

Multiply decimals by integers



1 Use place value counters to solve the calculations.

a) $3.2 \times 3 =$ 9.6

Ones	Tenths
1 1 1	0.1 0.1
1 1 1	0.1 0.1
1 1 1	0.1 0.1

b) $4.6 \times 2 =$ 9.2

Ones	Tenths
1 1 1 1	0.1 0.1 0.1 0.1 0.1
	0.1
1 1 1 1	0.1 0.1 0.1 0.1 0.1
	0.1

2 Solve the multiplication. Draw your answer.

$12.2 \times 3 =$ 36.6

Tens	Ones	Tenths
0 0 0	0 0 0 0 0 0	0 0 0 0 0 0

3 Nijah uses long multiplication to solve 3.72×3

		3	7	2	
	x			3	
		0	0	6	
		2	1	0	
		9	0	0	
	1	1	1	6	

Use long multiplication to work out the calculations.

a)

		4	8	6	
	x			4	
		0	2	4	
		3	2	0	
	1	6	0	0	
	1	9	4	4	

b)

		2	0	9	
	x			6	
		0	5	4	
		0	0	0	
	1	2	0	0	
	1	2	5	4	

4 Work out the multiplications.

a) $5.2 \times 4 =$ 20.8

d) 7.02 $= 2.34 \times 3$

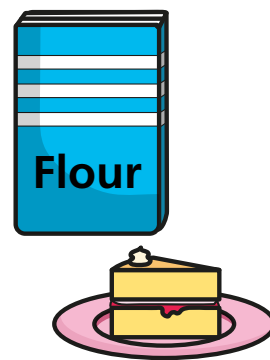
b) $14.3 \times 3 =$ 42.9

e) $11.505 \times 4 =$ 46.02

c) $6 \times 9.1 =$ 54.6

f) $9.602 \times 6 =$ 57.612

- 5 0.25 kg of flour is needed to make one cake.
How much flour is needed to make four cakes?



1 kg

- 6 Work out the multiplications.

a) $7.2 \times 2 = 14.4$

$7.2 \times 4 = 28.8$

$14.4 \times 4 = 57.6$

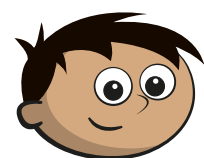
$7.2 \times 8 = 57.6$

b) $10.35 = 3.45 \times 3$

$103.5 = 34.5 \times 3$

$1,035 = 345 \times 3$

- 7 Amir is solving 3.4×4



To solve this, I did 34×4 , which was 136. Then I multiplied my answer by 10 to get an answer of 1,360.

Do you agree with Amir? NO

Explain why.

34 is ten times bigger than 3.4 so he should have divided by 10 to get 13.6

- 8 Use the digits 1, 2, 3 and 4 once each to create a calculation..

$$\begin{array}{|c|} \hline 1 \\ \hline \end{array} \begin{array}{|c|} \hline 2 \\ \hline \end{array} \begin{array}{|c|} \hline 3 \\ \hline \end{array} \begin{array}{|c|} \hline 4 \\ \hline \end{array}$$

$$\begin{array}{|c|} \hline \\ \hline \end{array} \cdot \begin{array}{|c|} \hline \\ \hline \end{array} \begin{array}{|c|} \hline \\ \hline \end{array} \times \begin{array}{|c|} \hline \\ \hline \end{array}$$

- a) How many different products can you make?

- b) What is the greatest possible product?

12.84

- c) What is the smallest possible product?

0.234

- d) What is the product closest to 12?

12.36

Compare answers with a partner.

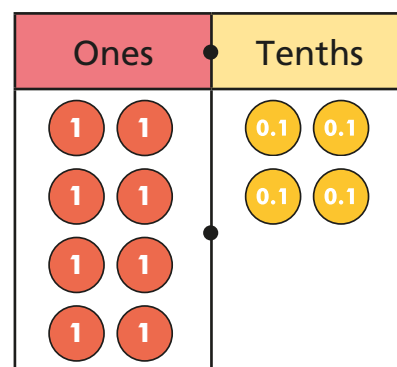


Divide decimals by integers

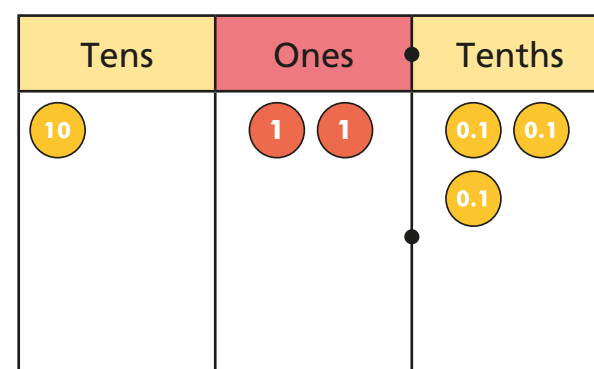


1 Use place value counters to work out the divisions.

a) $8.4 \div 4 =$ 2.1

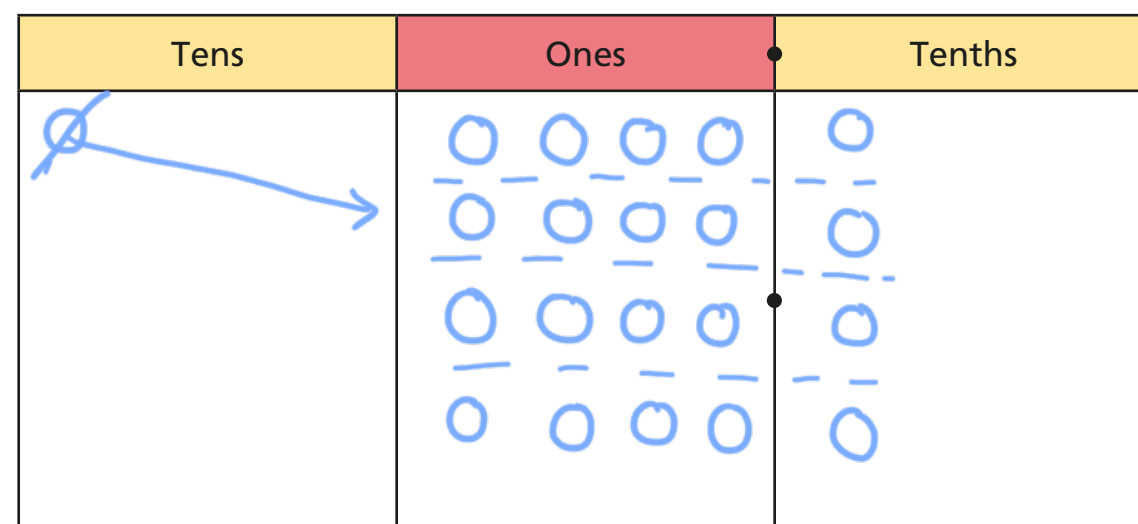


b) $12.3 \div 3 =$ 4.1

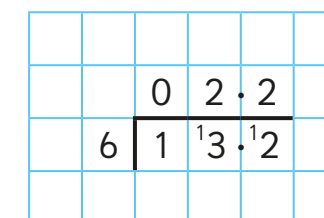


2 Work out the division. Draw your answer.

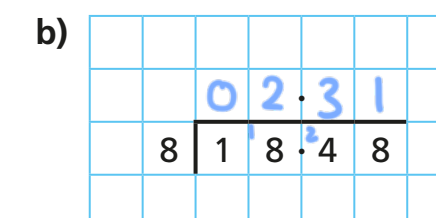
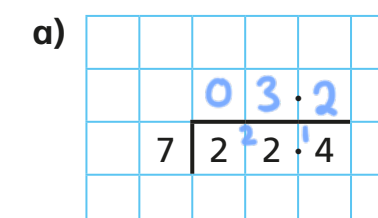
$16.4 \div 4 =$ 4.1



3 Brett uses short division to work out $13.2 \div 6$



Use short division to work out the calculations.



4 Work out the divisions.

a) $25.6 \div 8 =$ 3.2

d) 3.89 $= 19.45 \div 5$

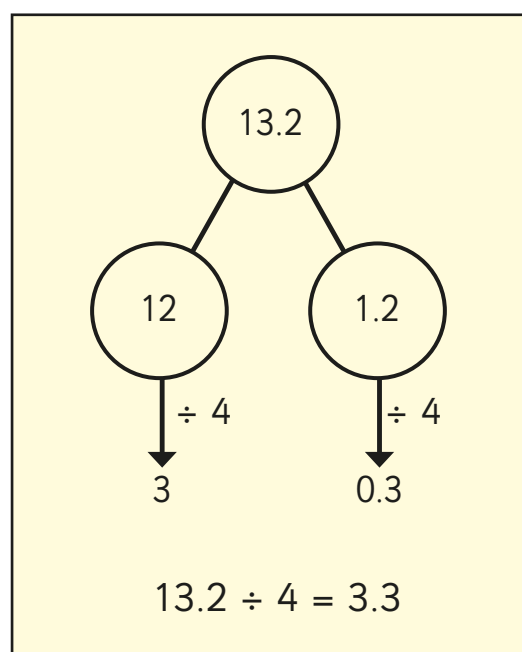
b) $14.8 \div 4 =$ 3.7

e) $202.35 \div 3 =$ 67.45

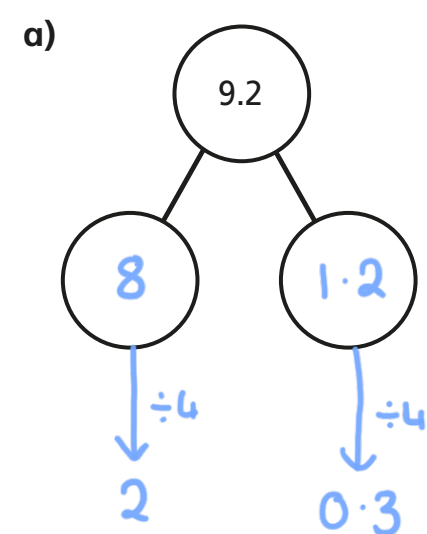
c) $18.48 \div 6 =$ 3.08

f) $105.12 \div 9 =$ 11.68

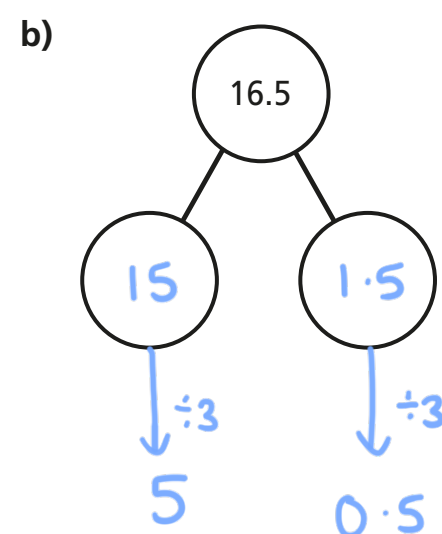
- 5 Esther solves $13.2 \div 4$ by partitioning 13.2 into two numbers that are easier to divide.



Use Esther's method to complete the part-whole model and calculation.



$$9.2 \div 4 = \boxed{2.3}$$



$$16.5 \div 3 = \boxed{5.5}$$

Compare answers with a partner. Did you partition your numbers in the same way?

- 6 Work out the divisions.

a) $9.64 \div 4 = \boxed{2.41}$

$96.4 \div 4 = \boxed{24.1}$

$0.964 \div 4 = \boxed{0.241}$

$9.64 \div 8 = \boxed{1.205}$

b) $19.44 \div 9 = \boxed{2.16}$

$19.53 \div 9 = \boxed{2.17}$

$19.62 \div 9 = \boxed{2.18}$

- 7 Fill in the missing numbers.

$3.6 \div 4 = 36 \div \boxed{40}$

$3.6 \div 4 = \boxed{7.2} \div 8$

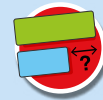
- 8 Complete the calculation.

e.g. $8.4 \div \boxed{2} = 4.2 \div \boxed{1}$

How many different solutions can you find?

What patterns do you notice? Talk about it with a partner.

Division to solve problems



- 1 There are 1,360 children in a school.
A quarter of the children walk to school.
How many children walk to school?

340

- 2 Huan has saved his pocket money for 5 weeks.
He gets the same pocket money every week.
He has saved £16.65
How much pocket money does Huan get each week?

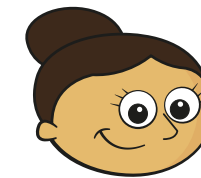


£3.33

- 3 Tom is running a 6-kilometre race.
He has run one-third of the race so far.
How many more kilometres does Tom have left to run?

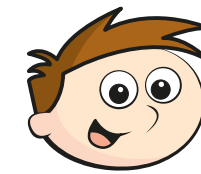
4 km

- 4 Dora, Ron and Teddy are making paper chains.



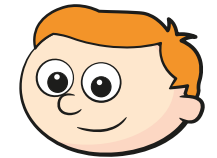
Dora

My paper chain
is 1.1 m long.



Teddy

My paper chain
is three times longer
than Ron's.



Ron

Dora's paper chain
is twice as long
as mine.

- a) How long is Ron's paper chain?

0.55m

- b) How long is Teddy's paper chain?

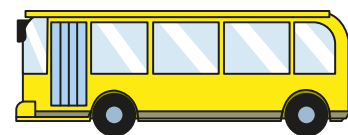
1.65m

- 5 A water bottle holds 2 litres.
A leak in the bottle means 25 ml drips out each day.
How many days will it take until the bottle is empty?



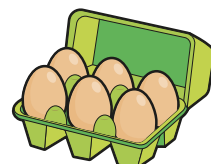
80 days

- 6 a) A school bus can hold 30 people.
There are 726 children going on a school trip.
How many buses are needed?



25

- b) A cake needs 4 eggs.
How many cakes can be made from 345 eggs?



86

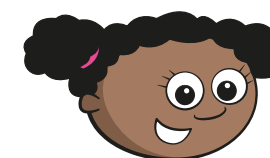
- 7 Shop A sells 5 tins of paint for £23.40
Shop B sells 3 tins of the same paint for £14.01



Which shop should Aisha buy her paint from? B
Explain your reasoning.

Shop A is £4.68 per tin. Shop B is £4.67
per tin so shop B is cheaper

- 8 $146 \div 5 = 29$ remainder 1
 $117 \div 4 = 29$ remainder 1



This means that
 $117 \div 4 = 146 \div 5$

Do you agree with Whitney? No
Explain your thinking.

The remainder isn't worth the same amount.
 $146 \div 5 = 29.2$, $117 \div 4 = 29.25$
 $29.2 \neq 29.25$

- 9 I'm thinking of a 3-digit number.
When I divide it by 5, I am left with a remainder of 3
When I divide it by 10, I am left with a remainder of 8
It rounds to 200 to the nearest 100
It has one hundred.
What could my number be?

5, 6, 7, 8 or 9
1 _ 8

e.g. 198

Create your own problem like this for a partner.



Decimals as fractions

1 Complete the sentences.

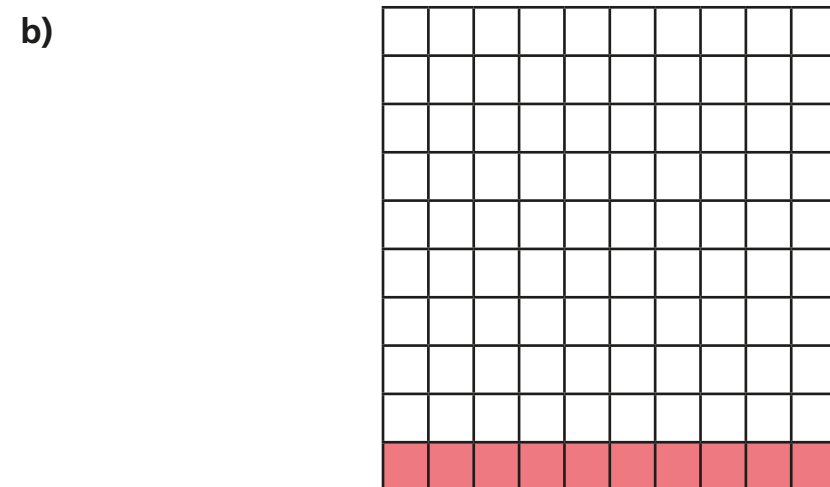
a)

0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
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The whole has been divided into 10 equal parts.

Each part is worth 0.1

This is equivalent to $\frac{1}{10}$



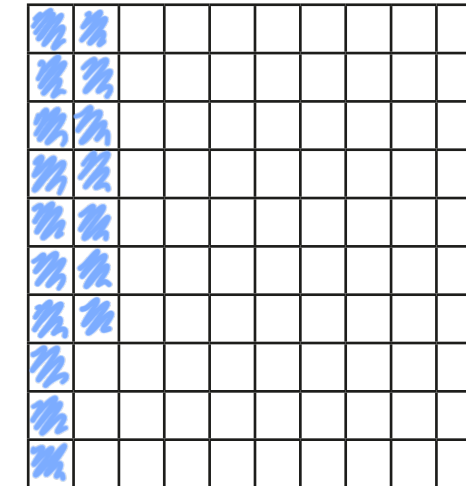
The whole has been divided into 100 equal parts.

Each part is worth 0.01

10 parts out of 100 are shaded.

This is equivalent to $\frac{10}{100}$ or $\frac{1}{10}$

2 a) Shade 0.17 of the hundred square.



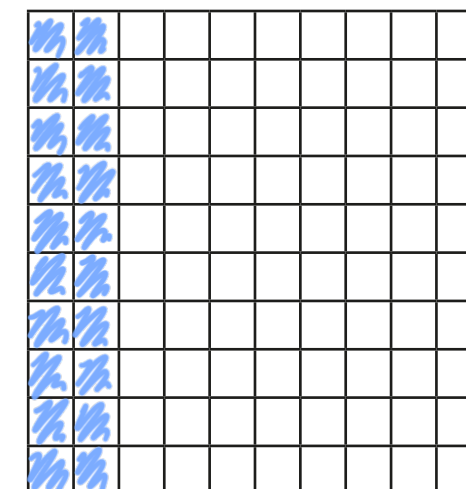
Complete the sentence.

17 parts out of 100 are shaded.

Write 0.17 as a fraction.

$0.17 = \frac{17}{100}$

b) Shade 0.2 of the hundred square.



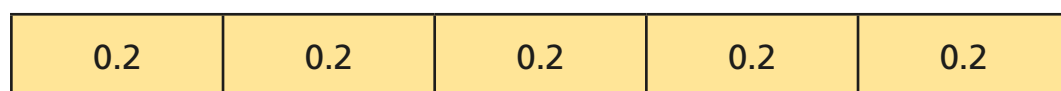
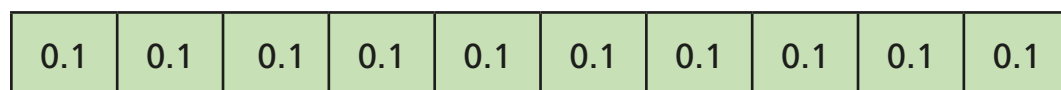
Complete the sentence.

20 parts out of 100 are shaded.

Write 0.2 as a fraction in its simplest form.

$0.2 = \frac{1}{5}$

3



Use the bar models to fill in the missing numbers.

$$0.2 = \frac{2}{10} = \frac{1}{5}$$

$$0.4 = \frac{4}{10} = \frac{2}{5}$$

$$0.8 = \frac{8}{10} = \frac{4}{5}$$

4

Fill in the missing numbers.

$$a) 0.54 = \frac{54}{100} = \frac{27}{50}$$

$$b) 0.6 = \frac{6}{10} = \frac{3}{5}$$

$$c) 0.3 = \frac{3}{10} = \frac{30}{100}$$

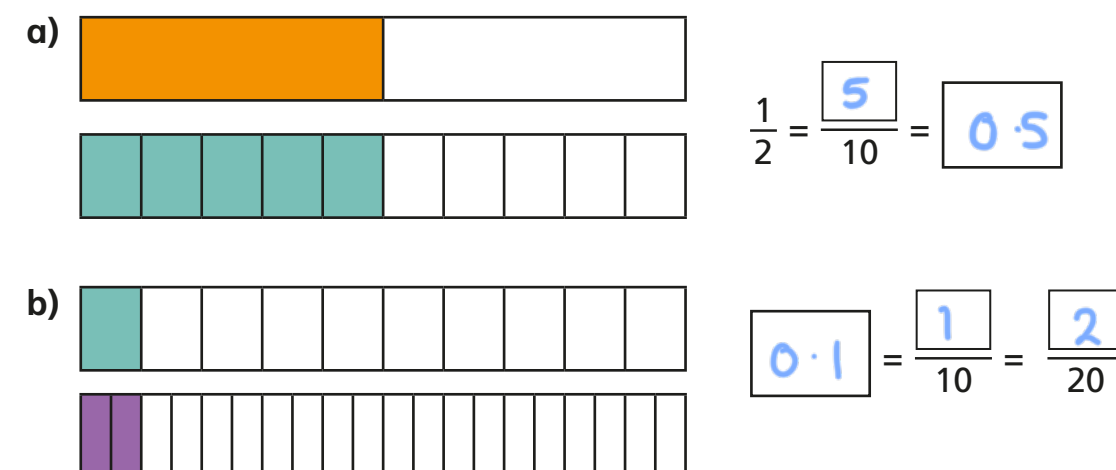
$$d) 0.09 = \frac{9}{100}$$

$$e) 0.9 = \frac{9}{10}$$

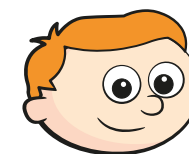
$$f) \frac{21}{50} = \frac{42}{100} = 0.42$$

5

Use the bar models to fill in the missing numbers.

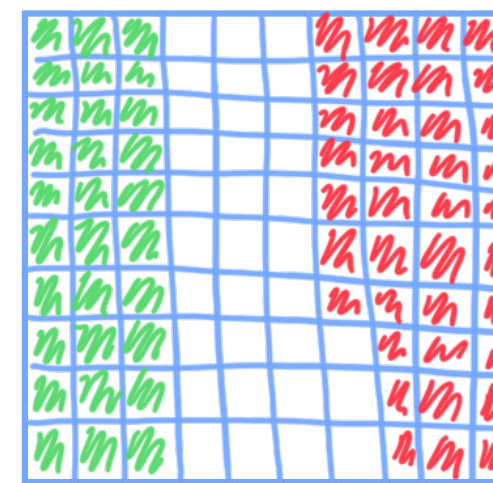


6



$$0.3 = \frac{3}{10} \text{ so } 0.37 = \frac{37}{10}$$

Draw a diagram to show that Ron is wrong.



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

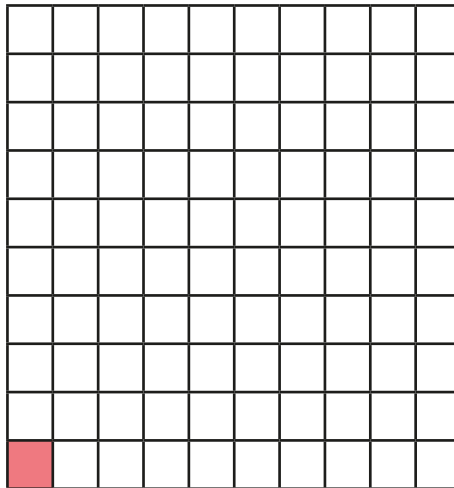
$$0.37 = \frac{37}{100}$$



Fractions to decimals (1)

1 Complete the sentences.

a)

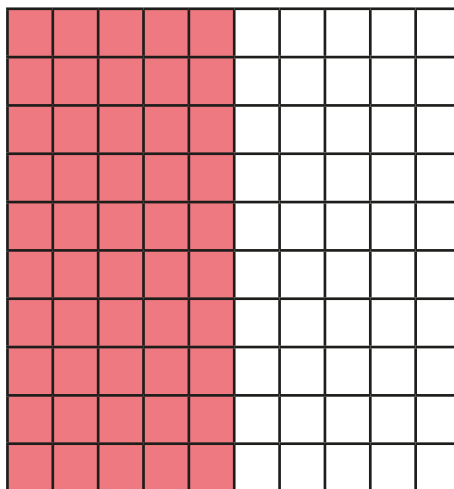


Each square represents $\frac{1}{100}$

$\frac{1}{100}$ of the whole square is shaded.

This is equivalent to 0.01 as a decimal.

b)

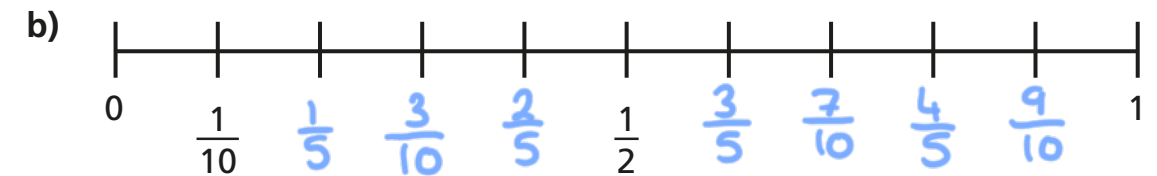
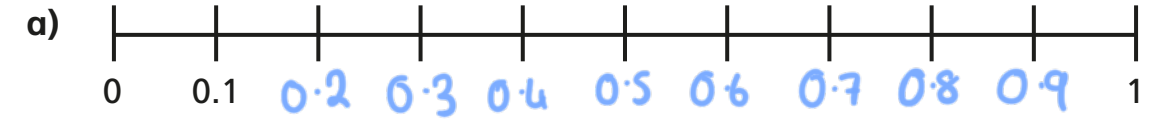


$\frac{50}{100}$ of the whole square is shaded.

This can be simplified to $\frac{1}{2}$

This is equivalent to 0.5 as a decimal.

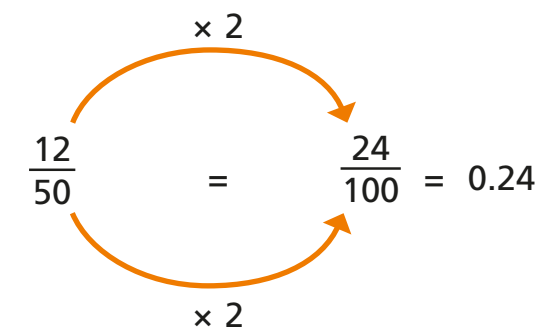
2



What is the same and what is different about the number lines?

3

To convert a fraction to a decimal, you can use equivalent fractions to make the denominator 100



Use this method to find the equivalent decimals for the fractions.

a) $\frac{28}{50} = \frac{56}{100} = 0.56$

c) $\frac{9}{25} = \frac{36}{100} = 0.36$

b) $\frac{6}{20} = \frac{30}{100} = 0.3$

d) $\frac{24}{200} = \frac{12}{100} = 0.12$

- 4 Some fractions can be converted to have a denominator of 1,000 to find their decimal equivalent.

$$\frac{62}{500} \xrightarrow{\times 2} \frac{124}{1000} = 0.124$$

a) $\frac{27}{500} = \frac{54}{1000} = 0.054$

b) $\frac{62}{250} = \frac{248}{1000} = 0.248$

c) $\frac{51}{200} = \frac{255}{1000} = 0.255$

d) $\frac{128}{2,000} = \frac{64}{1000} = 0.064$

- 5 Convert the fractions to their decimal equivalents.

a) $\frac{1}{5} = 0.2$

b) $\frac{1}{20} = 0.05$

$\frac{1}{10} = 0.1$

$\frac{2}{20} = 0.1$

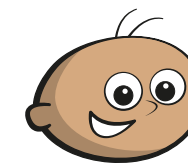
$\frac{1}{20} = 0.05$

$\frac{3}{20} = 0.15$

$\frac{1}{40} = 0.025$

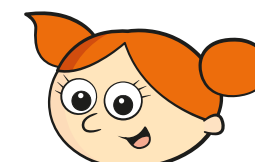
$\frac{6}{20} = 0.3$

- 6 Tommy, Alex and Eva are working out the decimal equivalent of $\frac{60}{200}$



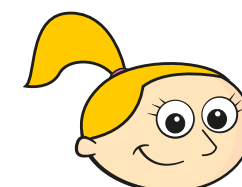
Tommy

You need to convert it to have a denominator of 100 to find the decimal equivalent.



Alex

I disagree. You need to convert it to have a denominator of 1,000



Eva

Both of you are right!

Who do you agree with? Eva

Explain your thinking.

Tommy's method: $\frac{60}{200} = \frac{30}{100} = 0.30 = 0.3$

Alex's method: $\frac{60}{200} = \frac{300}{1,000} = 0.300 = 0.3$

They get the same answer.

- 7 0.5 is equivalent to $\frac{1}{2}$, $\frac{5}{10}$, $\frac{50}{100}$

Are these the only fractions that are equivalent to 0.5?

How many fractions can you find?

Various answers.

Compare answers with a partner.

