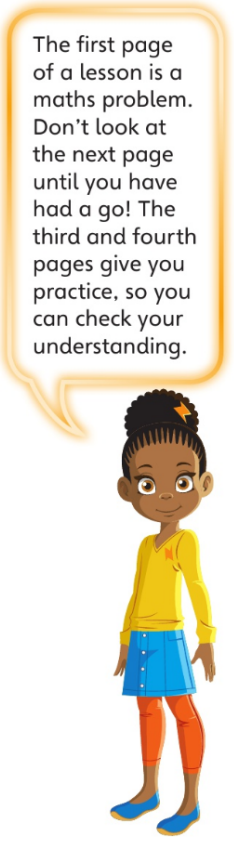
Contents



Lesson 1

Tenths

Discover

1 a) Which ten frame could represent the fraction $\frac{5}{10}$?

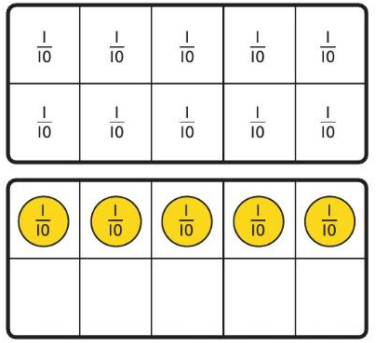
b) Is there another way to represent $\frac{5}{10}$ as a number?

Share

a) The ten frame is the whole. Each ten frame is split into 10 equal parts.

In $\frac{5}{10}$, the denominator is 10 and the numerator is 5.

The ten frame that represents $\frac{5}{10}$ is the one with counters on 5 of the 10 parts.



b) $\frac{5}{10}$ is read as 5 tenths.

T	O	•	Tth
		•	
	0	•	5

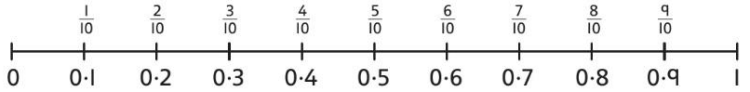
We can write $\frac{5}{10}$ as a **decimal**.

The **decimal point** separates the ones and tenths column.

This can be represented as 5 counters in the tenths column on a place value grid.

There are 0 ones and 5 tenths.

$\frac{5}{10}$ can be written as 0·5

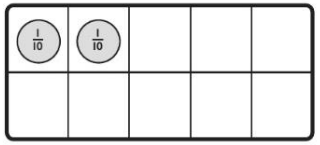


Lesson 1

Tenths

1 What numbers do the following representations show?

a)

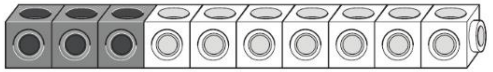


b)

O	•	Tth
	•	

This shows ☐/☐ or ☐·☐. This shows ☐/☐ or ☐·☐.

c)



The white cubes represent ☐/☐ or ☐·☐.

The grey cubes represent ☐/☐ or ☐·☐.

d)

The white beads represent ☐/☐ or ☐·☐.

The grey beads represent ☐/☐ or ☐·☐.

2 Complete the models below to show each decimal number:

a) Draw counters to show 0·3.

T	O	•	Tth
		•	

b) The ten frame represents one whole. Draw enough counters to represent 0·8.

3 Complete the following number sentences.

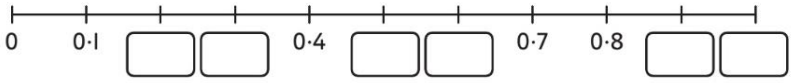
a) 1/10 = ☐·☐

b) 0·3 = ☐/☐

c) 0·7 = ☐/☐

d) 6/10 = ☐·☐

4 Complete the missing numbers on the number line.



Lesson 2

Dividing by 10

Discover

1 **a)** How heavy is each book in Box A?

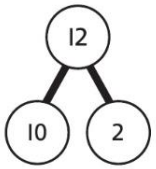
b) How heavy is each book in Box B?

What do you notice about the digits in the answer?

Share

a) 12 can be partitioned into 1 ten and 2 ones.

I will try what we did in the last lesson and divide each digit by 10.



1 ten and 2 ones =
10 ones and 20 tenths

10 ones ÷ 10 = 1 one

20 tenths ÷ 10 = 2 tenths

So, 12 ÷ 10 = 1 one and
2 tenths

= 1·2

T	O	•	Tth
10	1 1	•	

T	O	•	Tth
	1 1 1 1 1 1 1 1 1 1	•	0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Each book in Box A weighs 1·2 kg.

b) We need to calculate 14 ÷ 10.

I will visualise the place value counters on a place value grid.

14 = 1 ten and 4 ones

= 10 ones and 40 tenths

10 ones ÷ 10 = 1 one

40 tenths ÷ 10 = 4 tenths

So, 14 ÷ 10 = 1 one and 4 tenths = 1·4

Each book in Box B weighs 1·4 kg.

The digits in 14 and 1·4 are the same, but their position has changed.

Lesson 2

Dividing by 10

1 Complete the following calculations.

a) 2 tens = ☐ ones

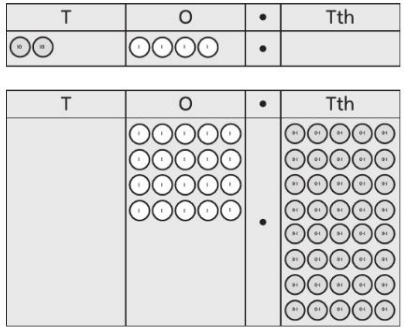
☐ ones ÷ 10 = ☐ ones

4 ones = ☐ tenths

☐ tenths ÷ 10 = ☐ tenths

So, 24 ÷ 10 = ☐ ones and

☐ tenths = ☐·☐



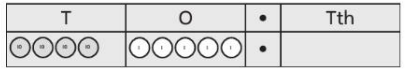
b) 4 tens = ☐ ones

☐ ones ÷ 10 = ☐ ones

5 ones = ☐ tenths

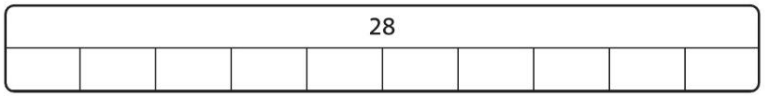
☐ tenths ÷ 10 = ☐ tenths

So, 45 ÷ 10 = ☐ ones and ☐ tenths = ☐·☐



c) 51 ÷ 10 = ☐

2 Complete the bar model and the calculation it represents.



☐ ÷ ☐ = ☐

3 Describe what happens to each digit when you divide 47 by 10.

T	O	•	Tth
		·	

4 Are the following calculations true or false? Circle your answer.

43 ÷ 10 = 3·4 True / False

10 ÷ 43 = 4·3 True / False

43 ÷ 10 = 4·3 True / False

4·3 = 43 ÷ 10 True / False

5 Complete the following calculations.

a) 46 ÷ 10 = ☐

b) ☐ ÷ 10 = 1·8

c) ☐ ÷ 10 = 7·2

d) ☐ = 39 ÷ 10

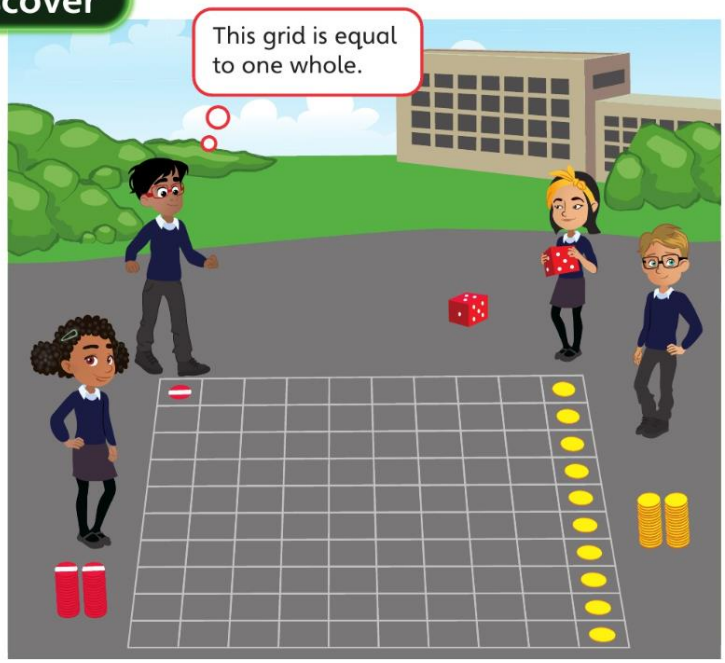
e) ☐ ÷ 10 = 3·9

f) 6·5 = ☐ ÷ 10

Lesson 3

Hundredths

Discover



1 **a)** What fraction of the hundredths grid is covered with striped counters?

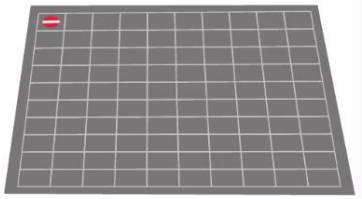
How can this be written as a decimal?

b) What fraction of the hundredths grid is covered with plain counters?

How can this be written as a decimal?

Share

a) There are 100 equal squares in the whole.



1 square is covered with a striped counter.

This can be written as $\frac{1}{100}$.

We say this as 'one hundredth'. There is also a place value column called hundredths.

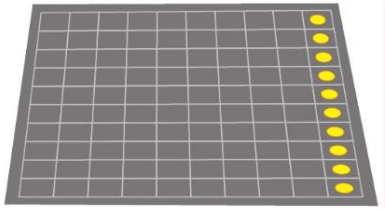
O	•	Tth	Hth
0	•	0	1

One hundredth can also be written as a decimal.

The digit 1 is placed in the hundredths column.

$\frac{1}{100}$ can be written as 0·01.

b) 10 of the 100 squares are covered by plain counters.



This can be written as $\frac{10}{100}$.

The fraction of the hundredths grid covered by plain counters is $\frac{10}{100}$.

O	•	Tth	Hth
0	•	1	0

We know that 10 hundredths is equal to 1 tenth.

So $\frac{10}{100}$ can be written as a decimal as 0·10 (shows 10 hundredths) or 0·1 (shows 1 tenth).

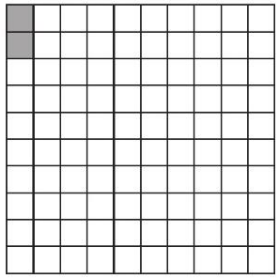
If I look at the columns in the hundredths grid, 1 of the 10 columns is covered with counters. I know this is written as $\frac{1}{10}$.

Lesson 3

Hundredths

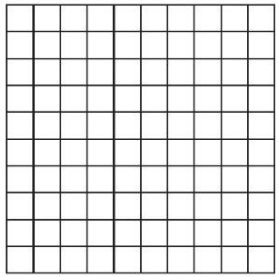
1 Complete the following so that the hundredths grid, fraction and decimal in each part are equivalent to each other.

a)



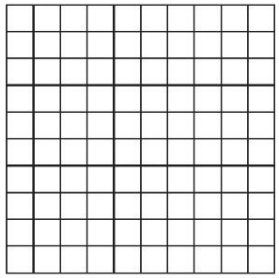
$\frac{\square}{100}$ $\square \cdot \square\square$

b)



$\frac{14}{100}$ $\square \cdot \square\square$

c)



$\frac{\square}{\square}$ 0·05

2 How could the following be written as a fraction and as a decimal?

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

$\frac{\square}{\square}$ or $\square \cdot \square$

3 Complete the table.

Fraction:	$\frac{16}{100}$	$\frac{18}{100}$		$\frac{22}{100}$	
Decimal:	0·16		0·20		

4 Complete these equivalent fractions and decimals.

a) $\frac{32}{100} = 0 \cdot \square$

b) $0{\cdot}27 = \frac{\square}{100}$

c) $0{\cdot}39 = \frac{\square}{\square}$

d) Nineteen hundredths $= \square \cdot \square$

e) $0{\cdot}46 =$ $\square$ hundredths

f) $\frac{\square}{100} = 0{\cdot}52$

g) $0{\cdot}59 = \frac{\square}{\square}$

h) $\frac{\square}{\square} = 0{\cdot}93$

i) Ninety hundredths $= \square \cdot \square$

j) $0{\cdot}03 =$ $\square$ hundredths

Lesson 4

Dividing by 100

Discover

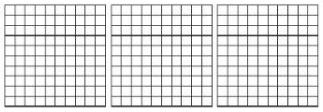
1 **a)** The pizza is cut so it can be shared out to the 100 guests. How long is each piece of pizza?

b) The cake is then shared out to the 100 guests. How long is each piece of cake?

Share

a) The pizza is 3 m long.

We need to divide it into 100 pieces.



I divided each whole into 100 pieces. I then divided the 300 hundredths into 100 groups.

3 ones = 300 hundredths

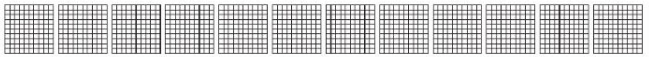
300 hundredths ÷ 100 = 3 hundredths

3 ÷ 100 = 0·03 so each piece of pizza is 0·03 m long.

b) The cake is 12 m long. We need to divide this into 100 pieces too.

Method 1

12 ones = 1,200 hundredths



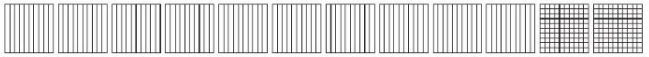
1,200 hundredths ÷ 100 = 12 hundredths

12 ÷ 100 = 0·12

So each piece of cake is 0·12 m long.

Method 2

Divide 10 of the squares into tenths and 2 of the squares into hundredths.



10 ones = 100 tenths
100 tenths ÷ 100 = 1 tenth

2 ones = 200 hundredths
200 hundredths ÷ 100 = 2 hundredths

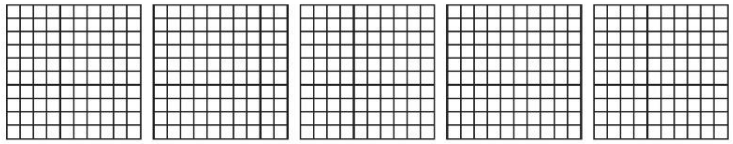
1 tenth and 2 hundredths is equal to 0·12. So each piece of cake is 0·12 m long.

Lesson 4

Dividing by 100

1 Complete the following calculations.

a) 5 ÷ 100



5 ones = ☐ hundredths

☐ hundredths ÷ 100 = ☐ hundredths

So, 5 ÷ 100 = ☐.☐

b) 11 ÷ 100

10 squares split into 10 parts means there are ☐ tenths.

☐ tenths ÷ 100 = ☐ tenth(s)

1 square split into 100 pieces means there are ☐ hundredths.

☐ hundredths ÷ 100 = ☐ hundredth(s)

11 ÷ 100 = ☐.☐

2 Aki is dividing 15 by 100.

I have noticed that when you divide by 100 the digits move columns.

T	O	•	Tth	Hth
1	5	•		

Explain what happens to the digits when you divide by 100.

3 Complete the calculations using the examples in **bold** to help you.

7 ÷ 100 = 0·07 **13 ÷ 100 = 0·13** **45 ÷ 100 = 0·45**

a) 8 ÷ 100 = ☐ **c)** 14 ÷ 100 = ☐ **e)** 55 ÷ 100 = ☐

b) 9 ÷ 100 = ☐ **d)** 15 ÷ 100 = ☐ **f)** 65 ÷ 100 = ☐

4 Are the following statements true or false? Write your answer in the table.

When you divide by 100:

	True or False?
The digits change.	
Any digit in the ones column moves to the tenths column.	
Any digit in the tens column moves to the tenths column.	
Each digit becomes $\frac{1}{100}$ of the value.	