

White Rose Maths Edition



# Year 4 Textbook

# 4B

$9\frac{3}{4}$   $\frac{1}{3}$   $\frac{1}{5}$   $\frac{7}{10}$   $\frac{2}{5}$   $\frac{1}{5}$   $2\frac{5}{8}$   $\frac{1}{3}$   $\frac{1}{2}$   $\frac{5}{5}$



Pearson

Series Editor: Tony Staneff



# Year 4 Textbook 4B



helpful



**Sparks**

brave



**Astrid**

curious



**Ash**

determined



**Dexter**

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This tells you  
which page  
you need.



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Are you ready  
for some  
more maths?



# How to use this book

These pages make sure we're ready for the unit ahead. Find out what we'll be learning and brush up on your skills.



**Unit 9**  
**Fractions 2**

In this unit we will ...

- Learn to add and subtract fractions with the same denominator
- Learn to subtract a fraction from a whole number
- Understand how to find a fraction of an amount

We will use fraction strips to add and subtract fractions.

We need some maths words. How many of these do you remember?

numerator denominator add  
subtract improper fraction  
mixed number fraction of an amount

You need to be able to find a fraction of an amount.

Find  $\frac{2}{3}$  of 24.  
 $24 \div 3 = 8$   
 $8 \times 2 = 16$   
 $\frac{2}{3}$  of 24 is 16

142 143

## Discover

Lessons start with **Discover**.

Here, we explore new maths problems.

Can you work out how to find the answer?

Don't be afraid to make mistakes.  
Learn from them and try again!

Unit 9: Fractions (2), Lesson 2

**Add fractions and mixed numbers**

**Discover**

There are  $\frac{1}{4}$  km of the race left to run.

Holly

1 a) Holly has run  $2\frac{3}{4}$  km already.  
Represent  $2\frac{3}{4}$  as a diagram.  
b) What is the total length of the race?

148



# Share

Next, we share our ideas with the class.

Did we all solve the problems the same way?  
What ideas can you try?

**Share**

a)  $2\frac{2}{4}$  is made up of 2 wholes and  $\frac{2}{4}$ .

I drew separate fraction circles.

b) Holly has run  $2\frac{3}{4}$  km. She has  $\frac{1}{4}$  km of the race left to run. You need to add to find the length of the race.

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

I think this is the same as  $3\frac{1}{4}$ .

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# Think together

Then we have a go at some more problems together. Use what you have just learnt to help you.

We'll try a challenge too!



This tells you which page to go to in your **Practice Book**.

**Think together**

1 Work out the answers to these calculations.

a)  $1\frac{2}{4} + \frac{1}{4}$

b)  $1\frac{2}{4} + \frac{2}{4}$

c)  $1\frac{2}{4} + \frac{3}{4}$

2 How can you use the fraction circles to work out this addition?

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

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**3 What numbers do the shapes represent?**

$\frac{5}{6} + \frac{1}{6} = 2\frac{1}{6}$

$\frac{5}{8} + \frac{1}{8} = 2\frac{1}{2}$

$\frac{5}{6} + \frac{1}{6} = 3$

I will draw 3 fraction strips split into 6 to help me.

I think one of the answers is an improper fraction.

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Practice book 48 p109

**End of unit check**

1 Find the answer to the following calculation.

$\frac{3}{8} + \frac{2}{8}$

12  5   $1\frac{5}{8}$    $1\frac{1}{2}$

2 Find the answer to the following calculation.

$3 - \frac{1}{4}$

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

3 Mark bakes some bread. He has  $2\frac{1}{2}$  kg flour. A loaf of bread needs  $\frac{1}{2}$  kg of flour. How much flour does he have left?

1 kg  3 kg  1 kg  2 kg

4 Harry has 45 apples. He uses  $\frac{2}{3}$  of them to make some juice. How many apples does he have left?

15  27  18  75

5 Jane takes part in a cycle race. She cycles 64 km. This is  $\frac{2}{3}$  of the total distance. How long is the cycle race?

16 km  64 km  42 km  21 km

6 Ambika spends  $\frac{1}{4}$  of her money on a new T-shirt. How much money does she have left?

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Practice book 48 p107

At the end of each unit there's an **End of unit check**. This is our chance to show how much we have learnt.

# Unit 6

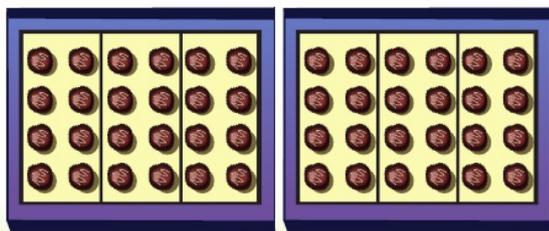
## Multiplication and division ②



In this unit we will...

- ⚡ Learn how to find and use factor pairs
- ⚡ Learn how to multiply a number using the written method
- ⚡ Learn how to multiply and divide numbers in our heads
- ⚡ Find the remainder when a number is divided

We have already learnt the times-tables. Can you use the multiplication facts to work out how many chocolates I have? Is there a quicker way?





We will need some maths words. How many of these have you used before?

multiply

divide

times-tables

remainder

bar model

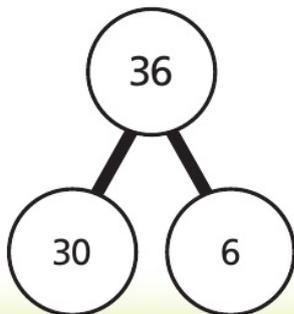
factor pair

factors

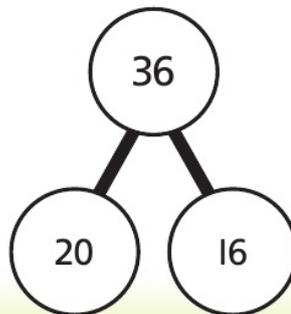
We need to know how to partition a number when we multiply and divide and can use a part-whole model. Is there another way to partition 36?



$$36 = 30 + 6$$



$$36 = 20 + 16$$



# Factor pairs

## Discover

I picked two numbers.  
I multiplied them together.  
The product was 20.

0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21		

20 ends in 0. One of the numbers must be a 10.

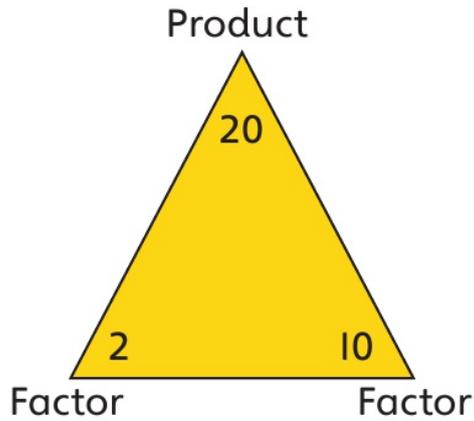
Miss Hall

Reena

- a) Do you agree with Reena?
- b) Find all the **factor pairs** for the number 20.

# Share

a)



20 is a multiple of 10.

So one of the **factors** could be 10.

$$2 \times 10 = 20$$

$$10 \times 2 = 20$$

2 and 10 are a factor pair of 20.

Reena is partly correct. One of the numbers could be 10, but that is not the only possibility.

b)



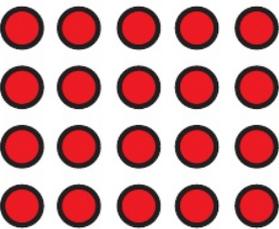
$$1 \times 20 = 20$$

$$20 \times 1 = 20$$



$$2 \times 10 = 20$$

$$10 \times 2 = 20$$



$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

# Think together

1 Write the factor pairs for the number 12.

Use the arrays to help you.



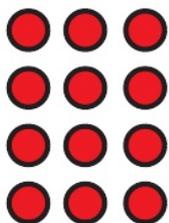
$$\square \times \square = \square$$

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



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

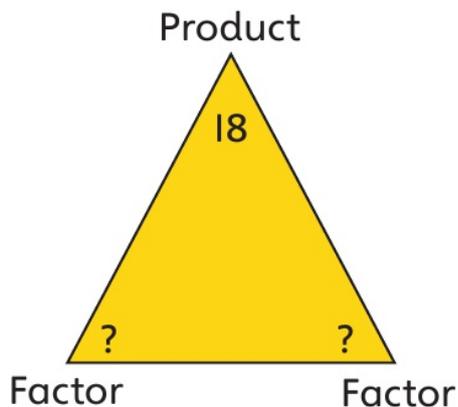
$$\square \times \square = \square$$



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

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

2 Find all the factor pairs for the number 18.



I will think of a way to find all the factors.



**CHALLENGE**

- 3 Choose a number. Work with a partner. Find all the factor pairs of that number.

Discuss what you notice.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30



I chose 16. I noticed something about the factor pairs.

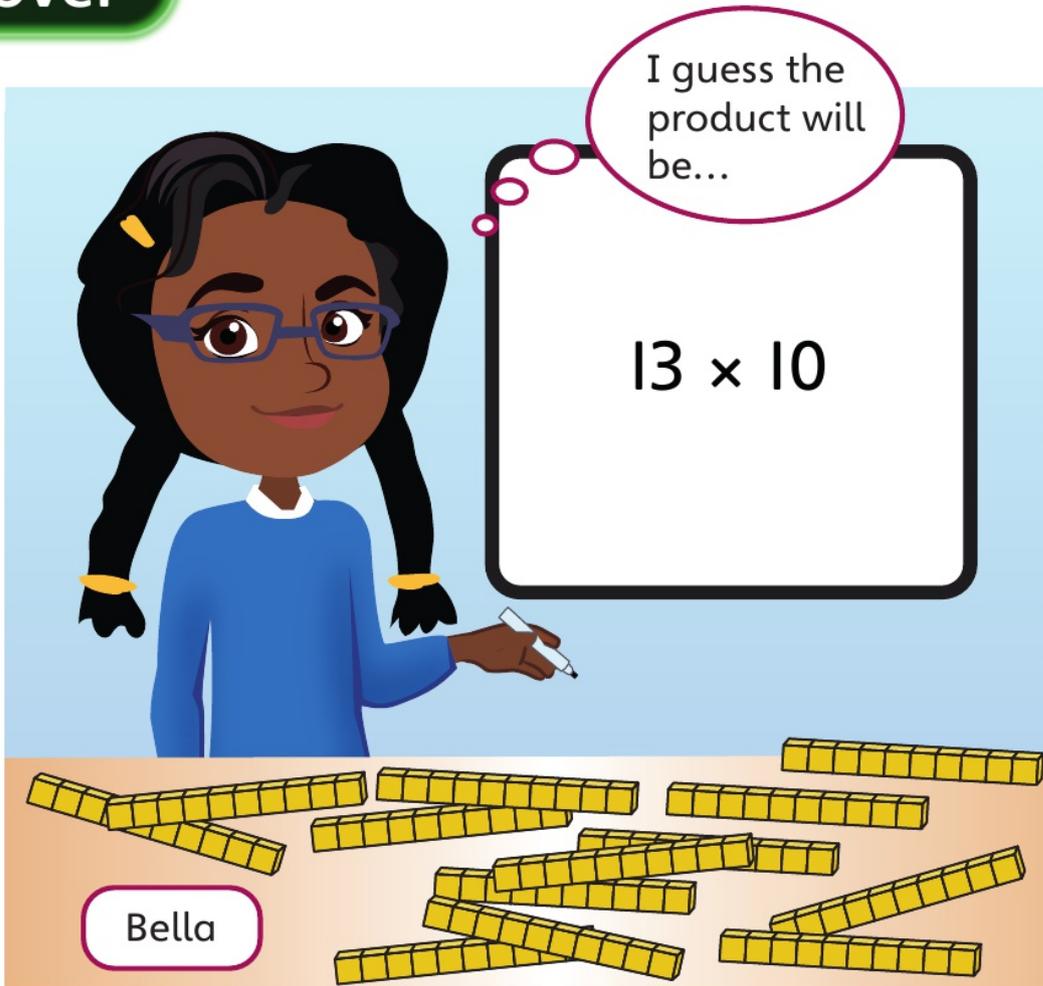
I think bigger numbers have more factor pairs than smaller numbers.



I noticed something interesting about factors of all the even numbers.

# Multiply and divide by 10

## Discover



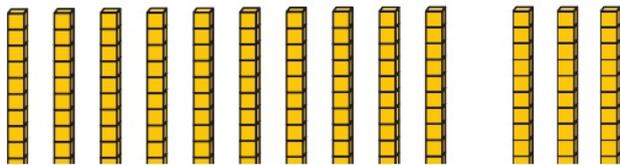
- I** a) People have different ways of thinking about multiplying by 10.  
Discuss different ways of thinking about  $13 \times 10$ .
- b) What number when multiplied by 10 makes 400?

# Share

a)  $13 \times 10 = 130$



I thought of this as ten 13s.



I thought of this as 13 tens.



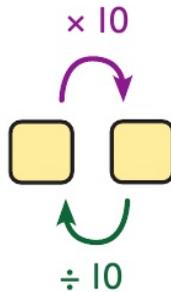
I thought of the place value of each digit.



Th	H	T	O
		1	3
	1	3	0

b)

$$40 \times 10 = 400$$



$$400 \div 10 = 40$$

# Think together

1 Complete the following multiplications.

a)  $7 \times 10 = \square$

$17 \times 10 = \square$

$37 \times 10 = \square$

$\square \times 10 = 670$

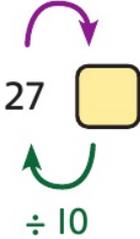
b)  $30 \div 10 = \square$

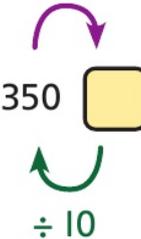
$130 \div 10 = \square$

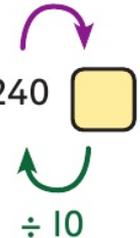
$430 \div 10 = \square$

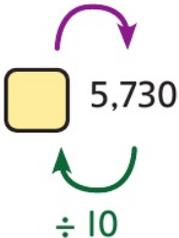
$\square \div 10 = 93$

2 Find the missing numbers.

a)  $\times 10$   
  
 $27 \square$   
 $\div 10$

c)  $\times 10$   
  
 $350 \square$   
 $\div 10$

b)  $\times 10$   
  
 $240 \square$   
 $\div 10$

d)  $\times 10$   
  
 $\square 5,730$   
 $\div 10$

CHALLENGE

3 What is the same and what is different about these word problems?



Lexi

I started with £20.  
Now I have ten times as  
much money. How much  
do I have now?

I walked 20 miles, but Ben  
walked ten times as far.  
How far did Ben walk?



Jamilla

A red deer weighs ten  
times as much as my dog.  
The red deer weighs 200 kg.  
How heavy is my dog?



Danny

We used 20 litres of  
water to wash the car. Ros  
used 10 l more than us to  
wash the van. How much  
water did Ros use?



Ebo

# Multiply and divide by 100

## Discover

Show  $13 \times 10$  and  $13 \times 100$  on your place value grid.

Mr Jones

Aki

Jamie

Aki's place value grid:

Th	H	T	O
		1	3
	1	3	0
1	3	0	0

Jamie's place value grid:

Th	H	T	O
		1	3
	1	0	3
1	0	0	3

**1** a) Whose place value grid represents the correct way to multiply 13 by 10 and 100?

b) Complete these calculations.

$$13 \times 100 = \square$$

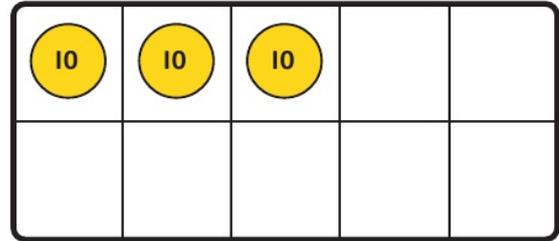
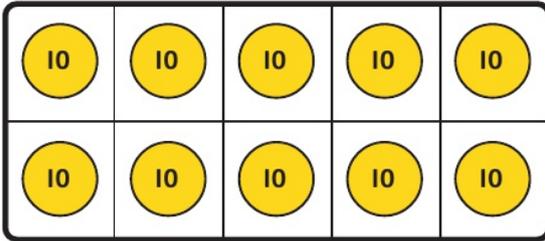
$$\square \div 100 = 13$$

$$100 \times 13 = \square$$

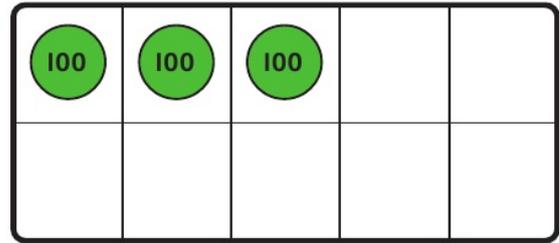
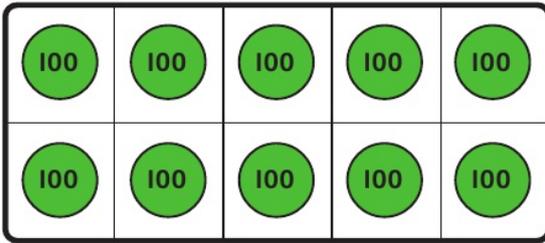
$$\square \div 13 = 100$$

# Share

a) Aki's work is correct.

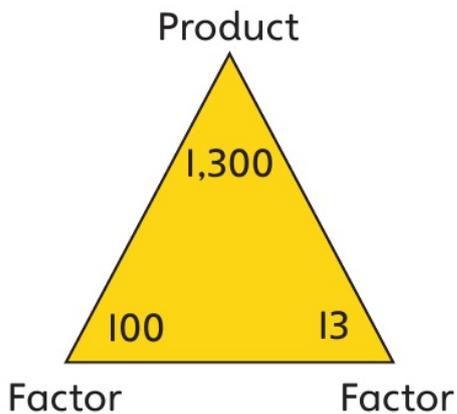


$13 \times 10$  is 13 tens. That is 130.



$13 \times 100$  is 13 hundreds. That is 1,300.

b)



$$13 \times 100 = 1,300$$

$$100 \times 13 = 1,300$$

$$1,300 \div 100 = 13$$

$$1,300 \div 13 = 100$$

# Think together

1 Complete the multiplications.

a)  $5 \times 100 = \square$

$15 \times 100 = \square$

$35 \times 100 = \square$

$\square \times 100 = 7,500$

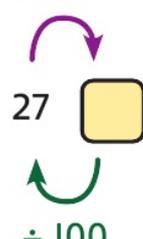
b)  $400 \div 100 = \square$

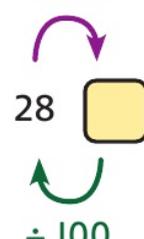
$1,400 \div 100 = \square$

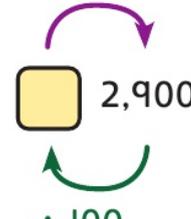
$4,400 \div 100 = \square$

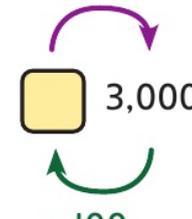
$\square \div 100 = 94$

2 Find the missing numbers.

a)  $\times 100$   
  
 27  $\square$   
 $\div 100$

c)  $\times 100$   
  
 28  $\square$   
 $\div 100$

b)  $\times 100$   
  
 $\square$  2,900  
 $\div 100$

d)  $\times 100$   
  
 $\square$  3,000  
 $\div 100$

**CHALLENGE**

- 3 A school collected 1p coins to raise money for charity. They made a long line of 1p coins in the hall.



Class 4A collected enough 1p coins to make £48. How many 1p coins did they collect?

Class 4B collected 5,000 1p coins. How much money is that in pounds?



I will count up in 1ps.

I wonder how many 1ps make £1.



I think I can convert other measures by multiplying and dividing by 10 and 100.



# Related facts – multiplication

## Discover

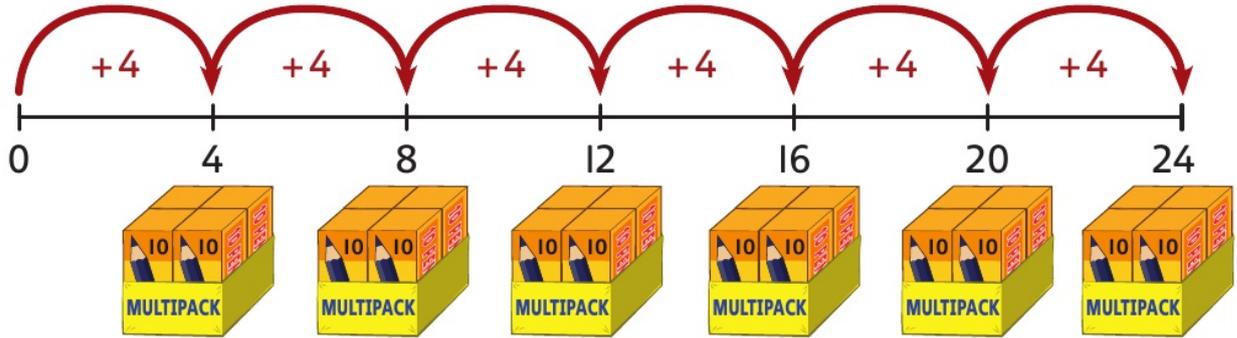


- 1** a) Each multipack contains 4 boxes.  
How many boxes are there in total?
- b) Each multipack contains 4 boxes of 10 pencils.  
How many pencils are there in total?

# Share

a) There are 4 boxes of pencils in each multipack.

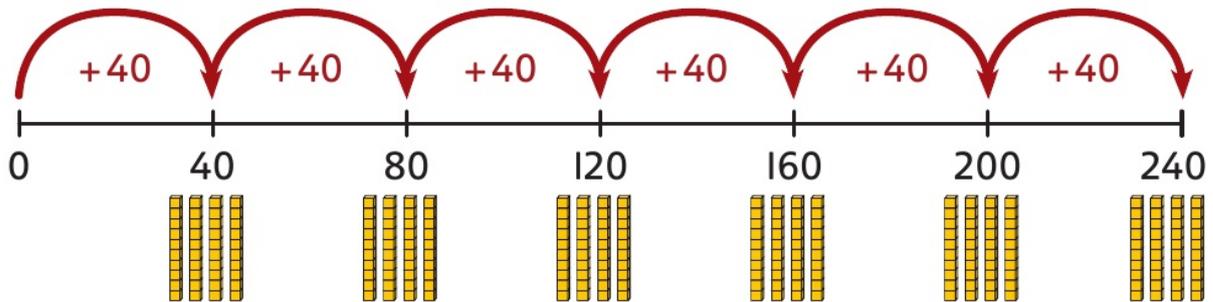
There are 6 multipacks.



$$6 \times 4 = 24$$

There are 24 boxes of pencils in 6 multipacks.

b) There are 10 pencils in each box. There are 4 boxes in a multipack.



$$6 \times 4 \text{ is } 24.$$

$$6 \times 4 \text{ tens is } 24 \text{ tens.}$$

$$6 \times 4 = 24$$

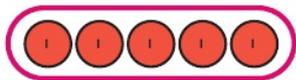
$$6 \times 40 = 240$$

There are 240 pencils in total.

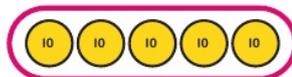
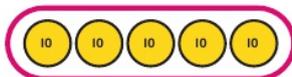
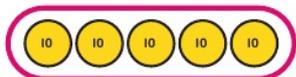
# Think together

1 Complete the multiplication calculations.

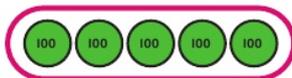
a)  $3 \times 5 = \square$



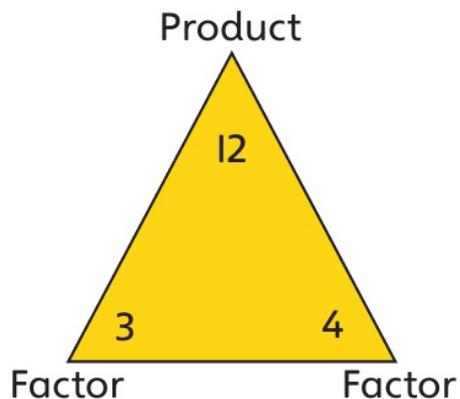
b)  $3 \times 50 = \square$



c)  $3 \times 500 = \square$



2 Complete the multiplications.



$3 \times 40 = \square$

$3 \times 400 = \square$

$30 \times 4 = \square$

$300 \times 4 = \square$