

# Contents

## Week 1 – Multiplication and division

Multiplying 2-digit numbers (1)	4
Multiplying 2-digit numbers (2)	8
Division with remainders	12
<b>Area and perimeter</b>	<b>16</b>
Calculating perimeter	16

## Week 2 – Area and perimeter cont.

Calculating area	20
<b>Fractions</b>	<b>24</b>
Equivalent fractions	24
Converting improper fractions to mixed numbers	28
Comparing and ordering fractions	32

## Week 3 – Fractions cont.

Adding and subtracting fractions with the same denominator	36
Adding fractions (1)	40
Adding fractions (2)	44
Subtracting fractions	48

## Week 4 – Fractions cont.

Multiplying fractions (1)	52
Multiplying fractions (2)	56
Solving problems – fractions	60
Calculating fractions of amounts	64

## Week 5 – Decimals and percentages

Decimals as fractions	68
Understanding thousandths	72
Rounding decimals	76
Ordering and comparing decimals	80

4

4

8

12

16

16

20

20

24

24

28

32

36

36

40

44

48

52

52

56

60

64

68

68

72

76

80

This tells you which page you need.



## Week 6 – Decimals and percentages cont.

Understanding percentages	84
Percentages as fractions and decimals	88
<b>Decimals</b>	<b>92</b>
Adding and subtracting decimals (1)	92
Adding and subtracting decimals (2)	96

## Week 7 – Decimals cont.

Adding and subtracting decimals (3)	100
Adding and subtracting decimals (4)	104
Multiplying decimals by 10, 100 and 1,000	108
Dividing decimals by 10, 100 and 1,000	112

## Week 8 – Geometry – properties of shapes

Measuring with a protractor	116
Drawing lines and angles accurately	120
Calculating angles on a straight line	124
Calculating angles around a point	128

## Week 9 – Geometry – properties of shapes cont.

Regular and irregular polygons	132
Reasoning about 3D shapes	136
<b>Geometry – position and direction</b>	<b>140</b>
Reflection with coordinates	140
Translation with coordinates	144

## Week 10 – Measure – converting units

Metric units	148
Imperial units of length	152
Converting units of time	156
Timetables	160

Answers to Practice questions	164
-------------------------------	-----

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 fractions 1

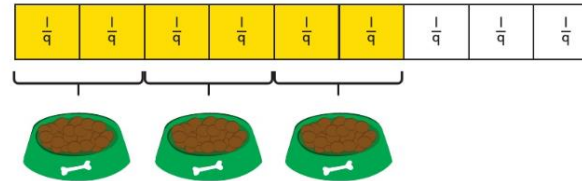
### Discover



- a) What fraction of the box is needed each day for the 3 dogs?
- b) How many boxes of dog food will Lexi and her mum need to buy to feed the dogs for 5 days?

### Share

- a) Each dog needs  $\frac{2}{9}$  of the box. There are 3 dogs.



Using addition:  $\frac{2}{9} + \frac{2}{9} + \frac{2}{9} = \frac{6}{9} = \frac{2}{3}$

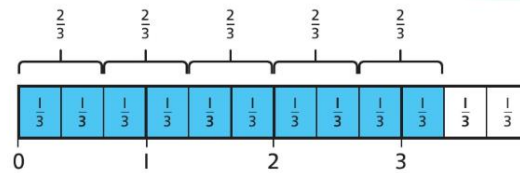
Using multiplication:  $\frac{2}{9} \times 3 = \frac{6}{9} = \frac{2}{3}$

$\frac{2}{3}$  of the box is needed each day for the 3 dogs.

- b) Each day the dogs need  $\frac{2}{3}$  of a box.

There are 5 days.

$$\frac{2}{3} \times 5 = \frac{10}{3} = 3\frac{1}{3}$$



The dogs need  $3\frac{1}{3}$  boxes for 5 days. Lexi and her mum will need to buy 4 boxes to feed the dogs for 5 days.

I think it is simpler to multiply. To work out how many  $\frac{1}{3}$ s, I work out  $2 \times 5 = 10$ .



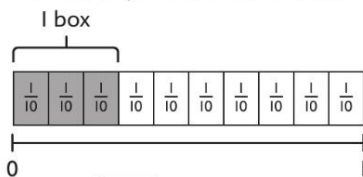
# Lesson 1

## Multiplying fractions 1

1 Each box contains  $\frac{3}{10}$  of a pizza.



How much pizza is there in total?



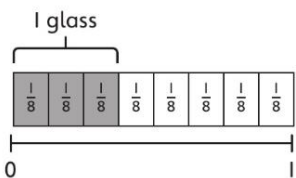
$$\frac{3}{10} \times 3 = \frac{\boxed{\phantom{000}}}{10}$$

There are  $\frac{\boxed{\phantom{000}}}{10}$  of a pizza in total.

2 Each glass contains  $\frac{3}{8}$  litres of milk.



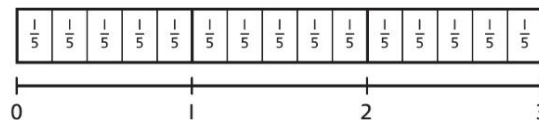
How many litres of milk are there in total?



$$\frac{3}{8} \times 5 = \frac{\boxed{\phantom{000}}}{8} = \boxed{\phantom{000}} \frac{\boxed{\phantom{000}}}{8}$$

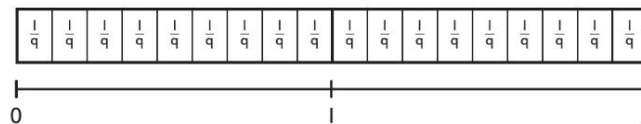
There are  $\boxed{\phantom{000}} \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$  litres of milk in total.

3 a) Use the model to help you work out  $\frac{3}{5} \times 4$ .



$$\frac{3}{5} \times 4 = \frac{\boxed{\phantom{000}}}{5} = \boxed{\phantom{000}} \frac{\boxed{\phantom{000}}}{5}$$

b) Use the model to help you work out  $2 \times \frac{7}{9}$ .



$$2 \times \frac{7}{9} = \frac{\boxed{\phantom{000}}}{9} = \boxed{\phantom{000}} \frac{\boxed{\phantom{000}}}{9}$$

4 Complete these multiplications.

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

c)  $\frac{3}{4} \times 7$

b)  $\frac{5}{6} \times 6$

d)  $11 \times \frac{3}{5}$

## Multiplying fractions 2

### Discover

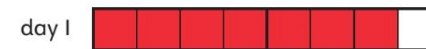


- 1** a) How far does the glacier travel in 3 days?
- b) How many days will it take the glacier to travel more than 15 yards?

### Share

- a) The glacier moves  $1\frac{3}{4}$  yards each day.

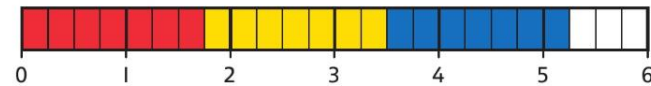
Multiply  $1\frac{3}{4}$  by 3 to work out how far it moves in 3 days.



I converted  $1\frac{3}{4}$  to an improper fraction. I then multiplied by 3.



$$1\frac{3}{4} = \frac{7}{4}$$



$$\frac{7}{4} \times 3 = \frac{21}{4} = 5\frac{1}{4}$$

The glacier travels  $5\frac{1}{4}$  yards in 3 days.

- b) Multiply  $\frac{7}{4}$  by different numbers until the answer is greater than 15.

$$\frac{7}{4} \times 6 = \frac{42}{4} = 10\frac{2}{4}$$

$$\frac{7}{4} \times 7 = \frac{49}{4} = 12\frac{1}{4}$$

$$\frac{7}{4} \times 8 = \frac{56}{4} = 14$$

$$\frac{7}{4} \times 9 = \frac{63}{4} = 15\frac{3}{4}$$

I used trial and error to find the correct answer.

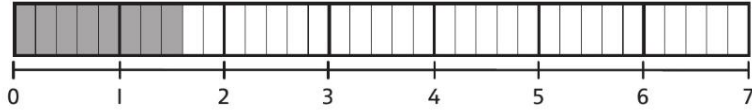


After 9 days, the glacier has moved more than 15 yards.

# Lesson 2

## Multiplying fractions 2

1 A bag of flour has a mass of  $1\frac{3}{5}$  kg.



a) What is the mass of two bags of flour?

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

$$\frac{\square}{5} \times 2 = \frac{\square}{5} = \square \frac{\square}{5} \text{ kg}$$

b) What is the mass of 3 bags of flour?

$$\frac{\square}{5} \times 3 = \frac{\square}{5} = \square \frac{\square}{5} \text{ kg}$$

c) What is the mass of 4 bags of flour?

$$\frac{\square}{5} \times 4 = \frac{\square}{5} = \square \frac{\square}{5} \text{ kg}$$

2 A box needs  $2\frac{1}{4}$  metres of sticky tape to seal.

How much sticky tape is needed to seal 5 boxes?



$\square \frac{\square}{\square}$  m of sticky tape is needed to seal 5 boxes.

3 Work out these multiplications.


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

b)  $1\frac{2}{3} \times 5 = \frac{\square}{3} \times 5$   
 $= \frac{\square}{3}$   
 $= \square \frac{\square}{3}$

c)  $1\frac{2}{3} \times 7 = \frac{\square}{3} \times 7$   
 $= \frac{\square}{3}$   
 $= \square \frac{\square}{3}$

d)  $10 \times 1\frac{2}{3} = 10 \times \frac{\square}{3}$   
 $= \frac{\square}{3}$   
 $= \square \frac{\square}{3}$

4 a) Louise wants to row 12 km in total. She rows  $2\frac{7}{10}$  km each day for 5 days.  
 Does she meet her target? Show your working.

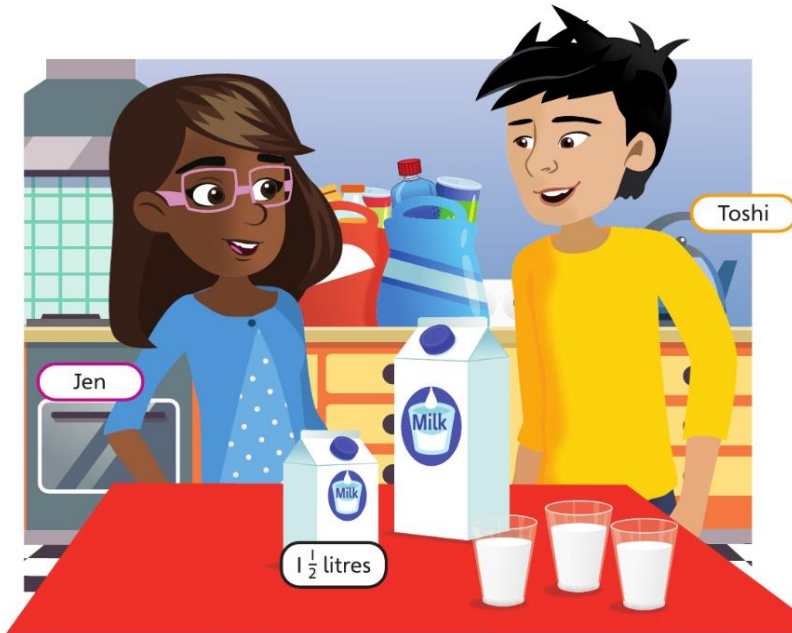


b) Louise cycles  $1\frac{2}{3}$  km each day.  
 How many days will it take her to cycle more than 12 km?  
 Show your working.



## Solving problems – fractions

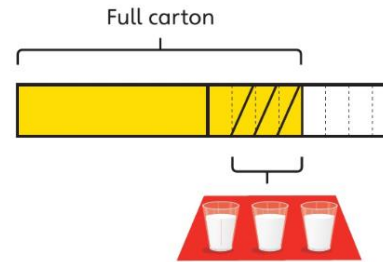
### Discover



- 1 a) Jen pours 3 glasses of milk from the  $1\frac{1}{2}$  litre carton.  
Each glass holds  $\frac{1}{8}$  of a litre.  
How much milk is left in the carton?
- b) The large carton holds  $2\frac{3}{4}$  litres more than the small carton.  
How much milk do the two cartons hold in total?

### Share

- a) The carton holds  $1\frac{1}{2}$  litres. Each glass holds  $\frac{1}{8}$  litre.

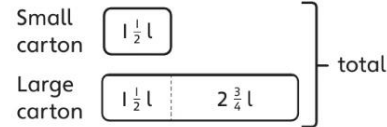


I converted  $1\frac{1}{2}$  to  $1\frac{4}{8}$  to make it easier to subtract  $\frac{3}{8}$ .



$$1\frac{4}{8} - \frac{3}{8} = 1\frac{1}{8}. \text{ There is } 1\frac{1}{8} \text{ litres of milk left in the carton.}$$

- b)



I worked out how much was in the large carton first and then added this on to the small carton.



#### Large carton

$$1\frac{1}{2} + 2\frac{3}{4} = 1\frac{2}{4} + 2\frac{3}{4}$$

$$\text{Add the wholes: } 1 + 2 = 3$$

$$\text{Add the parts: } \frac{2}{4} + \frac{3}{4} = \frac{5}{4} = 1\frac{1}{4}$$

$$\text{Add wholes and parts: } 3 + 1\frac{1}{4} = 4\frac{1}{4}$$

The large carton holds  $4\frac{1}{4}$  litres.

#### Total

$$1\frac{1}{2} + 4\frac{1}{4} = 1\frac{2}{4} + 4\frac{1}{4}$$

$$1 + 4 = 5$$

$$\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$$

$$5 + \frac{3}{4} = 5\frac{3}{4}$$

There are  $5\frac{3}{4}$  litres of milk in total.

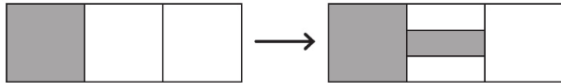
## Lesson 3

### Solving problems – fractions

- 1 Ebo spends  $\frac{4}{4}$  of his pocket money on a present and  $\frac{1}{3}$  of his pocket money on a comic book. What fraction of his pocket money does he have left?



- 2 Leo divides a rectangle into three equal parts and shades one of the parts. He then divides one of the parts into three more equal parts and shades one of them.



- a) What fraction of the shape is now shaded?



- b) Explain your method.

---



---

- 3 Max has a 3 kg bag of oats. He uses  $\frac{1}{2}$  kg to make some porridge. He uses  $2\frac{3}{8}$  kg to make some flapjack. How many kilograms of oats are left in the bag?




- 4 Kate used  $2\frac{1}{3}$  metres of ribbon to tie a present. Another present needed  $\frac{1}{4}$  of a metre more ribbon than the first. How much ribbon did Kate use in total?



- 5 Work out the missing numbers:

a)  $\frac{1}{5} + \frac{\square}{15} = \frac{7}{15}$     c)  $\frac{1}{5} + \frac{\square}{15} = \frac{1}{3}$

b)  $\frac{1}{5} + \frac{\square}{15} = \frac{4}{15}$     d)  $\frac{1}{5} + \frac{\square}{15} = 1$



## Calculating fractions of amounts

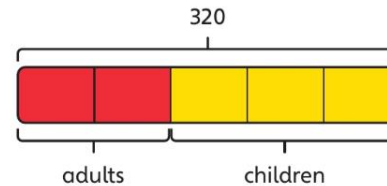
### Discover



- 1** a) There are 320 people in the theme park.  
 $\frac{2}{5}$  of the people are adults.  
 How many children are in the theme park?
- b) A child ticket is  $\frac{3}{8}$  of the cost of an adult ticket.  
 How much does an adult ticket cost?

### Share

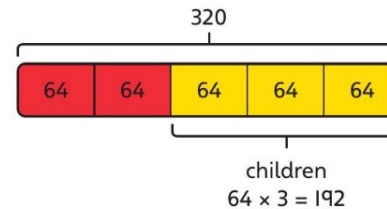
- a) There are 320 people in the theme park.  
 $\frac{2}{5}$  of the people are adults.  
 This means  $\frac{3}{5}$  of the people are children.



Work out the value of  $\frac{1}{5}$  by dividing 320 by 5.

$$5 \overline{) 320} \begin{array}{r} 64 \\ 32 \\ \underline{20} \\ 0 \end{array} \longrightarrow 320 \div 5 = 64$$

To work out the number of children multiply by 3.



There are 192 children in the theme park.

I drew a bar model to help me represent the situation. 2 parts represent the adults and 3 parts represent the children.



$\frac{3}{5}$  of the people are children, so I multiplied by 3 to work out  $\frac{3}{5}$ .

I worked out the number of adults and subtracted it from 320. You did it using a more efficient method.

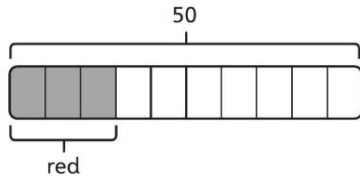




# Lesson 4

## Calculating fractions of amounts

- 1 Kate buys this bag of balloons.  
 $\frac{3}{10}$  of the balloons are red.  
 How many balloons are red?

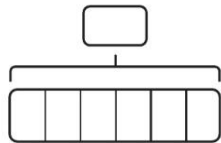


$$50 \div \square = \square$$

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

$\square$  balloons are red.

- 2 A box contains 30 counters.  
 $\frac{5}{6}$  of the counters are yellow. The rest are blue.  
 How many yellow counters are in the box?



There are  $\square$  yellow counters in the box.

- 3 Work out these calculations.

a)  $\frac{1}{7}$  of £140 = £  $\square$

c)  $\frac{11}{20}$  of £800 = £  $\square$

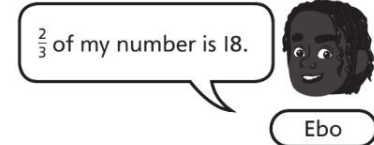
b)  $\frac{7}{12}$  of 48 kg =  $\square$  kg

d)  $\frac{13}{20}$  of £800 = £  $\square$

- 4 What are Bella and Ebo's numbers?

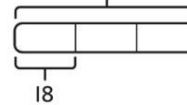


$\frac{1}{3}$  of my number is 18.

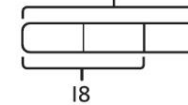


$\frac{2}{3}$  of my number is 18.

Bella's number



Ebo's number



Bella's number is  $\square$ .

Ebo's number is  $\square$ .