Power Maths

White Rose Maths

White Rose Maths Edition

Year 5 Textbook 5B

Pearson

Series Editor: Tony Staneff

Year 5 Textbook 5B

Dexter

Dexter is determined.

When he makes a mistake, he learns from it and tries again.

flexible

Flo

helpful

Sparks

curious

Ash

brave

Astrid

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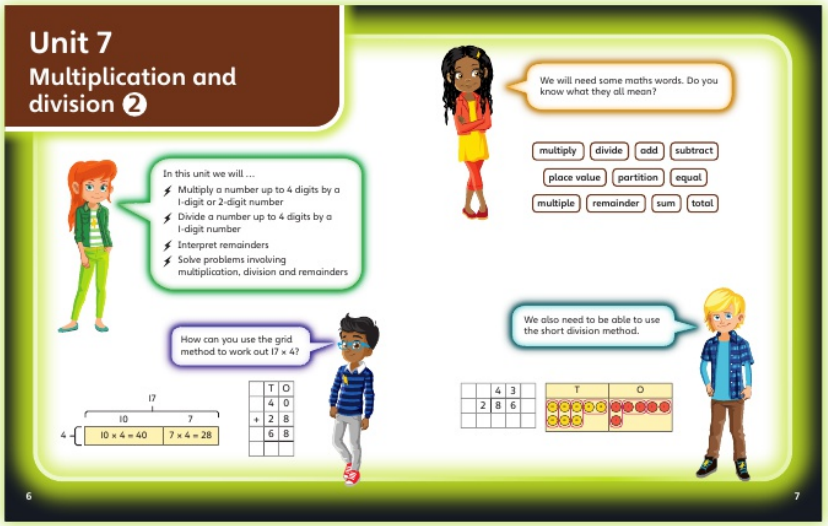
Pearson

Contents

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!

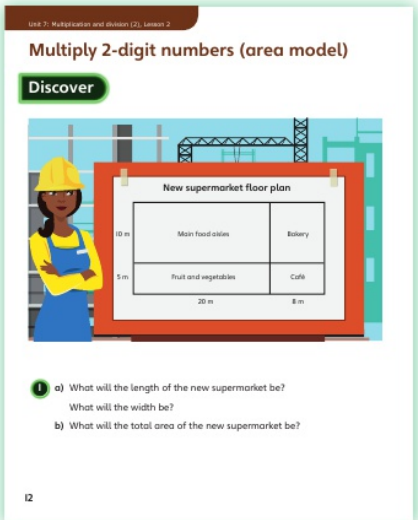


Discover

Lessons start with **Discover**.

Here, we explore new maths problems.

Can you work out how to find the answer?

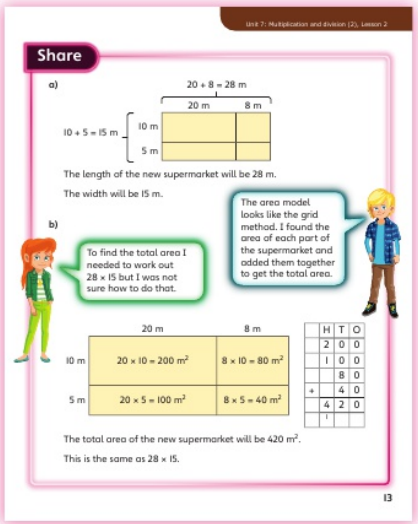


Don't be afraid to make mistakes. Learn from them and try again!

Share

Next, we share our ideas with the class.

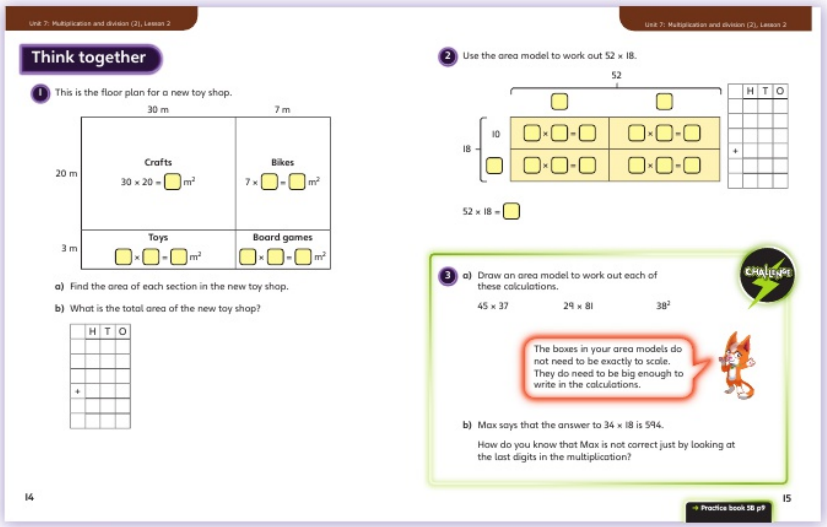
Did we all solve the problems the same way? What ideas can you try?



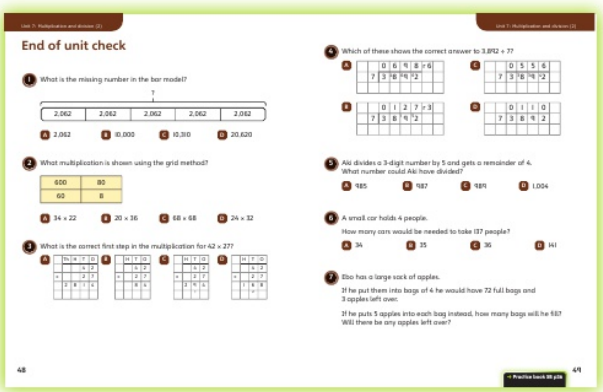
Think together

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**.



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 7
Multiplication and division 2

In this unit we will …

- Multiply a number up to 4 digits by a 1-digit or 2-digit number
- Divide a number up to 4 digits by a 1-digit number
- Interpret remainders
- Solve problems involving multiplication, division and remainders

How can you use the grid method to work out 17 × 4?

	17	
	10	7
4	10 × 4 = 40	7 × 4 = 28

	T	O
	4	0
+	2	8
	6	8

We will need some maths words. Do you know what they all mean?

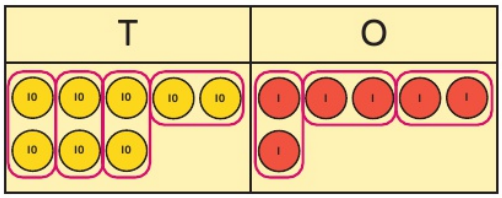
multiply **divide** **add** **subtract**

place value **partition** **equal**

multiple **remainder** **sum** **total**

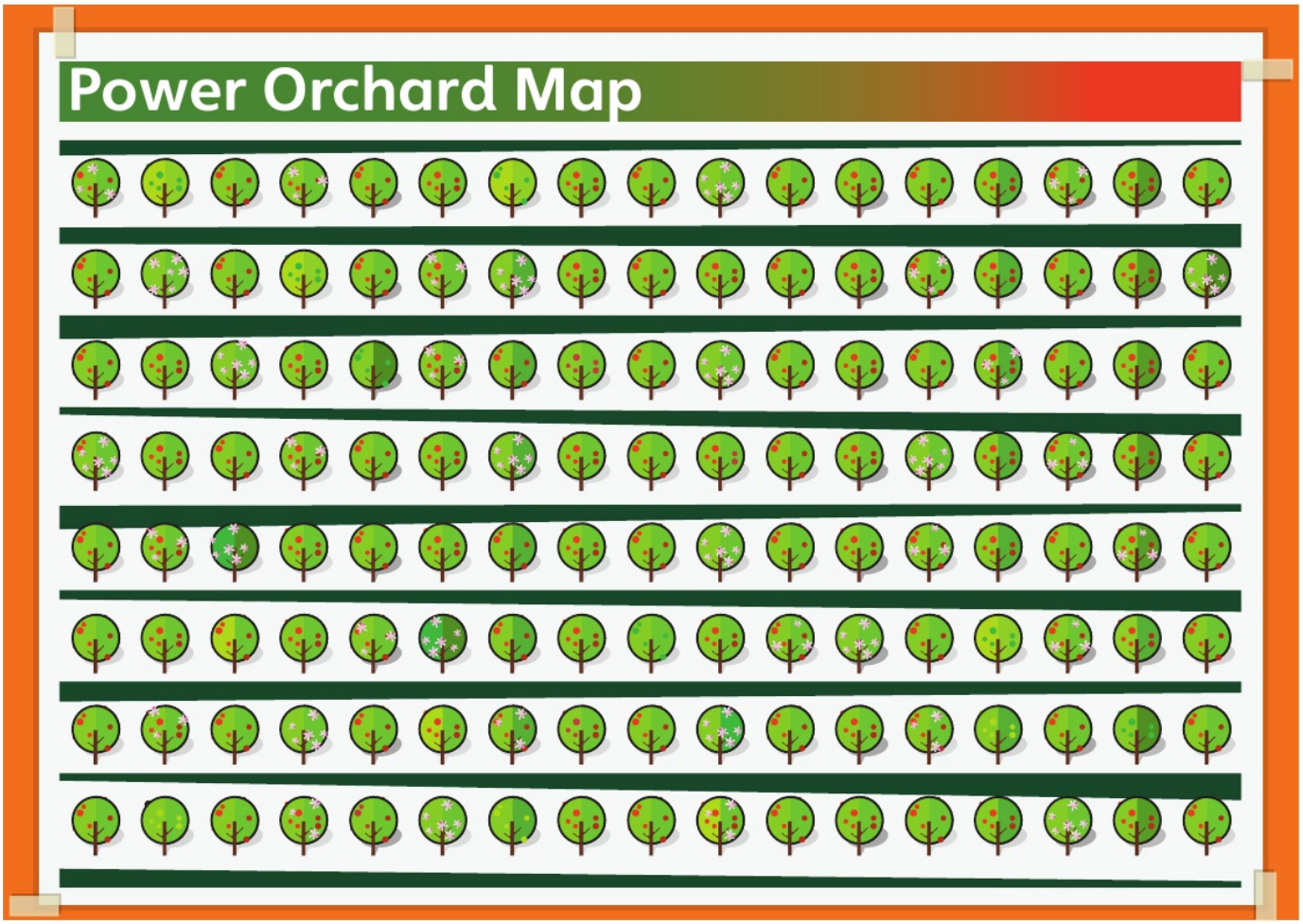
We also need to be able to use the short division method.

		4	3	
	2	8	6	



Multiply a number up to 4-digits by a I-digit number

Discover



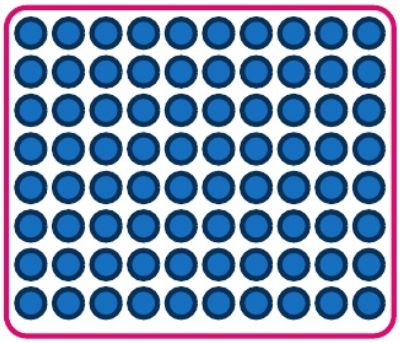
I **a)** Use an array method to calculate how many trees there are in total.

b) Use a written method to calculate the number of trees.

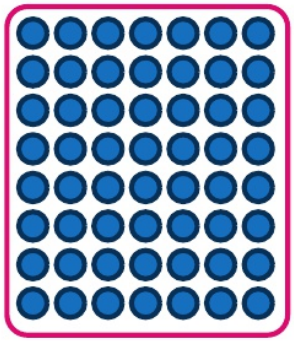
Share

I used counters to represent the trees. I partitioned the counters into sections to make it easier for me to work out the total.

a) There are 8 rows of trees, with 17 trees in each row.



$8 \times 10 = 80$



$8 \times 7 = 56$

$80 + 56 = 136$

b)

	H	T	O
		1	7
×			8
			6
		5	

	H	T	O
		1	7
×			8
	1	3	6
		5	

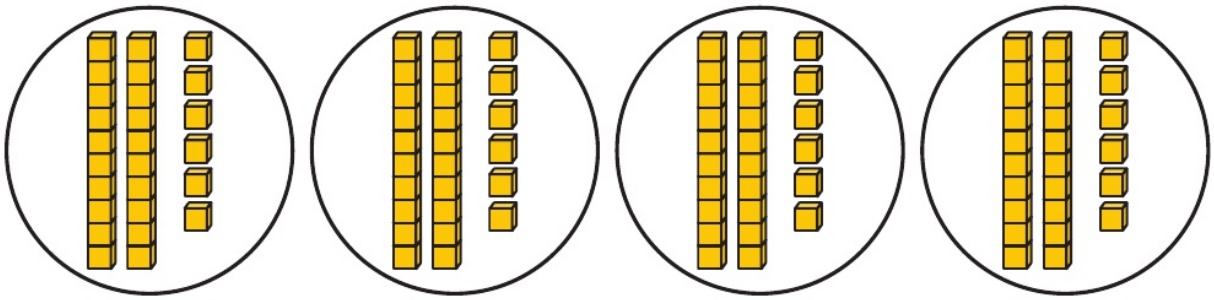
I used the column method that we did last year. This is called formal column multiplication.

There are 136 trees in total.

Think together

1 Use the mathematical equipment to help you work out these multiplications.

a) 26 × 4



20 × 4 = ☐

6 × 4 = ☐

☐ + ☐ = ☐

b) 135 × 5 = ☐

H	T	O
100	10 10 10	1 1 1 1 1
100	10 10 10	1 1 1 1 1
100	10 10 10	1 1 1 1 1
100	10 10 10	1 1 1 1 1
100	10 10 10	1 1 1 1 1

100 × 5 = ☐

30 × 5 = ☐

5 × 5 = ☐

2 Complete the multiplications.

a) 42 × 7 = ☐

	T	O
	4	2
×		7

b) 142 × 7 = ☐

	H	T	O
	1	4	2
×			7

c) 3,142 × 7 = ☐

	Th	H	T	O
	3	1	4	2
×				7

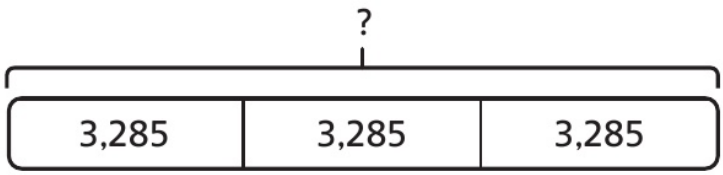
3 Danny and Zac are representing calculations using bar models.

What calculations are being represented? Work out the answers.

CHALLENGE

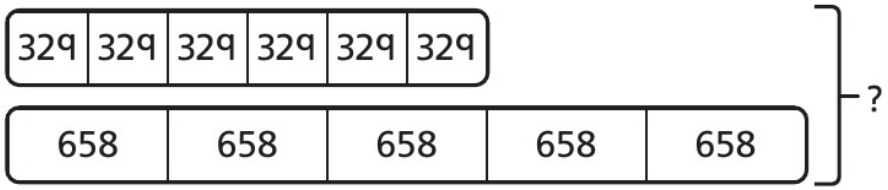
a)

Danny



b)

Zac



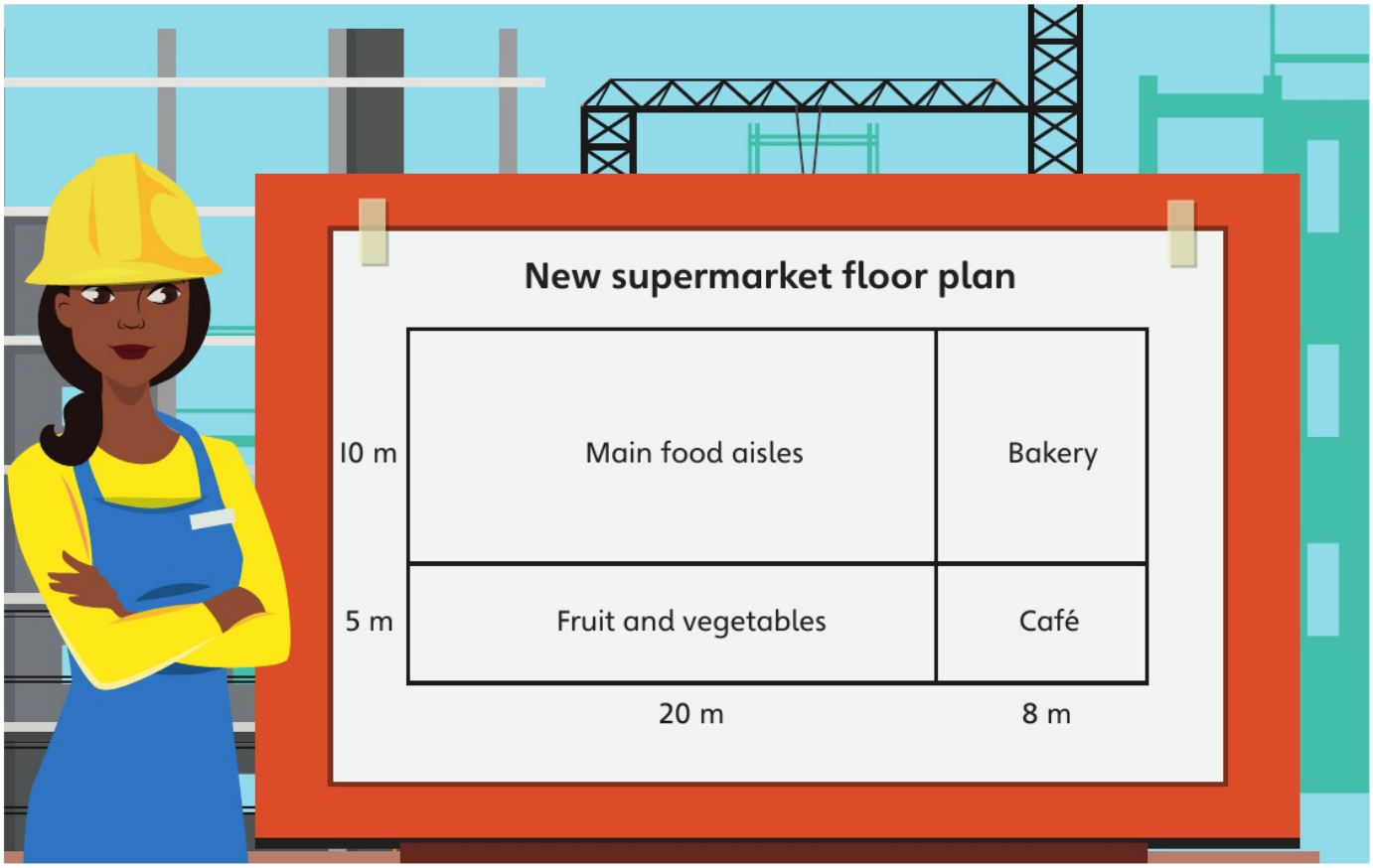
To work out Zac's calculation, I think I need to do two multiplications.

I think I can do it as just one multiplication.

→ Practice book 5B p6

Multiply 2-digit numbers (area model)

Discover



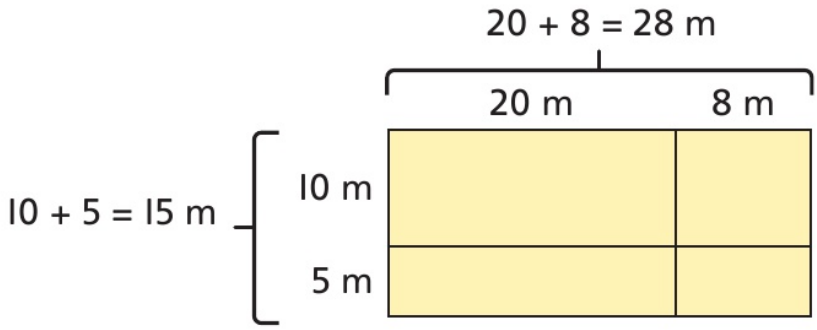
1 **a)** What will the length of the new supermarket be?

What will the width be?

b) What will the total area of the new supermarket be?

Share

a)



The length of the new supermarket will be 28 m.

The width will be 15 m.

b)

To find the total area I needed to work out 28 × 15 but I was not sure how to do that.

The area model looks like the grid method. I found the area of each part of the supermarket and added them together to get the total area.

	20 m	8 m
10 m	$20 \times 10 = 200\ m^2$	$8 \times 10 = 80\ m^2$
5 m	$20 \times 5 = 100\ m^2$	$8 \times 5 = 40\ m^2$

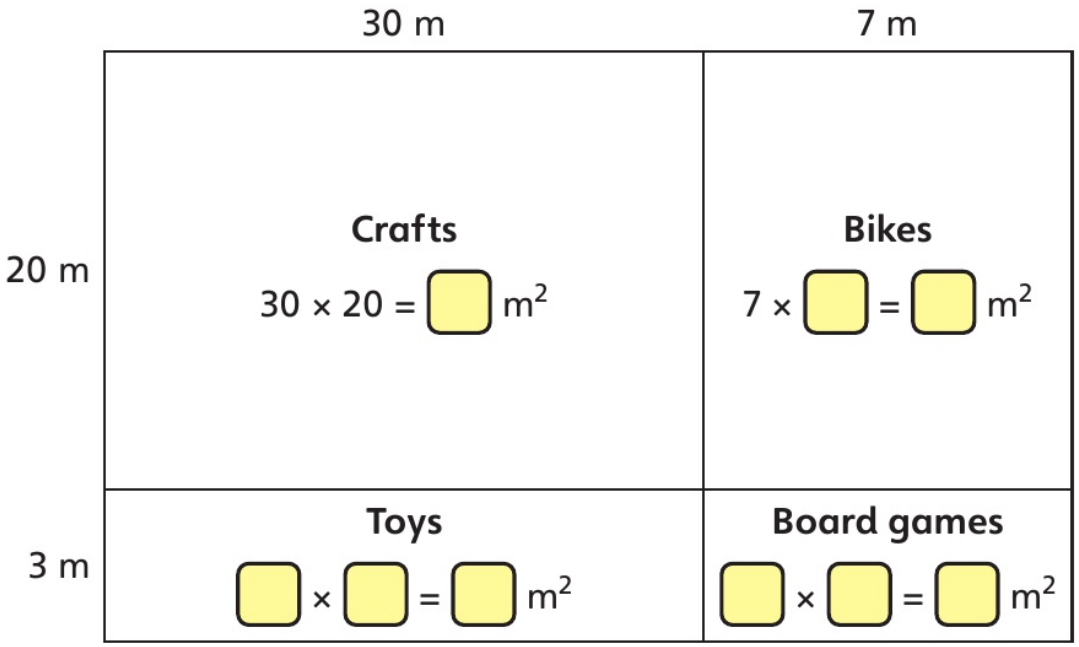
	H	T	O
	2	0	0
	1	0	0
		8	0
+		4	0
	4	2	0
	1		

The total area of the new supermarket will be 420 m^2.

This is the same as 28 × 15.

Think together

1 This is the floor plan for a new toy shop.

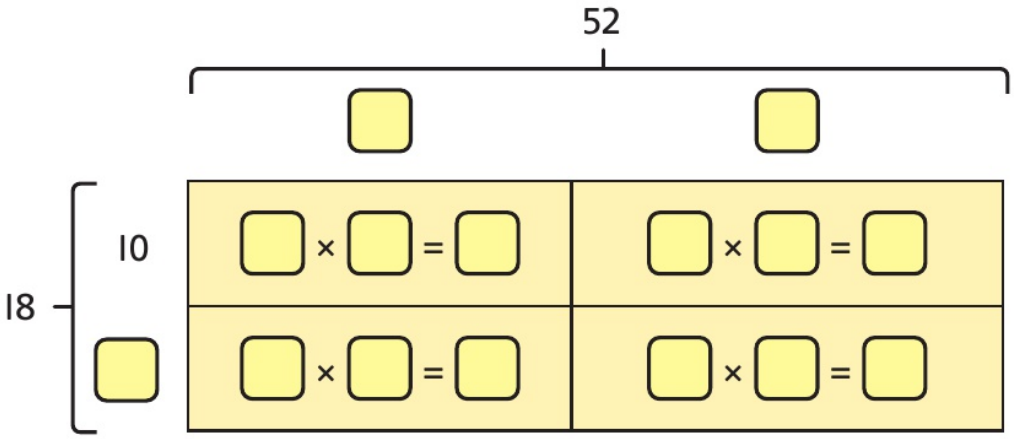


a) Find the area of each section in the new toy shop.

b) What is the total area of the new toy shop?

	H	T	O
+			

2 Use the area model to work out 52 × 18.



	H	T	O
+			

52 × 18 = ☐

3 **a)** Draw an area model to work out each of these calculations.

45 × 37 29 × 81 38^2

CHALLENGE

The boxes in your area models do not need to be exactly to scale. They do need to be big enough to write in the calculations.

b) Max says that the answer to 34 × 18 is 594.

How do you know that Max is not correct just by looking at the last digits in the multiplication?

→ Practice book 5B p9

Multiply 2-digit numbers

Discover

34×27

Richard

	30	4
20	30 × 20 = 600	4 × 20 = 80
7	30 × 7 = 210	4 × 7 = 28

	Th	H	T	O
		6	0	0
		2	1	0
		8	0	
+		2	8	
	1	8	9	0

Lexi

34 × 20 = 680

		3	4
×			7
	2	3	8
		2	

680 + 238 = 820

Zac

		3	4
×		2	7
	2	3	8
	6	2 8	0
	9	1	8
	1		

34 × 7
34 × 20
34 × 27

1 **a)** What mistake has Richard made?

b) Look at Lexi's method and Zac's method.

What is the same? What is different?

Share

a) The calculations in the grid are all correct but Richard has lined up the numbers incorrectly in his addition.

	30	4
20	30 × 20 = 600	4 × 20 = 80
7	30 × 7 = 210	4 × 7 = 28

	Th	H	T	O
		6	0	0
		2	1	0
			8	0
+			2	8
		9	1	8
		1		

The correct answer is 918.

b) Lexi partitioned her number and worked out each multiplication separately.

Lexi did that correctly, but she then made a mistake when adding her two totals 680 + 238 = 918.

34 × 20 = 680

	H	T	O
		3	4
×			7
	2	3	8
		2	

Zac did the same as Lexi, except he did it all in one column multiplication and made no mistakes. This is called long multiplication.

	H	T	O	
		3	4	
×		2	7	
	2	3	8	34 × 7
	6	8 (2)	0	34 × 20
	9	1	8	34 × 27

Did you notice that Zac placed a 0 here to show that he is multiplying 34 by 20 and not by 2?

Think together

1 Mr Jones sets the class some more long multiplication questions.

Complete each multiplication.

a) 46 × 13

	H	T	O
		4	6
×		1	3

46 × 3
46 × 10
46 × 13

c) 37 × 21

	H	T	O
		3	7
×		2	1

37 × 1
37 × 20
37 × 21

b) 34 × 24

	H	T	O
		3	4
×		2	4

34 × 4
34 × 20
34 × 24

2 Mr Jones's class are going on a school trip.

There are 29 children in the class and they each pay £15.

How much money is paid in total by all the children?

CHALLENGE

3 **a)** Josh works out 63 × 24.

	Th	H	T	O
			6	3
×			2	4
	2	4	1	2
	1	2	6	0
	3	6	7	2

What mistake has Josh made?

Show the correct long multiplication.

b) Zac has worked out another multiplication.

What two numbers has Zac multiplied together?

	H	T	O
		✱	✱
×		✱	✱
	3	8	7
	4	$\overset{2}{3}$	0
	8	1	7
	1		

→ Practice book 5B p12

Multiply a 3-digit number by a 2-digit number

Discover

1 **a)** How many boxes of cereal are there in 143 packs?

Use the grid method to work out the answer.

b) Check your answer using long multiplication.