

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.

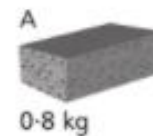
a) $1.1 \times 10 = \square$ b) $\square = 99.9 \times 100$ c) $2.5 \times 10 = \square$
 $1.2 \times 10 = \square$ $\square = 999.9 \times 100$ $2.5 \times 20 = \square$
 $1.02 \times 10 = \square$ $0.999 \times 100 = \square$ $2.5 \times 200 = \square$
 $\square = 1.02 \times 100$ $9.999 \times 1,000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

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 $\square$.

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



The total mass of all the bricks is $\square$.

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



6 Complete each calculation.

a) $0.025 \times 100 = 10 \times \square$

$3.5 \times 40 = 400 \times \square$

$1,000 \times 1.01 = 101 \times \square$

$2.5 \times 200 = \square \times 100$

$\square \times 1,000 = 10 \times 9$

$5,000 \times \square = 50 \times 3$

b) $0.004 \times \blacktriangle = \star \times 0.04$

How many different solutions can you find?

	Solution 1	Solution 2	Solution 3	Solution 4	Solution 5	Solution 6	Solution 7
$\blacktriangle$							
$\star$							



CHALLENGE

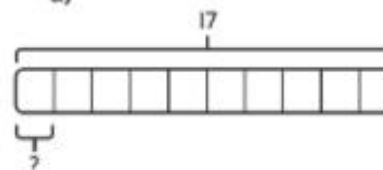
Reflect

- When multiplying decimals by 10, 100 and 1,000, I will
-
-
-

Dividing by multiples of 10, 100 and 1,000

1 Complete each division.

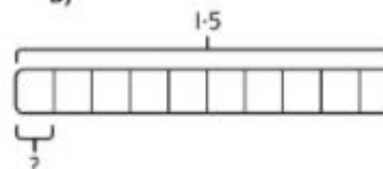
a)



H	T	O	•	Tth	Hth	Thth
	1	7	•			

$17 \div 10 = \square$

b)



H	T	O	•	Tth	Hth	Thth
		1	•	5		

$1.5 \div 10 = \square$

2 A leaking tap loses the same amount of water every day. After 100 days, it has lost 125 litres of water. How much water does it lose each day?

The tap loses $\square$ litres of water each day.

- 3 Which of these represents the answer to 2.050 divided by 1,000?
Tick your answer.

O	•	Tth	Hth	Thth
2	•	0	0	5

☐

O	•	Tth	Hth	Thth
0	•	2	0	5

☐

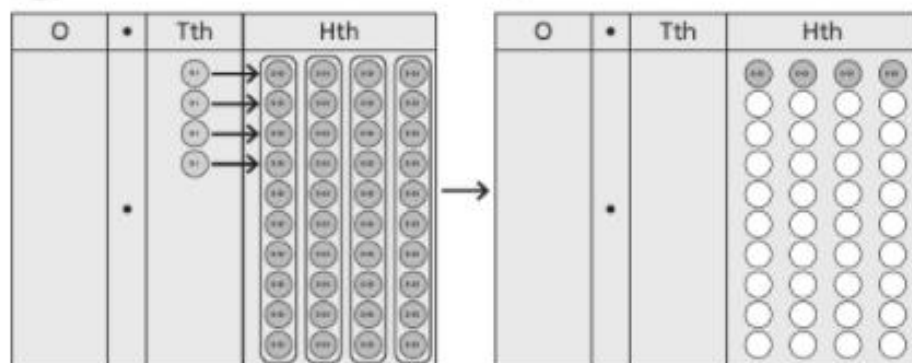
O	•	Tth	Hth
2	•	0	5

☐

O	•	Tth
2	•	5

☐

- 4 What division calculation does this diagram show?


 $\div$ =

- 5 Each number has been divided by 10, 100 or 1,000.
Complete the calculations.

O	•	Tth	Hth	Thth
0	•	3	0	6

$30.6 \div \square = 0.306$

O	•	Tth	Hth
0	•	3	6

$3.6 \div \square = 0.36$

O	•	Tth	Hth	Thth
0	•	0	3	6

$36 \div \square = 0.036$

- 6 Complete these calculations.

a) $240 \div 200 = \square$ b) $240 \div 6,000 = \square$ c) $\square = 24 \div 20$
 $240 \div 300 = \square$ $240 \div 4,000 = \square$ $\square = 24 \div 30$
 $240 \div 400 = \square$ $240 \div 3,000 = \square$ $\square = 24 \div 40$
 $240 \div 600 = \square$ $240 \div 8,000 = \square$ $\square = 24 \div 120$

- 7 Join the numbers to make six accurate divisions.
Write each division out in full. One has been done for you.

CHALLENGE

206	$\div 10$	2.6	$\longrightarrow$	
26	$\div 100$	0.206	$\longrightarrow$	$206 \div 1,000 = 0.206$
260	$\div 1,000$	0.206	$\longrightarrow$	
20.6	$\div 10$	0.026	$\longrightarrow$	
2.6	$\div 100$	0.026	$\longrightarrow$	
2.06	$\div 1,000$	2.06	$\longrightarrow$	

Reflect

Write a word problem that is solved by dividing by 10, 100 or 1,000 and gives a decimal answer. Find the answer to your word problem.

•

•

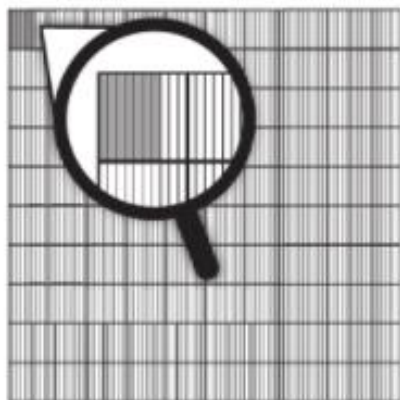
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Decimals as fractions

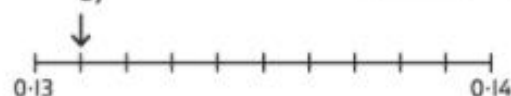
- 1 Write each decimal as a fraction.

a)



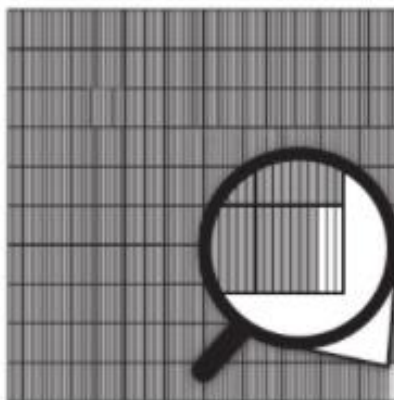
0.007 is equivalent to $\frac{\boxed{}}{\boxed{}}$

b)



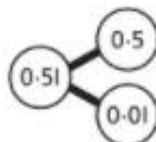
$\boxed{}$ is equivalent to $\frac{\boxed{}}{\boxed{}}$

c)



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

d)



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

- 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.

$$\frac{85}{10}$$

$$\frac{17}{10}$$

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

$$\frac{17}{20}$$

- 6 a) Which of these decimals add together to make $\frac{3}{25}$?

0.1 0.105 0.02 0.015 0.01 0.2

Is there more than one possibility?

CHALLENGE



- b) Which pairs of decimals have a difference of $\frac{5}{250}$?

0.2 0.04 2 1.02 2.04 1.98 1 2.6 10.4



Reflect

Explain how to write 0.555 as a fraction and how to simplify it as far as you can.

• _____
• _____
• _____
• _____

Fractions as decimals 1

- 1 Write each fraction on a place value grid.

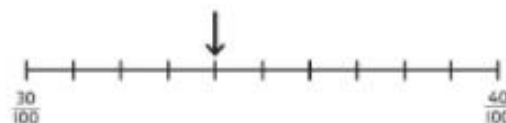
a) $\frac{3}{100}$

O	.	Tth	Hth	Thth
	.			

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

O	.	Tth	Hth	Thth
	.			

- b)



O	.	Tth	Hth	Thth
	.			

- d)

$\frac{345}{1,000}$				
$\frac{3}{10}$		$\frac{4}{100}$		$\frac{5}{1,000}$

O	.	Tth	Hth	Thth
	.			

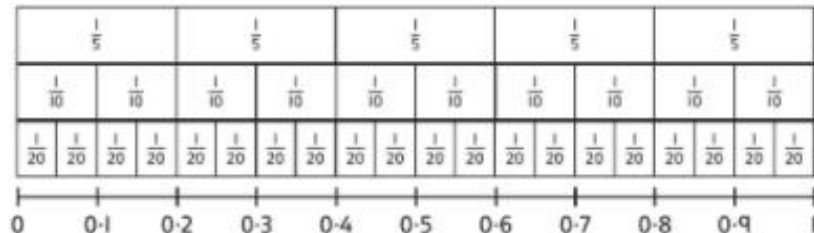
- 2 a) Which decimal is equivalent to $\frac{77}{10}$? Circle your answer.

0.77 77.10 7.7 77.7

- b) Which decimal is equivalent to $\frac{370}{100}$? Circle your answer.

0.37 0.037 0.307 3.7

- 3 Use the fraction wall to help convert these fractions to decimals.

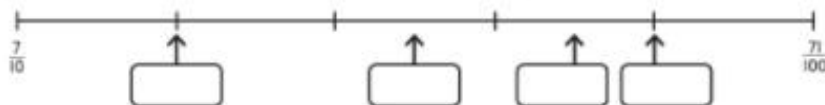


- a) $\frac{2}{5} = \square$ d) $\frac{4}{5} = \square$
 b) $\frac{8}{20} = \square$ e) $\frac{11}{20} = \square$
 c) $\frac{17}{20} = \square$

- 4 Use equivalent fractions to convert these fractions to decimals.

- a) $\frac{1}{50} = \frac{\square}{100} = 0.\square$ d) $\frac{3}{50} = \frac{\square}{100} = \square$
 b) $\frac{3}{200} = \frac{\square}{1,000} = \square$ e) $\frac{99}{500} = \frac{\square}{\square} = \square$
 c) $\frac{99}{250} = \frac{\square}{\square} = \square$

- 5 Write the decimals that the arrows are pointing to.



- 6 Use these digit cards to make fractions, where one card is the denominator and one card is the numerator. Convert each fraction to a decimal and write it in the correct column of the table.

CHALLENGE

2 4 5 25 50 200 250 500

Between 0 and 1	Between 1 and 10	Greater than 10

Reflect

What is the same and what is different about converting from decimals to fractions and converting from fractions to decimals?

- _____
- _____
- _____
- _____

Fractions as decimals 2

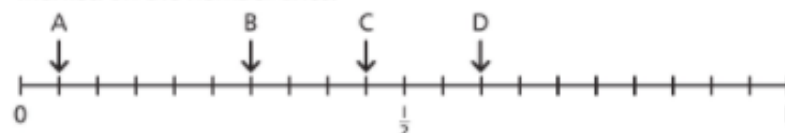
- 1 Write each fraction as a decimal.







- 2 Write an equivalent fraction and a decimal for each of the fractions marked on the number lines.



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

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

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

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



$$E = \frac{\boxed{}}{\boxed{}} = \boxed{}.\boxed{}$$

$$G = \frac{\boxed{}}{\boxed{}} = \boxed{}.\boxed{}$$

$$F = \frac{\boxed{}}{\boxed{}} = \boxed{}.\boxed{}$$

$$H = \frac{\boxed{}}{\boxed{}} = \boxed{}.\boxed{}$$

- 3 Use equivalent fractions to convert these fractions into divisions and decimals.

$$\frac{3}{12} = \frac{\boxed{}}{\boxed{}}$$

$$\boxed{} \div \boxed{} = 0.\boxed{}$$

$$\frac{7}{50} = \frac{\boxed{}}{\boxed{}}$$

$$\boxed{} \div \boxed{} = 0.\boxed{}$$

$$\frac{81}{250} = \frac{\boxed{}}{\boxed{}}$$

$$\boxed{} \div \boxed{} = 0.\boxed{}$$

- 4 Use short division to convert these fractions to decimals.

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

$$\boxed{} \overline{) 5} = 0.\boxed{}$$

$$\frac{5}{12}$$

$$\boxed{} \overline{) 5} = \boxed{}$$

$$\frac{12}{5}$$

$$\boxed{} \overline{) 12} = \boxed{}$$

- 5 Convert these fractions into decimals using the most appropriate method.

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

c) $\frac{54}{2,000}$

b) $\frac{16}{80}$

d) $\frac{14}{24}$

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

$$\begin{array}{r} 0 \\ 9 \overline{) 10} \end{array}$$

$$\rho/\omega = \boxed{} + j\boxed{}$$

11/1/2010

$$\frac{2}{9} = 2 \div 9$$

$$\begin{array}{r} 0 \\ 9 \overline{) 2 \cdot 20} \end{array}$$

$$\frac{4}{9} = \boxed{} \div \boxed{}$$

11

$$\frac{5}{9} = 0.\boxed{}$$

$$\frac{6}{9} = 0.\boxed{}$$

$$\frac{7}{9} = 0.\boxed{}$$

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

$\frac{p}{p} =$

$$\frac{10}{9} = \boxed{}$$

$$\frac{a}{b} = \boxed{}$$

$$\frac{19}{9} = \boxed{}$$

Explain how to use decimals to compare $\frac{5}{8}$ and $\frac{55}{100}$.