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This tells you which page you need.



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The first page of a lesson is a maths problem. Don't look at the next page until you have had a go! The third and fourth pages give you practice, so you can check your understanding.



Lesson 1

Multiplying by 10, 100 and 1,000

Discover



- 1 a) Each plate has a mass of 0.3 kg. What is the mass of the 10 plates altogether?
- b) Each glass has a mass of 0.15 kg. What is the total mass of all the glasses?

Share

a) There are 10 plates, so find 0.3×10 .

T	O	.	Tth
		.	0.1 0.1 0.1

Represent 0.3.

Exchanging the tenths means the digit moves one place to the left on the place value grid.



T	O	.	Tth
		.	0.1 0.1

Multiply by 10.

T	O	.	Tth
3		.	

Exchange each group of ten tenths.

T	O	.	Tth
		.	3

T	O	.	Tth
3		.	3

T	O	.	Tth
3		.	

$$0.3 \times 10 = 3$$

$$300 \text{ g} \times 10 = 3,000 \text{ g}$$

3,000 g is equivalent to 3 kg.

The mass of the 10 plates altogether is 3 kg.

I solved it by converting to grams. I know that 0.3 kg is equivalent to 300 g.



Lesson 1

Multiplying by 10, 100 and 1,000

1 Draw counters to show each number multiplied by 10.

a)

T	O	.	Tth
	●	.	●●●

→

T	O	.	Tth
		.	

$1.3 \times 10 = \square$

b)

T	O	.	Tth	Hth
	●●●	.		●●●

→

T	O	.	Tth
		.	

$3.03 \times 10 = \square$

2 a) Which of these represents the answer to 10.08 multiplied by 100? Tick your answer.

Th	H	T	O
1	0	0	8

Th	H	T	O
1	0	8	0

H	T	O	.	Tth
1	0	0	.	8

b) Which of these represents the answer to 8.103 multiplied by 1,000? Tick your answer.

Th	H	T	O
8	1	3	0

Th	H	T	O
8	1	0	3

H	T	O	.	Tth
8	1	0	.	3

c) What is 0.012 multiplied by 1,000?

$0.012 \times 1,000 = \square$

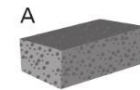
3 Complete these calculations.

a) $1.1 \times 10 = \square$ b) $\square = 99.9 \times 100$ c) $2.5 \times 10 = \square$
 $1.2 \times 10 = \square$ $\square = 999.9 \times 100$ $2.5 \times 20 = \square$
 $1.02 \times 10 = \square$ $0.999 \times 100 = \square$ $2.5 \times 200 = \square$
 $\square = 1.02 \times 100$ $9.999 \times 1,000 = \square$ $2.5 \times 2,000 = \square$

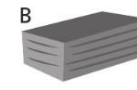
4 a) A builder orders 400 bricks. One brick costs £1.50. What will be the total cost of the order?

The total cost of the order will be .

b) There are 500 of each type of brick. What is the total mass of all the bricks?



A
0.8 kg



B
1.2 kg

The total mass of all the bricks is .

5 Bella says that when you multiply 5.02 by 100, you get 520. Explain her mistake using a place value grid.

Multiplying decimals

Discover



- 1 a) What is the total volume of the 3 drinks cans?
 b) What is the total volume of 30 cans?

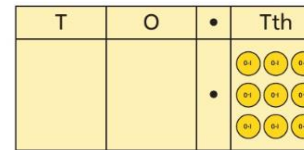
Share

- a) Work out 3×0.3 .

Method 1: Use known facts.

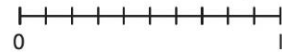
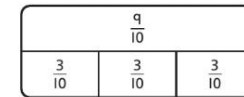
$$3 \times 3 = 9$$

$$3 \times 0.3 = 0.9$$



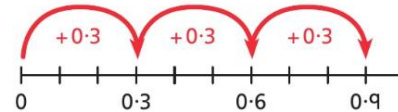
Method 2: Use fractions.

$$0.3 = \frac{3}{10}$$



$$3 \times \frac{3}{10} = \frac{9}{10} \quad \frac{9}{10} = 0.9$$

Method 3: Count in decimal steps.



$$0.3 + 0.3 + 0.3 = 0.9$$

Method 4: Convert the measuring units.

$$0.3 \text{ l} = 300 \text{ ml}$$

$$3 \times 300 \text{ ml} = 900 \text{ ml}$$

$$900 \text{ ml} = 0.9 \text{ l}$$

The total volume of the 3 drinks cans is 0.9 litres.

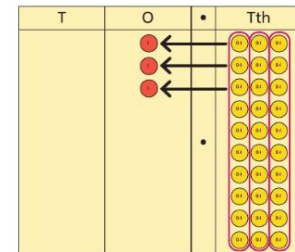
- b) $30 \times 0.3 = ?$

$10 \times 0.3 = 3$, so the volume of 10 cans is 3 litres.

There are 3 groups of 10 cans.

3 groups of 3 litres is 9 litres.

The total volume of 30 cans is 9 litres.



Lesson 2

Multiplying decimals

1 Complete these multiplication calculations.

T	O	•	Tth	Hth								
		•	<table border="1"> <tr><td>0.1</td><td>0.1</td></tr> <tr><td>0.1</td><td>0.1</td></tr> <tr><td>0.1</td><td>0.1</td></tr> <tr><td>0.1</td><td>0.1</td></tr> </table>	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											

$$4 \times 0.2 = \square$$

T	O	•	Tth	Hth						
		•		<table border="1"> <tr><td>0.01</td><td>0.01</td></tr> <tr><td>0.01</td><td>0.01</td></tr> <tr><td>0.01</td><td>0.01</td></tr> </table>	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01									
0.01	0.01									
0.01	0.01									

$$\square \times \square = \square$$

2 Complete the number line to represent each calculation, then solve each calculation.

a) $3 \times 0.3 = \square$



b) $3 \times 0.03 = \square$



3 Bella has 3 buckets of water. She fills each one with 0.3 litres of water. How much more water does she need to make 1 litre?

Bella needs litres more water to make 1 litre.

4 a) Work out each calculation. Give your answers as decimals.

$21 \times \frac{2}{10} = \square$

$201 \times 0.03 = \square$

$310 \times 0.02 = \square$

$31 \times \frac{3}{100} = \square$

b) Put the products in order from smallest to largest.

Lesson 3

Dividing decimals

Discover



- 1 a) Four small blocks balance a 0.8 kg box. What is the mass of each block?
- b) How many blocks will balance an 8 kg crate?

Share



The total mass of the 4 blocks is 0.8 kg, so find $0.8 \div 4$.



I think I can use multiplication facts to help me.
 $0.8 \div 4 = ?$
 $4 \times ? = 0.8$

0.8			
?	?	?	?

$$4 \times 2 = 8$$

$$8 \div 4 = 2$$

So, $4 \times 0.2 = 0.8$ $0.8 \div 4 = 0.2$



I think I can solve this by using sharing to find out what 0.8 is when it is shared into four parts.



The mass of each block is 0.2 kg.

I will check my answer with multiplication.
 $40 \times 0.2 = 4 \times 2$
 $40 \times 0.2 = 8$

- b) 8 kg is ten times as heavy as 0.8 kg.
 So, 10 times as many blocks will balance the scale.
 $4 \times 10 = 40$
 40 blocks will balance an 8 kg crate.



Lesson 3

Dividing decimals

1 Complete the divisions.

a)



$0.6 \div 3 = \square$

b)



$1.2 \div 6 = \square$

c)



$\square \div 4 = \square$

2 a) Complete these division calculations.

$36 \div 4 = \square \quad 48 \div 4 = \square \quad 16 \div 4 = \square \quad 28 \div 4 = \square$

$3.6 \div 4 = \square \quad 4.8 \div 4 = \square \quad 1.6 \div 4 = \square \quad 2.8 \div 4 = \square$

$0.36 \div 4 = \square \quad 0.48 \div 4 = \square \quad 0.16 \div 4 = \square \quad 0.28 \div 4 = \square$

b) Complete these division calculations.

$3.6 \div 6 = \square \quad 4.8 \div 6 = \square$

$0.72 \div 6 = \square \quad 0.18 \div 6 = \square$

3 Complete these calculations.

a)

O	•	Tth	Hth
	•	0.1 0.1	

$0.2 \div 4 = \square$

c)

O	•	Tth	Hth
	•	0.1 0.1 0.1 0.1	

$0.4 \div 8 = \square$

b)

O	•	Tth	Hth
	•	0.1 0.1 0.1	

$0.3 \div 6 = \square$

d)

O	•	Tth	Hth
	•	0.1 0.1 0.1 0.1 0.1	


$0.5 \div 10 = \square$

Explain how the calculations are related to each other.

4 Complete the related calculations.

$7 \times 8 = 56 \quad 5.6 \div 7 = \square$

$0.7 \times 8 = \square \quad 5.6 \div 8 = \square$

5 A box of pens costs £7.20. There are 12 packs in a box and each pack has 3 pens. How much does 1 pen cost? 

1 pen costs £ .

Lesson 4

Decimals as fractions

Discover

Match each fraction card to a decimal diagram.

0.006 0.06 0.6

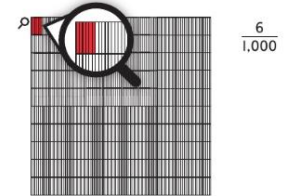
Ebo Isla Mr Jones

- 1 a) Isla and Ebo are matching fraction cards to decimal diagrams. Which fractions are equivalent to each decimal?
- b) Simplify the fractions on the cards, if possible.

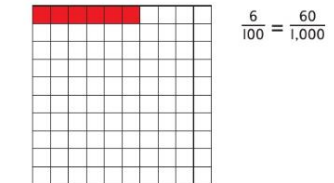
Share

- a) Use equivalent fractions to match the decimals.

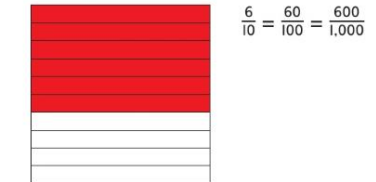
0	•	Tth	Hth	Thth
0	•	0	0	6



0	•	Tth	Hth	Thth
0	•	0	6	



0	•	Tth	Hth	Thth
0	•	6		



$\frac{6}{1,000}$ is equivalent to 0.006.

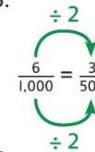
$\frac{6}{100}$ and $\frac{60}{1,000}$ are equivalent to 0.06.

$\frac{6}{10}$, $\frac{60}{100}$ and $\frac{600}{1,000}$ are equivalent to 0.6.

- b) $\frac{6}{1,000}$ can be simplified to $\frac{3}{500}$.

$\frac{6}{100}$ and $\frac{60}{1,000}$ can be simplified to $\frac{3}{50}$.

$\frac{6}{10}$, $\frac{60}{100}$ and $\frac{600}{1,000}$ can be simplified to $\frac{3}{5}$.

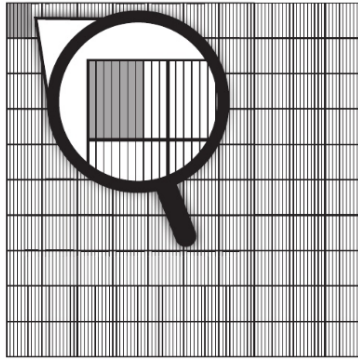


Lesson 4

Decimals as fractions

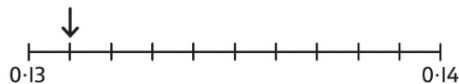
1 Write each decimal as a fraction.

a)



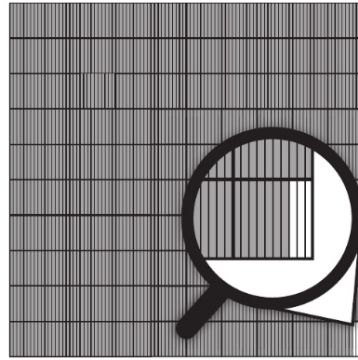
0.007 is equivalent to $\frac{\quad}{\quad}$

b)



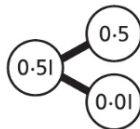
$\frac{\quad}{\quad}$ is equivalent to $\frac{\quad}{\quad}$

c)



0.997 is equivalent to $\frac{\quad}{\quad}$

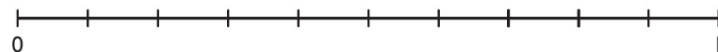
d)



$\frac{\quad}{\quad}$ is equivalent to $\frac{\quad}{\quad}$

2 Convert these fractions to decimals then mark their position on the number line.

$\frac{900}{1,000}$ $\frac{15}{100}$ $\frac{3}{10}$ $\frac{550}{1,000}$ $\frac{50}{1,000}$



3 Match each decimal to the equivalent fraction.

0.3

$\frac{33}{10}$

0.03

$\frac{303}{1,000}$

0.33

$\frac{30}{1,000}$

0.303

$\frac{33}{100}$

3.3

$\frac{3}{1,000}$

0.003

$\frac{300}{1,000}$

4 Write each decimal as a fraction, then simplify as far as you can.

a) 0.04 _____

b) 0.05 _____

c) 0.004 _____

d) 0.005 _____

5 a) Which of these fractions is equivalent to 1.823? Circle your answer.

$1\frac{823}{1,000}$

$1\frac{823}{100}$

$\frac{8}{23}$

$\frac{1,000}{823}$

b) Which of these fractions is equivalent to 0.85? Circle your answer.

$\frac{85}{10}$

$\frac{17}{10}$

$\frac{8}{5}$

$\frac{17}{20}$