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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 a fraction by a whole number

Discover



- I** a) The boat uses $\frac{1}{3}$ of a tank of fuel for each trip.
How many tanks of fuel are used in a day?
- b) What is the total duration of the boat trips in a day?

Share

- a) Each trip uses $\frac{1}{3}$ of a tank of fuel.

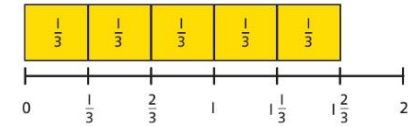
There are 5 trips in a day.

$$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{5}{3} = 1\frac{2}{3}$$

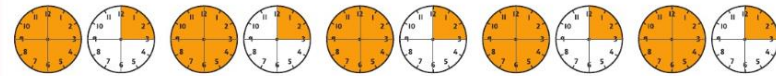
or

$$\frac{1}{3} \times 5 = \frac{5}{3} = 1\frac{2}{3}$$

$1\frac{2}{3}$ tanks of fuel are used in a day.



- b) Each boat trip takes $1\frac{1}{4}$ hours and there are 5 trips a day.



I can multiply the whole and the fraction separately and then add them.

Method 1

$$1 \times 5 = 5$$

$$\frac{1}{4} \times 5 = \frac{5}{4} = 1\frac{1}{4}$$

$$5 + 1\frac{1}{4} = 6\frac{1}{4}$$



I will convert the mixed number to an improper fraction first.

Method 2

$$1\frac{1}{4} = \frac{5}{4}$$

$$\frac{5}{4} \times 5 = \frac{25}{4}$$

$$\frac{25}{4} = 6\frac{1}{4}$$



The total duration of the boat trips in a day is $6\frac{1}{4}$ hours.

Lesson 1

Multiplying a fraction by a whole number

1 a) Work out $\frac{1}{4} \times 7$.

$$\frac{1}{4} \times 7 = \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$$



b) Work out $\frac{2}{5} \times 4$.

$$\frac{2}{5} \times 4 = \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$$



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

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





2 Work out these multiplications.

a) $\frac{1}{2} \times 7 = \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$

c) $\frac{3}{8} \times 6 = \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$

b) $\frac{4}{5} \times 3 = \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$

d) $\frac{7}{10} \times 5 = \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$



3 Work out $1\frac{3}{5} \times 3$ in two different ways.



$$1 \times 3 = \boxed{}$$

$$\text{and } 1\frac{3}{5} = \frac{\boxed{}}{5}$$

$$\frac{3}{5} \times 3 = \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$$

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

$$\boxed{} + \boxed{} \frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$$


$$\frac{\boxed{}}{\boxed{}} = \boxed{} \frac{\boxed{}}{\boxed{}}$$

$$\text{So } 1\frac{3}{5} \times 3 = \boxed{} \frac{\boxed{}}{\boxed{}}.$$

4 Work out these multiplications.

a) $\frac{11}{5} \times 6$


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


b) $2\frac{1}{3} \times 8$


d) $6 \times 3\frac{2}{5}$


5 Kate says $\frac{2}{3} \times 4 = \frac{8}{12}$. What mistake has Kate made?

Lesson 2

Multiplying a fraction by a fraction

Discover

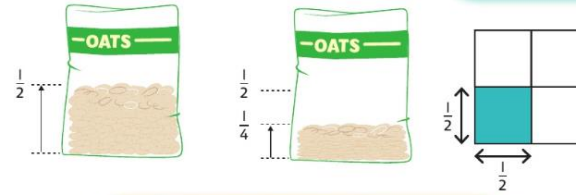


1 Bella and Amal are making flapjacks.

- a) They have $\frac{1}{2}$ a bag of oats. They need to use $\frac{1}{2}$ of the oats in the bag.
What fraction of a whole bag do they need to use?
- b) They have $\frac{3}{4}$ of a block of butter.
They need $\frac{1}{2}$ of this to make the flapjack.
What fraction of a whole block do they need to use?

Share

- a) There is $\frac{1}{2}$ a bag of oats.
Bella and Amal need to use $\frac{1}{2}$ of the oats in the bag.



I used a grid. I labelled $\frac{1}{2}$ along the bottom and $\frac{1}{2}$ on the side. I shaded in the part of the grid where the $\frac{1}{2}$ labels lined up.

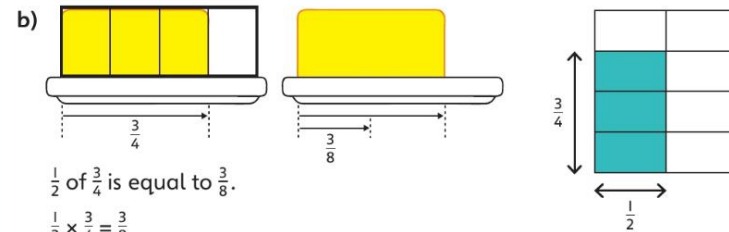


I think $\frac{1}{2}$ of $\frac{1}{2}$ means the same as $\frac{1}{2} \times \frac{1}{2}$.

$\frac{1}{2}$ of $\frac{1}{2}$ is equal to $\frac{1}{4}$.

Write this as $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$.

Bella and Amal need to use $\frac{1}{4}$ of a bag of oats.



Bella and Amal need to use $\frac{3}{8}$ of a block of butter.

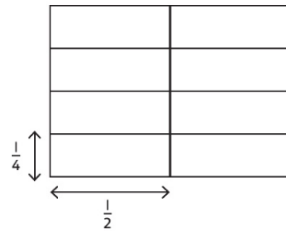
Lesson 2

Multiplying a fraction by a fraction

1 Zac is baking cookies.

a) The bag of flour is $\frac{1}{4}$ full. He uses $\frac{1}{2}$ of the flour in the bag.

What fraction of the whole bag does Zac use?



$$\frac{1}{2} \times \frac{1}{4} = \frac{\square}{\square}$$

Zac uses $\frac{\square}{\square}$ of the bag of flour.

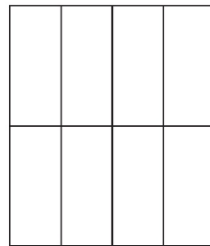
b) The bag of chocolate chips is $\frac{1}{2}$ full.

Zac needs $\frac{3}{4}$ of the chocolate chips.

What fraction of the whole bag does he need?

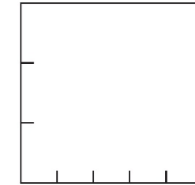
$$\frac{\square}{\square} \times \frac{\square}{\square} = \frac{\square}{\square}$$

Zac needs $\frac{\square}{\square}$ of the bag.



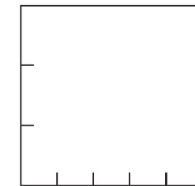
2 a) Complete the diagram to work out $\frac{1}{5} \times \frac{1}{3}$.

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



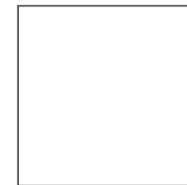
b) Complete the diagram to work out $\frac{2}{3}$ of $\frac{2}{5}$.

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

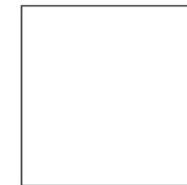


3 Draw diagrams to help you work out these calculations. Give each answer in its simplest form.

a) $\frac{3}{4} \times \frac{2}{5} = \frac{\square}{\square}$



b) $\frac{2}{3}$ of $\frac{5}{6} = \frac{\square}{\square}$



Lesson 3

Dividing a fraction by a whole number

Discover



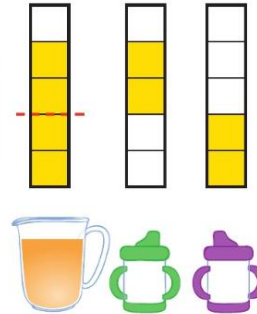
- 1** a) The jug is $\frac{4}{5}$ full of juice.
The juice is divided equally between the 2 empty cups.
What fraction of the original jug is in each of these cups?
- b) $\frac{9}{10}$ of the jar of baby food will be enough for 3 equal meals.
What fraction of the jar of baby food should be put into each bowl?

Share

- a) There is $\frac{4}{5}$ of the jug to be shared equally between 2 cups.



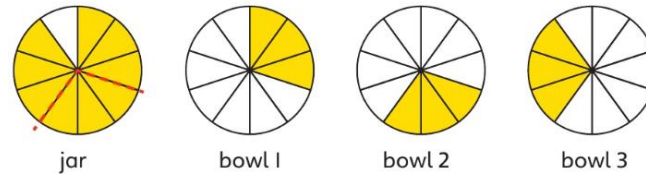
I drew a diagram to represent the juice in the jug and then I divided this by 2. I can write this as a division.



$$\frac{4}{5} \div 2 = \frac{2}{5}$$

$\frac{2}{5}$ of the original jug is in each cup.

- b) There is $\frac{9}{10}$ of the jar to be shared equally into 3 bowls.



$$\frac{9}{10} \div 3 = \frac{3}{10}$$

$\frac{3}{10}$ of the jar of baby food should be put into each bowl.

Lesson 3

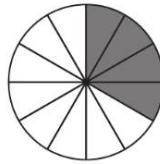
Dividing a fraction by a whole number

- 1 This circle is divided into twelfths.
4 of the twelfths can be divided into 2 equal groups.
How many twelfths are there in each group?

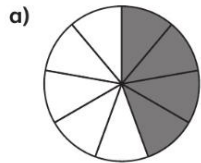
There are twelfths in each group.

Write this as a division.

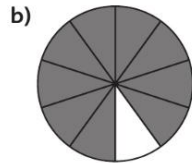
$$\frac{4}{12} \div 2 = \frac{\boxed{}}{\boxed{}}$$



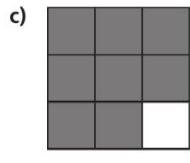
- 2 Use the diagrams to help you work out the divisions.



$$\frac{4}{9} \div 2 = \frac{\boxed{}}{\boxed{}}$$



$$\frac{9}{10} \div 3 = \frac{\boxed{}}{\boxed{}}$$



$$\frac{8}{9} \div 2 = \frac{\boxed{}}{\boxed{}}$$

- 3 Work out these divisions.

a) $\frac{10}{11} \div 5 = \frac{\boxed{}}{\boxed{}}$

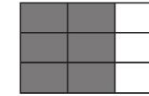


b) $\frac{4}{5} \div 4 = \frac{\boxed{}}{\boxed{}}$



- 4 Write a calculation for this diagram.

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



- 5 Work out these divisions.

a) $\frac{5}{9} \div 5 = \frac{\boxed{}}{\boxed{}}$

c) $\frac{6}{7} \div 2 = \frac{\boxed{}}{\boxed{}}$

b) $\frac{3}{4} \div 3 = \frac{\boxed{}}{\boxed{}}$

d) $\frac{8}{15} \div 2 = \frac{\boxed{}}{\boxed{}}$

- 6 Complete these number sentences.

a) $\frac{\boxed{}}{5} \div 2 = \frac{1}{5}$

c) $\frac{14}{15} \div \boxed{} = \frac{2}{15}$

d) $\frac{40}{45} \div \boxed{} = \frac{4}{45}$

$\frac{\boxed{}}{5} \div 2 = \frac{2}{5}$

$\frac{14}{15} \div \boxed{} = \frac{7}{15}$

$\frac{40}{45} \div \boxed{} = \frac{5}{45}$

b) $\frac{\boxed{}}{20} \div 3 = \frac{2}{20}$

$\frac{14}{15} \div \boxed{} = \frac{1}{15}$

$\frac{40}{45} \div \boxed{} = \frac{20}{45}$

$\frac{\boxed{}}{20} \div 3 = \frac{5}{20}$

$\frac{14}{15} \div \boxed{} = \frac{14}{15}$

$\frac{40}{45} \div \boxed{} = \frac{8}{45}$

Lesson 4

Calculating fractions of amounts

Discover



- 1 a) The apples are shared into the baskets equally.
How many apples will the Year 6 children get?
- b) The Year 6 children eat $\frac{3}{10}$ of their apples in the morning and the remaining apples in the afternoon.
How many apples do they eat in the afternoon?

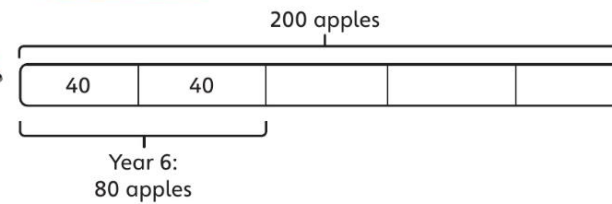
Share

- a) There are 200 apples in the box.

The apples are shared equally between the baskets.

There are only 4 year groups, so will Year 6 receive $\frac{1}{4}$ of the apples, which is 50?

No, there are two baskets for Year 6, so the apples are shared between 5 baskets.



The 200 apples are shared between 5 baskets.

$$\frac{1}{5} \text{ of } 200 = 200 \div 5 = 40$$

There are 2 baskets for Year 6. The Year 6 children will get $\frac{2}{5}$ of the apples.

$$\frac{2}{5} \text{ of } 200 = 2 \times 40 = 80$$

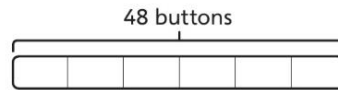
The Year 6 children will get 80 apples.

Lesson 4

Calculating fractions of amounts

- 1 There are 48 buttons in a box. $\frac{5}{6}$ of the buttons are red and the rest are blue.

How many buttons are blue?



- 2 Andy won £720 in a competition. He gave $\frac{1}{3}$ of the money to his sister.

How much money did he have left?

- 3 Kate and Ebo each bake 60 cookies for charity. Kate sells $\frac{2}{3}$ of her cookies. Ebo sells $\frac{7}{12}$ of his cookies.

Who sells more cookies? How many more?

- 4 A box of chocolates costs £4.80. Sofia pays $\frac{4}{5}$ and Holly pays the rest. How much more does Sofia pay than Holly?

- 5 Work out these calculations.

a) $\frac{9}{10}$ of 170 km = km

c) $\frac{1}{7}$ of 0.35 km = km

b) $\frac{1}{5}$ of 3 hours = hours

I wonder if I can change the units in parts b) and c).

