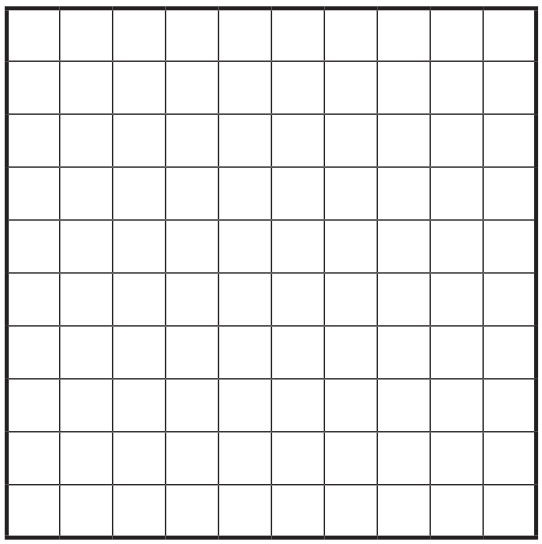
0·45



0·6



0·09



b Circle the largest decimal.

0·45 or 0·6

0·09 or 0·6

0·45 or 0·09

Money in Decimals

Activity 1

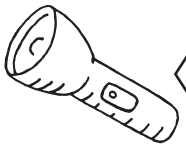
This woodling goes hiking. Write the cost of each item she buys.

a

$_____ . _____

two dollars and fifty cents

b



$_____ . _____

thirty dollars and five cents

c

$_____ . _____

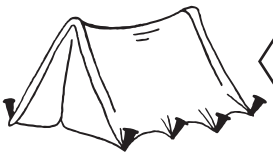
sixty-two dollars

d

$_____ . _____

eight dollars

e



$_____ . _____

forty-one dollars and twenty-five cents

f

$_____ . _____

seventy-five cents

Activity 2

Write these total amounts.

a

_____ dollars and _____ cents = $_____

b

_____ dollars and _____ cents = $_____

c

_____ dollars and _____ cents = $_____

d

_____ dollars and _____ cents = $_____

e

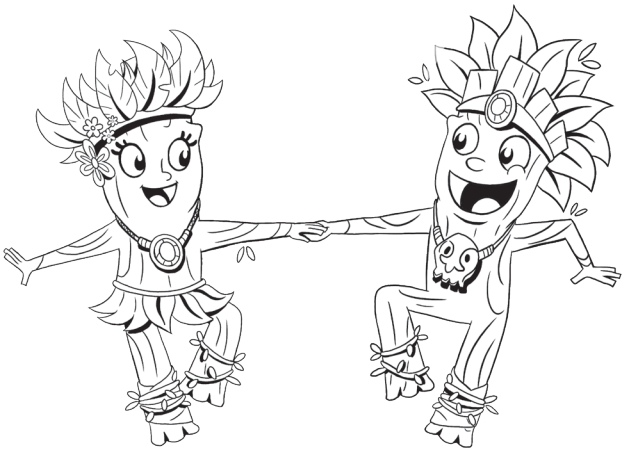
_____ dollars and _____ cents = $_____

Money in Decimals

Activity 3

Match the amounts.

Six dollars and fifty cents	$6.00
Sixty dollars and five cents	$65.00
Six hundred dollars	$6.50
Six dollars	$600
Sixty-five dollars	$605
Six hundred and five dollars	$60.05



Activity 4

Circle the correct format for each amount.

a	24 dollars and 40 cents	$24.40c	$24.40	24.40$	24.40c
b	35 dollars and 75 cents	35.75c	$35.75c	$35.75	$3575
c	75 dollars	$75.00c	$75	75.00c	75c
d	62 dollars and 50 cents	$62.50	62.50c	62.50$	$62.50c
e	43 cents	$0.43	$43	0.43$	$0.43c

Activity 5

What can you touch with your left foot but not with your right?
Use this to decode your answer.

A	B	C	D	E	F	G	H	I	J	K	L	M
Z	**Y**	**X**	**W**	**V**	**U**	**T**	**S**	**R**	**Q**	**P**	**O**	**N**

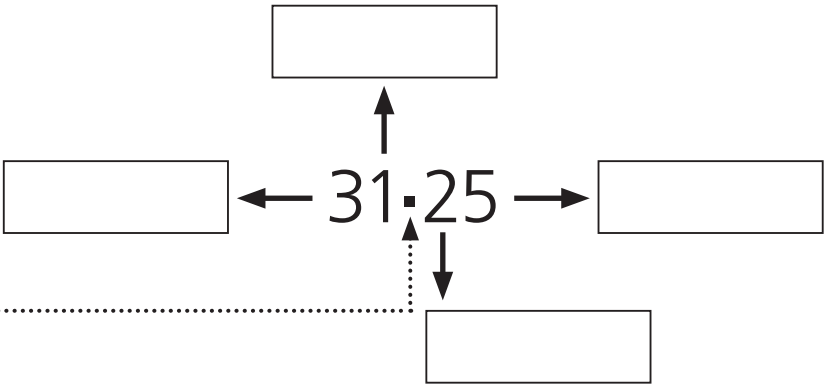
S: thirty-five dollars and twenty cents
P: thirty-five dollars and two cents
L: four dollars and thirty cents
G: three dollars and fifty-two cents
M: fifty cents
R: fifty dollars
I: five dollars
B: forty-three cents
F: seventy-five cents
T: forty-three dollars
V: seventy-five dollars

$0.43	$4.30	$0.75	$5.00		$5.00	$50	$43	$35.20	$3.52

$35.02	$0.50	$75	$75

Review

1 Name the places.



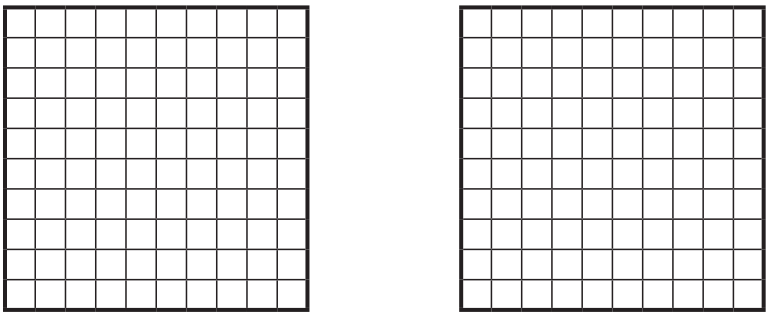
2 **a** What is the dot? .....

_____

b What does it do?

_____

3 Shade the squares to show this decimal: 1·48



4 Write these numbers in the place value table: 0·55 3·67 0·9 12·21 0·84

Tens	Ones	Tenths	Hundredths

5 Highlight the largest number. How did you know?

_____

Review

6 Shade numbers …

Pink if there's a 4 in the tenths place. Blue if there's a 9 in the hundredths place. Green if there's a 1 in the tenths place. Yellow if there's a 6 in the hundredths place.

2·415	7·89	9·41	0·56	0·29
0·06	0·88	5·11	1·75	3·47

7 Tick the numbers above that are less than 0·5.

8 Put these decimals in order from smallest to largest:

0·72	0·82	0·7	0·71	0·8

_____ _____ _____ _____ _____

9 What do these symbols mean?

a $ means _____ **b** c means _____

10 Write these amounts using correct money format.

a 3 cents = _____ **b** 850 cents = _____

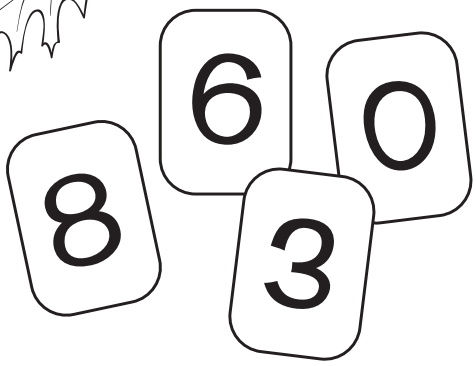
c 50 cents = _____ **d** 725 cents = _____

e 400 cents = _____ **f** 2 dollars and 20 cents = _____

g 3 dollars = _____ **h** 16 dollars and 1 cent = _____

Making Decimals

Mathseed's PRIME



1 You have four digits: 0, 3, 6 and 8.
How many numbers can you make that use all 4 digits and have 2 decimal places?

a Underline the question.

b Circle the facts.

c Make a list of all the numbers with 2 decimal places that can be made.

_____

_____

_____

_____

_____

_____

d There are _____ numbers.

e Which places cannot have a zero? _____ _____

f Why? _____

_____

_____

2 **a** What is the largest number? _____ **b** Smallest? _____

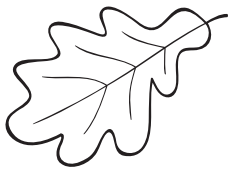
c Write all the numbers starting with 3 from smallest to largest.

_____ _____ _____ _____

d Write all the numbers with 0 tenths from smallest to largest.

_____ _____ _____

_____ _____ _____



Problem Solving: First and Last

Mathseeds PRIME

1 Five students each throw a shot put. Whose throw was shortest? Whose throw was longest?

Artie – 11.79 m Buffy – 11.9 m Cam – 12.05 m Dina – 11.77 m Eric – 12.5 m

a Show your working.

b Answer: _____ threw the shortest distance.

c Answer: _____ threw the longest distance.

2 The same five students did the high jump. Whose jump was shortest? Whose jump was highest?

Artie – 1.39 m Buffy – 1.40 m Cam – 1.04 m Dina – 1.35 m Eric – 1.43 m

a Show your working.

b Answer: _____'s jump was the shortest.

c Answer: _____'s jump was the highest.

Place Value Games

PLACE VALUE BINGO

Play in small groups or as a class. You will need a pen and a bingo card each (see next page).

1. One person is the 'caller'. They run the game for the players.
2. Each player fills in a grid by writing random numerals from 0 to 9 into the empty squares. You now have four numbers.
3. The caller calls out a place value, eg 90 or 5 tenths. Anyone who has this place value on their board crosses it off.
4. Repeat step 3 until someone has a complete number crossed off and calls 'Bingo!'

   The winner becomes the caller for the next round.

GUESS MY NUMBER

Play in pairs. You both need pencil and paper .

1. **Player A:** Write a 4-digit number with 2 decimal places, eg 98·76. Keep it secret from your partner.
2. **Player B:** Write a 4-digit number with 2 decimal places, eg 35·79. Show it to your partner.
3. **Player A:** Tell your partner if any digits are the same in the two numbers, eg 'You have the same tenths digit as my number.'
4. **Player B:** Use this information to write a new number, eg 12·78.
5. Repeat until the numbers match. Swap roles and play again.

Bingo Cards

Tens	Ones •	10ths	100ths
	•		
	•		
	•		
	•		

Tens	Ones •	10ths	100ths
	•		
	•		
	•		
	•		

Tens	Ones •	10ths	100ths
	•		
	•		
	•		
	•		

Tens	Ones •	10ths	100ths
	•		
	•		
	•		
	•		

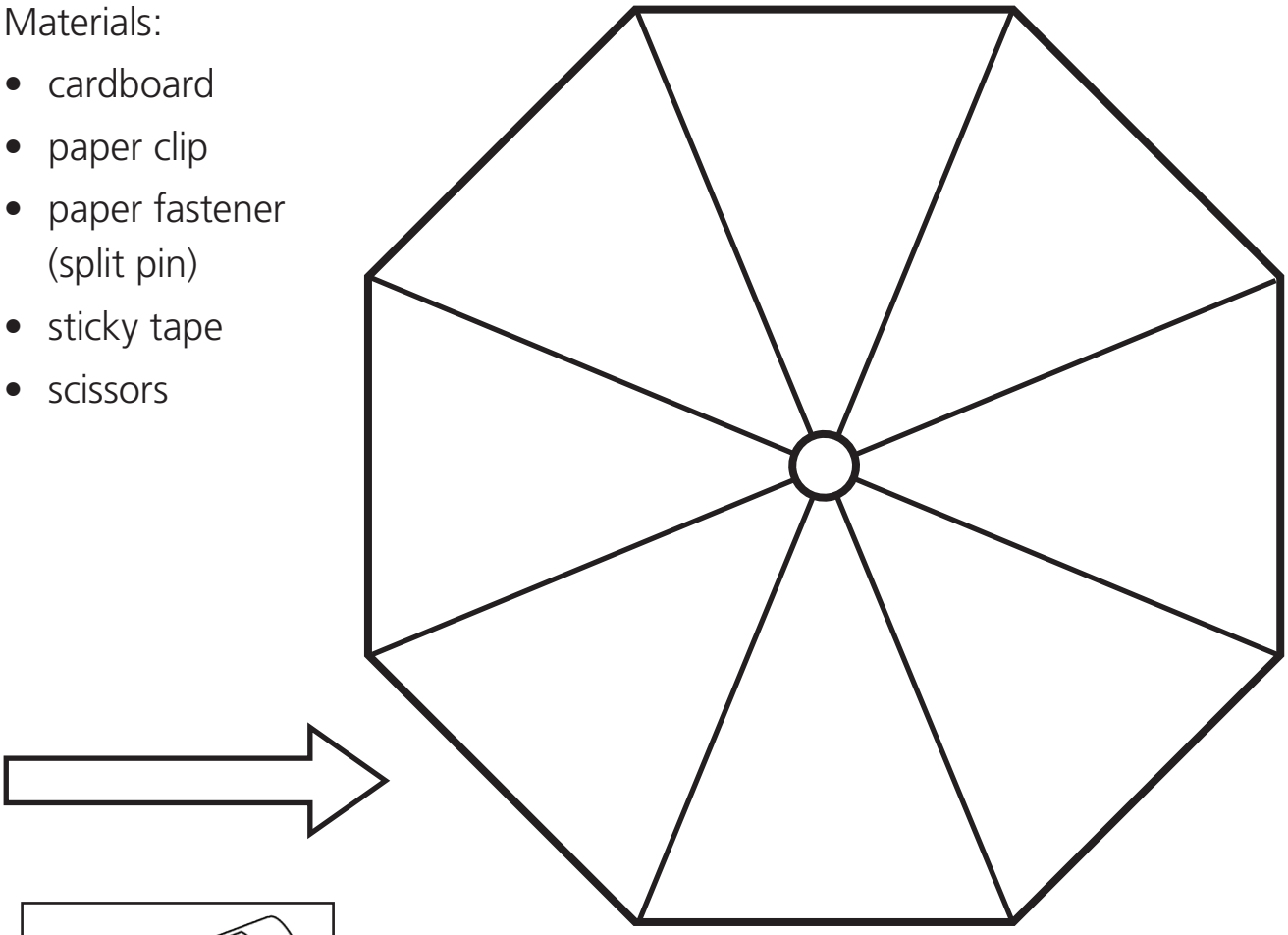
Tens	Ones •	10ths	100ths
	•		
	•		
	•		
	•		

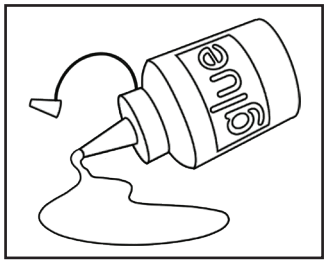
Tens	Ones •	10ths	100ths
	•		
	•		
	•		
	•		

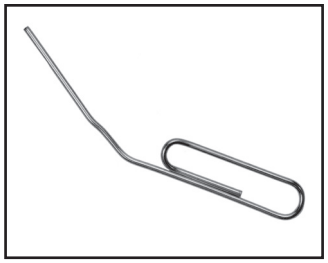
8-sided Spinner

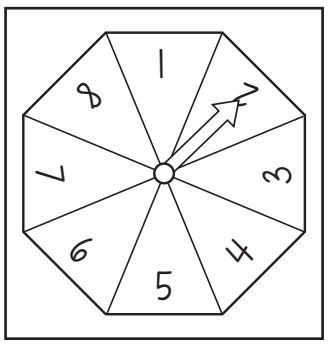
Materials:

- cardboard
- paper clip
- paper fastener (split pin)
- sticky tape
- scissors









a Print or glue the spinner and the arrow onto cardboard. Write on the numbers. You can laminate them after this.

b Bend out one end of the paper clip to make the spinning pointer.

c Insert the split pin with the paper clip on it through the centre of the spinner.

d Split the back of the pin and tape the ends down. The top of the split pin should sit about 1 cm above the card to allow the paper clip pointer to spin freely.

e Tape the arrow onto the paper clip.

6 and 10-sided Spinners