Fractions B

sample

Spring Term Block 2

Name _____ Class _____

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Year 5 Spring Term Block 2

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sample

Multiply a unit fraction by an integer

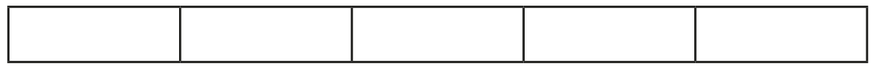
1 Match each addition to the equivalent multiplication.

$\frac{1}{3} + \frac{1}{3}$	$2 \times \frac{1}{5}$
$\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$	$\frac{1}{4} \times 3$
$\frac{1}{5} + \frac{1}{5}$	$3 \times \frac{1}{5}$
$\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$	$2 \times \frac{1}{3}$

2 Complete the calculations.

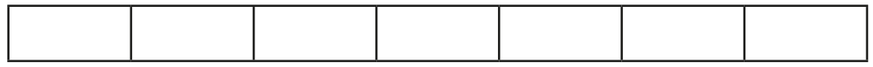
Use the bar models to help you.

a)



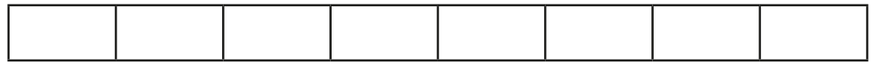
$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \square$ $\quad$ $3 \times \frac{1}{5} = \square$

b)



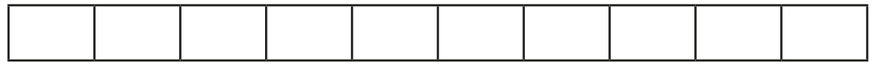
$\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \square$ $\quad$ $4 \times \frac{1}{7} = \square$

c)



$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \square$ $\quad$ $5 \times \frac{1}{8} = \square$

d)



$\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} = \square$ $\quad$ $7 \times \frac{1}{10} = \square$

What do you notice?

3 Complete the multiplications.

a) $3 \times \frac{1}{8} = \square$ $\quad$ **e)** $\frac{1}{5} \times 4 = \square$

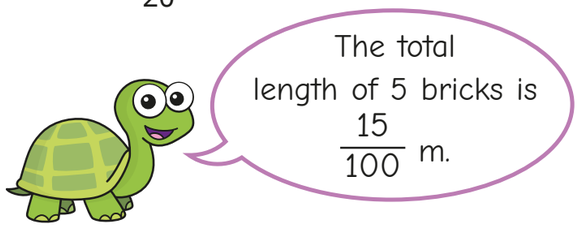
b) $3 \times \frac{1}{10} = \square$ $\quad$ **f)** $\frac{1}{9} \times 8 = \square$

c) $\frac{1}{8} \times 5 = \square$ $\quad$ **g)** $8 \times \frac{1}{11} = \square$

d) $9 \times \frac{1}{10} = \square$ $\quad$ **h)** $\frac{1}{11} \times 10 = \square$

sample

4 The length of a brick is $\frac{3}{20}$ m.



Do you agree with Tiny? _____

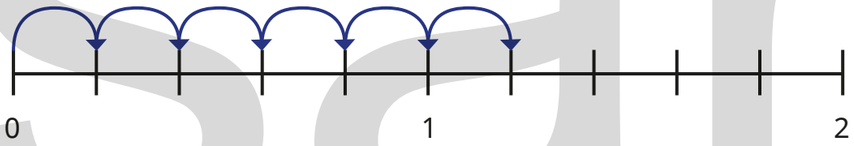
Explain your answer.

5 Complete the multiplications.

Use the number lines to help you.

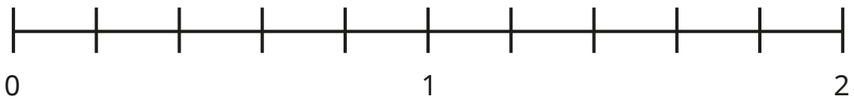
Give each answer as an improper fraction and as a mixed number.

a)



$6 \times \frac{1}{5} = \square = \square$

b)



$9 \times \frac{1}{5} = \square = \square$

6 Complete the multiplications.

Give each answer as an improper fraction and as a mixed number.

a) $11 \times \frac{1}{10} = \square = \square$

b) $11 \times \frac{1}{9} = \square = \square$

c) $\frac{1}{8} \times 11 = \square = \square$

d) $11 \times \frac{1}{7} = \square = \square$

e) $11 \times \frac{1}{6} = \square = \square$

What pattern do you notice?

Does this pattern continue?

7 Complete the calculations.

a) $\square \times \frac{1}{3} = \frac{2}{3}$

b) $\square \times \frac{1}{3} = 1$

c) $\square \times \frac{1}{7} = 1$

d) $\frac{1}{7} \times \square = 1\frac{3}{7}$

e) $\frac{1}{8} \times \square = 1\frac{3}{8}$

f) $\square \times \frac{1}{2} = 3\frac{1}{2}$

g) $\square \times \frac{1}{3} = 3\frac{1}{3}$

h) $\frac{1}{4} \times \square = 3\frac{1}{4}$

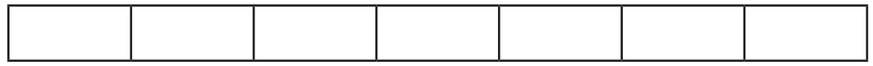
sample

Multiply a non-unit fraction by an integer

1 Complete the calculations.

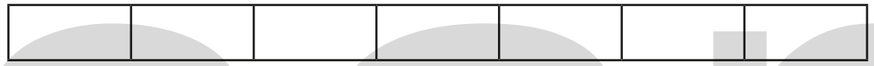
Use the bar models to help you.

a)



$\frac{2}{7} + \frac{2}{7} =$ ☐ $2 \times \frac{2}{7} =$ ☐

b)

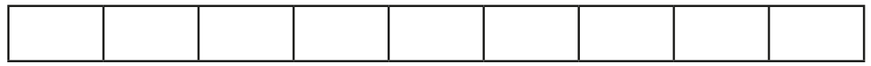


$\frac{2}{7} + \frac{2}{7} + \frac{2}{7} =$ ☐ $3 \times \frac{2}{7} =$ ☐

c)

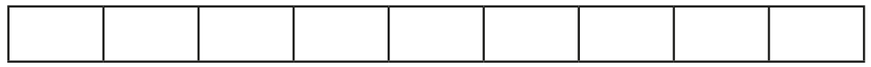
$\frac{3}{10} + \frac{3}{10} + \frac{3}{10} =$ ☐ $3 \times \frac{3}{10} =$ ☐

d)



$\frac{2}{9} + \frac{2}{9} + \frac{2}{9} + \frac{2}{9} =$ ☐ $4 \times \frac{2}{9} =$ ☐

e)



$\frac{4}{9} + \frac{4}{9} =$ ☐ $2 \times \frac{4}{9} =$ ☐

What do you notice about parts c) and d)? Talk to a partner.

2 Complete the multiplications.

a) $2 \times \frac{3}{7} =$ ☐

b) $3 \times \frac{3}{11} =$ ☐

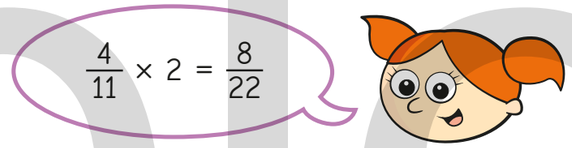
c) $\frac{2}{11} \times 4 =$ ☐

d) $5 \times \frac{2}{11} =$ ☐

e) $\frac{2}{15} \times 7 =$ ☐

f) $\frac{7}{15} \times 2 =$ ☐

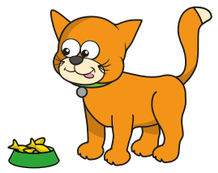
3



Explain the mistake that Alex has made.

4 A cat eats $\frac{2}{15}$ of a bag of biscuits a day.

What fraction of the bag does the cat eat in 4 days?



☐

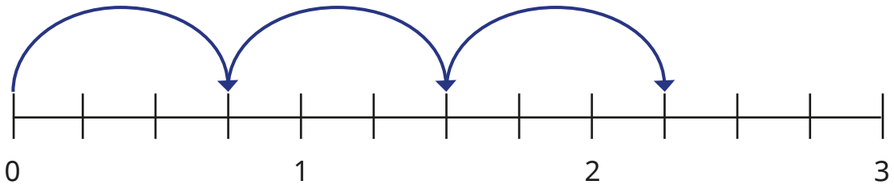
sample

5 Complete the multiplications.

Use the number lines to help you.

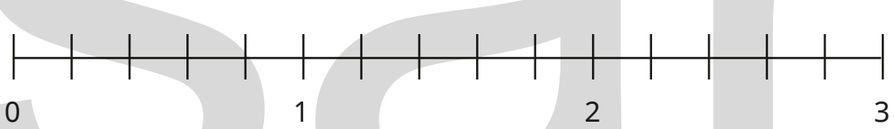
Give each answer as an improper fraction and as a mixed number.

a)



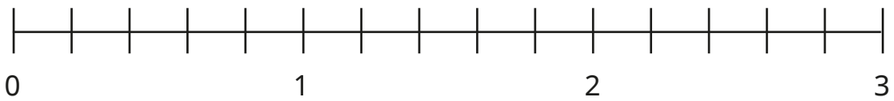
$3 \times \frac{3}{4} = \square = \square$

b)



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

c)



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

6 Complete the multiplications.

Give each answer as an improper fraction and as a mixed number.

a) $5 \times \frac{2}{3} = \square = \square$

b) $4 \times \frac{4}{5} = \square = \square$

c) $\frac{2}{7} \times 11 = \square = \square$

d) $4 \times \frac{7}{9} = \square = \square$

e) $17 \times \frac{2}{11} = \square = \square$

Describe the pattern you can see in the answers.

What could the next multiplication in the pattern be?

Write two possible options.

7 Here are some digit cards.

1	3	5	7

Use the digit cards to complete the multiplication.

$\square \times \frac{\square}{8} = \frac{15}{8} = \square\frac{\square}{8}$

sample

Multiply a mixed number by an integer

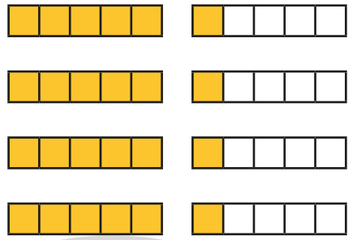
1 Complete the calculations.

a) $4 \times 1\frac{1}{5}$

$4 \times 1 =$ ☐

$4 \times \frac{1}{5} =$ ☐

☐ + ☐ = ☐

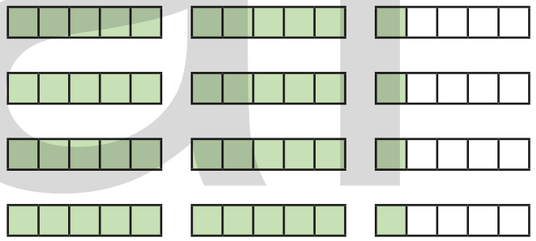


b) $4 \times 2\frac{1}{5}$

☐ × 2 = ☐

4 × ☐ = ☐

☐ + ☐ = ☐

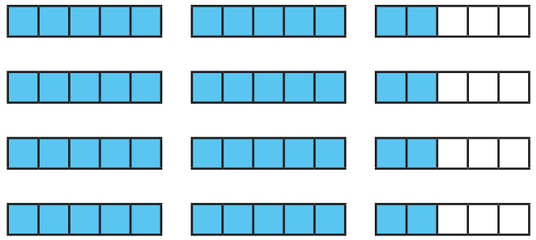


c) $4 \times 2\frac{2}{5}$

☐ × ☐ = ☐

4 × ☐ = ☐ = ☐

☐ + ☐ = ☐

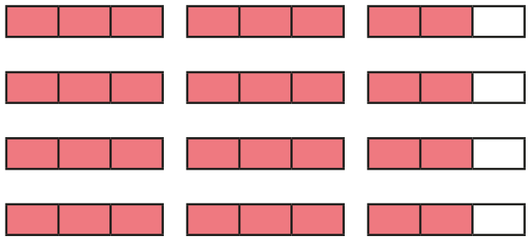


d) $4 \times 2\frac{2}{3}$

☐ × ☐ = ☐

☐ × ☐ = ☐ = ☐

☐ + ☐ = ☐



2 Complete the multiplications.

a) $3 \times 8\frac{2}{7} =$ ☐

b) $2 \times 12\frac{2}{11} =$ ☐

c) $6\frac{2}{11} \times 4 =$ ☐

d) $4 \times 6\frac{3}{19} =$ ☐

e) $2\frac{2}{25} \times 12 =$ ☐

f) $3\frac{1}{15} \times 8 =$ ☐

What is the same and what is different about your answers?

3 The mass of one bag of potatoes is $1\frac{3}{4}$ kg.

What is the mass of five bags of potatoes?

☐ kg

sample

4 Complete the calculations.

a) $5 \times 2\frac{2}{3} = 10 + \frac{10}{3} =$ ☐

b) $4\frac{3}{7} \times 5 = 20 +$ ☐ = ☐

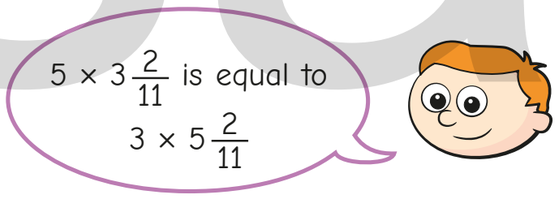
c) $8 \times 2\frac{5}{12} =$ ☐ + ☐ = ☐

d) $7 \times 3\frac{1}{5} =$ ☐ + ☐ = ☐

e) $4\frac{2}{9} \times 8 =$ ☐ + ☐ = ☐

f) $11 \times 4\frac{3}{10} =$ ☐ + ☐ = ☐

5



Do you agree with Ron? _____

Explain your answer.

_____

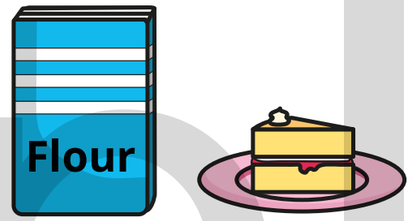
_____

6 Eva drinks $3\frac{1}{3}$ litres of water every day.

How many litres of water does she drink in a week?

☐ l

7 Here are the ingredients for making a large cake.



Butter $1\frac{3}{8}$ kg

Sugar $1\frac{5}{16}$ kg

Self-raising flour $2\frac{1}{4}$ kg

6 eggs

a) How much flour is needed for three cakes?

☐ kg

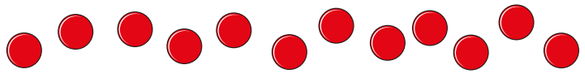
b) Dora makes four cakes.

How much more butter does she use than sugar?

☐ kg

Calculate a fraction of a quantity

1 Here are 12 counters.



a) Draw to share the counters equally into 3 groups.

b) Complete the sentences.

When 12 counters are shared equally into 3 groups, there are ☐ counters in each group.

12 shared equally between 3 is equal to ☐

$\frac{1}{3}$ of 12 is equal to ☐

2 Kim shares 15 sweets equally between 5 bags.

a) How many sweets are there in each bag?

Complete the sentences.

There are ☐ sweets in each bag.

$\frac{1}{5}$ of 15 is equal to ☐

b) Kim gives Ron 2 of the bags.

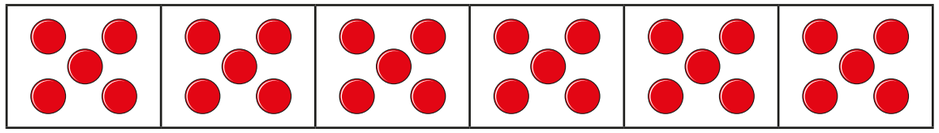
How many sweets does Ron have?

Complete the sentences.

Ron gets ☐ sweets.

$\frac{2}{5}$ of 15 is equal to ☐

3 The bar model shows how 30 counters have been shared into 6 equal groups.



Use the bar model to complete the calculations.

a) $\frac{1}{6}$ of 30 = ☐

b) $\frac{2}{6}$ of 30 = ☐

c) $\frac{3}{6}$ of 30 = ☐

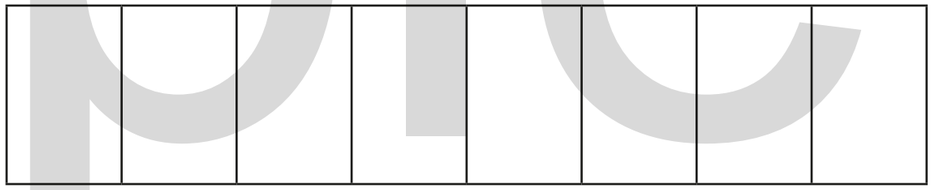
d) $\frac{4}{6}$ of 30 = ☐

e) $\frac{5}{6}$ of 30 = ☐

f) $\frac{6}{6}$ of 30 = ☐

What do you notice?

4 Use the bar model to complete the calculations.



a) $\frac{1}{8}$ of 32 = ☐

b) $\frac{2}{8}$ of 32 = ☐

c) $\frac{3}{8}$ of 32 = ☐

d) $\frac{4}{8}$ of 32 = ☐

e) $\frac{5}{8}$ of 32 = ☐

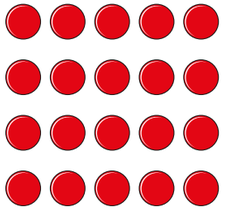
f) $\frac{6}{8}$ of 32 = ☐

g) $\frac{7}{8}$ of 32 = ☐

h) $\frac{8}{8}$ of 32 = ☐

sample

5 Here is an array of 20 counters.



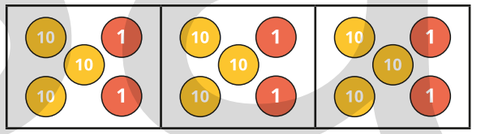
a) Draw on the array to show that $\frac{1}{4}$ of 20 = 5

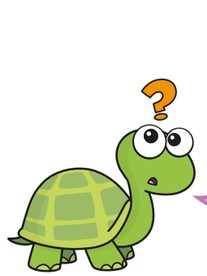
b) Use the array to find $\frac{3}{4}$ of 20 ☐

c) Use the array to find $\frac{1}{5}$ of 20 ☐

d) Use the array to find $\frac{4}{5}$ of 20 ☐

6 Tiny is using place value counters to find $\frac{2}{3}$ of 96





I can only see that $\frac{1}{3}$ of 96 is equal to 32
I do not know how to find $\frac{2}{3}$ of 96

a) Explain how Tiny can work out $\frac{2}{3}$ of 96

b) What is $\frac{2}{3}$ of 96? ☐

7 Use place value counters and bar models to work out the fractions of amounts.

a) $\frac{2}{5}$ of 55 = ☐

b) $\frac{3}{4}$ of 84 = ☐

c) $\frac{2}{3}$ of 396 = ☐

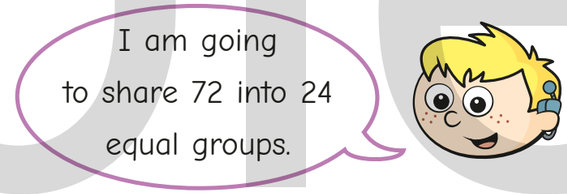
d) $\frac{3}{8}$ of 24 = ☐

e) $\frac{4}{7}$ of 35 = ☐

f) $\frac{7}{10}$ of 40 = ☐

Which calculations did you find easier?

8 Max wants to find $\frac{4}{24}$ of 72



I am going to share 72 into 24 equal groups.

a) Explain what Max could do first to make the calculation easier.

_____

_____

b) What is $\frac{4}{24}$ of 72? ☐

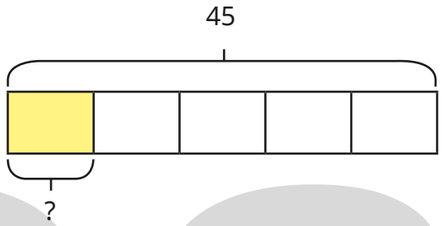
sample

Fraction of an amount

1 Annie and Mo are finding fractions of amounts.

a) Annie is trying to find $\frac{1}{5}$ of 45

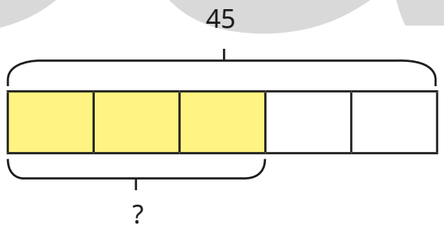
She draws this bar model.



How does the bar model represent the calculation?

What is $\frac{1}{5}$ of 45?

b) Mo is trying to find $\frac{3}{5}$ of 45



How does the bar model represent the calculation?

What is $\frac{3}{5}$ of 45?

What is the same and what is different about Annie and Mo's questions?

2 Complete the calculations.

a) $\frac{1}{3}$ of 27 = ☐ **b)** $\frac{1}{3}$ of 72 = ☐ **c)** $\frac{1}{3}$ of 90 = ☐

$\frac{2}{3}$ of 27 = ☐ $\frac{1}{6}$ of 72 = ☐ $\frac{2}{6}$ of 90 = ☐

$\frac{3}{3}$ of 27 = ☐ $\frac{1}{12}$ of 72 = ☐ $\frac{3}{9}$ of 90 = ☐

What patterns do you notice?

3 Match the calculations to the correct amounts.

$\frac{5}{8}$ of 48	32
$\frac{2}{3}$ of 48	40
$\frac{5}{6}$ of 48	30
$\frac{3}{4}$ of 48	36

sample

4 Write <, > or = to compare the calculations.

a) $\frac{5}{7}$ of 56 ◯ $\frac{5}{8}$ of 56

b) $\frac{4}{7}$ of 56 ◯ $\frac{5}{8}$ of 56

c) $\frac{2}{3}$ of 63 ◯ $\frac{5}{8}$ of 64

d) $\frac{7}{10}$ of 350 ◯ $\frac{5}{7}$ of 350

5 165 children and adults go on a school trip.

Two-thirds of the people are children.

a) How many adults are there on the school trip?

b) $\frac{3}{5}$ of the children are boys.

How many boys are there on the school trip?

c) $\frac{7}{10}$ of the children have an apple for lunch.

How many children do **not** have an apple for lunch?

6 Tick the odd one out.

$\frac{3}{4}$ of 80	$\frac{3}{8}$ of 160	$\frac{2}{3}$ of 90	$\frac{3}{4}$ of 100

Explain your choice.

7 320 people were asked to name their favourite flavour of ice cream.

Here is a pictogram showing the results.

vanilla	
strawberry	
chocolate	
mint choc chip	

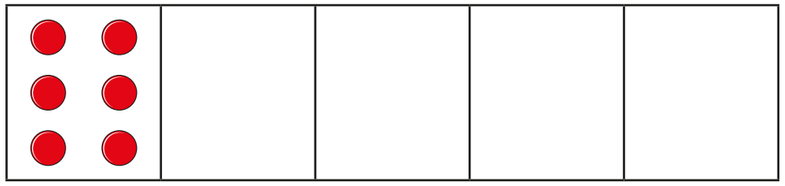
a) How many people chose mint choc chip?

b) How many more people chose vanilla than chose chocolate?

sample

Find the whole

1 The bar model shows that $\frac{1}{5}$ of an amount is equal to 6



a) Draw counters in the other parts to complete the bar model.

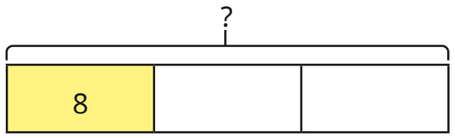
b) Use the bar model to work out these fractions of the amount.

$\frac{2}{5} =$ ☐ $\frac{4}{5} =$ ☐

$\frac{3}{5} =$ ☐ $\frac{5}{5} =$ ☐

c) What is the whole? ☐

2 The bar model shows that $\frac{1}{3}$ of an amount is 8



a) Complete the bar model.

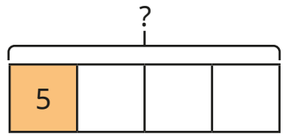
b) Use the bar model to work out these fractions of the amount.

$\frac{2}{3} =$ ☐ $\frac{3}{3} =$ ☐

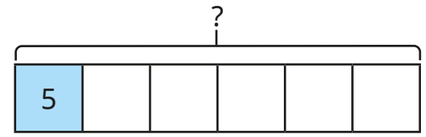
c) What is the whole? ☐

3 Use the bar models to complete the statements.

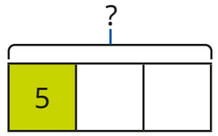
a) $\frac{1}{4}$ of ☐ = 5



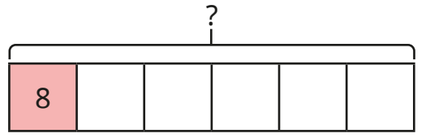
c) $\frac{1}{6}$ of ☐ = 5



b) $\frac{1}{3}$ of ☐ = 5

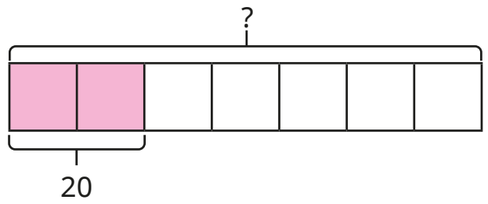


d) $\frac{1}{6}$ of ☐ = 8



What do you notice?

4 The bar model shows that $\frac{2}{7}$ of an amount is equal to 20



a) What is $\frac{1}{7}$ of the same amount? ☐

How do you know?

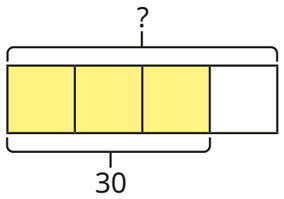
b) Complete the bar model.

c) What is the whole? ☐

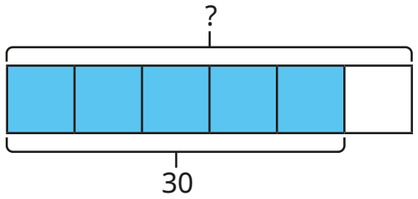
sample

5 Use the bar models to complete the statements.

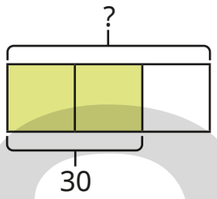
a) $\frac{3}{4}$ of ☐ = 30



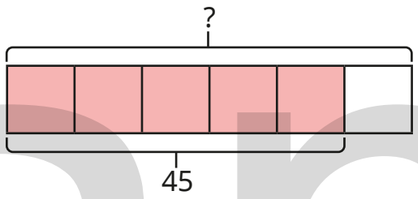
c) $\frac{5}{6}$ of ☐ = 30



b) $\frac{2}{3}$ of ☐ = 30



d) $\frac{5}{6}$ of ☐ = 45

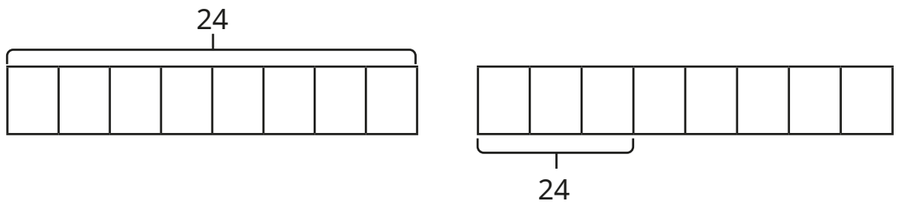


What do you notice?

6 Use the bar models to complete the statements.

a) $\frac{3}{8}$ of 24 = ☐

b) $\frac{3}{8}$ of ☐ = 24



What is the same about the statements? What is different?

7 Jo is $\frac{2}{3}$ of the way through a race.

She has run 3,000 m so far.

How long is the race?

☐ m

8 Max drinks $\frac{3}{4}$ of a bottle of juice.

There is 100 ml of juice left in the bottle.

How much juice was in the bottle when it was full?

☐ ml

9 $\frac{10}{7}$ of a number is 350

What is the number?

☐

10

$\frac{2}{3}$ of A = $\frac{3}{5}$ of B = $\frac{1}{4}$ of C

$\frac{1}{2}$ of C = 600

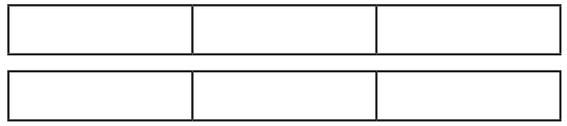
Work out the values of A, B and C.

A = ☐ B = ☐ C = ☐

sample

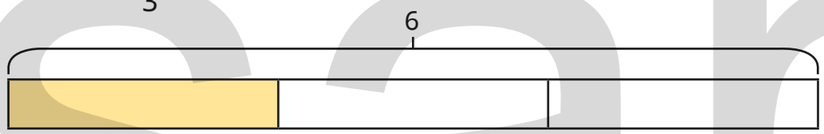
Use fractions as operators

1 **a)** Work out $\frac{1}{3} \times 6$



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

b) Work out $\frac{1}{3}$ of 6



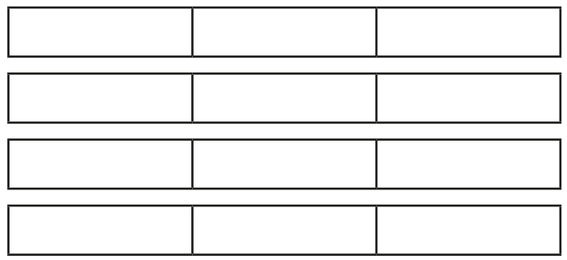
$\frac{1}{3}$ of 6 = $\square \div \square = \square$

What is the same about these calculations?

2 **a)** Work out $\frac{2}{3}$ of 6

$\frac{2}{3}$ of 6 = $\square \div \square \times 2 = \square$

b) Work out $\frac{2}{3} \times 6$



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

3 Complete the calculations.

a) $\frac{1}{3} \times 12 = \square$

$\frac{1}{3}$ of 12 = $\square$

b) $12 \times \frac{1}{4} = \square$

$\frac{1}{4}$ of 12 = $\square$

c) $12 \times \frac{2}{3} = \square$

$\frac{2}{3}$ of 12 = $\square$

d) $\frac{3}{4} \times 12 = \square$

$\frac{3}{4}$ of 12 = $\square$

What do you notice?

4 Tick the calculation in each pair that is easier to work out.

a)	$\frac{1}{5} \times 7$	$\frac{1}{5}$ of 7
b)	$\frac{1}{5} \times 10$	$\frac{1}{5}$ of 10
c)	$\frac{3}{5} \times 10$	$\frac{3}{5}$ of 10
d)	$\frac{3}{10} \times 5$	$\frac{3}{10}$ of 5

Compare answers with a partner.

sample

5 Complete the calculations.

a) $\frac{5}{6} \times 12 = \frac{\square}{\square}$ of 12 = $\square$

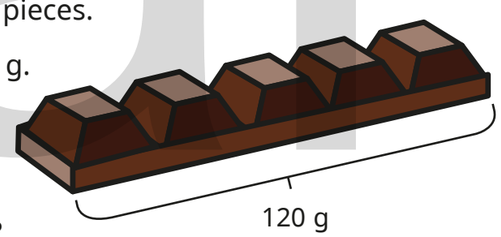
b) $\frac{3}{4} \times 24 = \frac{\square}{\square}$ of 24 = $\square$

c) $\frac{2}{7} \times \square = \frac{\square}{\square}$ of 28 = $\square$

d) $\frac{\square}{\square} \times 45 = \frac{4}{5}$ of $\square$ = $\square$

6 A bar of chocolate has five equal pieces.

The mass of the whole bar is 120 g.



What is the mass of three pieces?

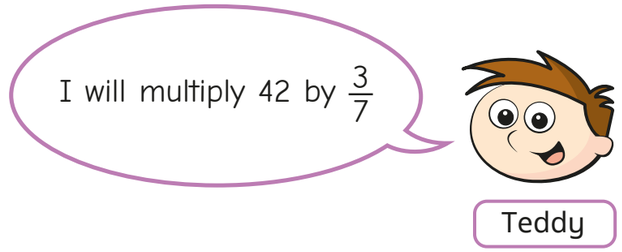
a) Write two calculations that will give the answer to the question.

b) Work out the answer.

$\square$

7 Teddy and Annie are working out $\frac{3}{7} \times 42$

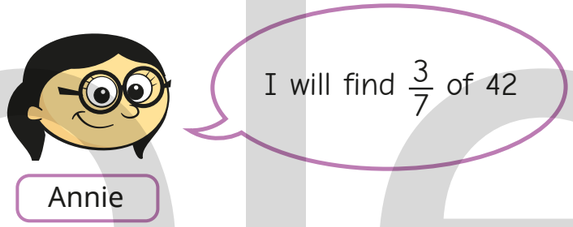
a)



Use Teddy's method to work out the calculation.

$\square$

b)



Use Annie's method to work out the calculation.

$\square$

c) Whose method do you prefer? _____

Explain your reasoning.

_____

_____

_____

d) When is it easier to find fractions of amounts rather than multiply fractions?

Give some examples for each method.

sample

sample

sample

sample

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