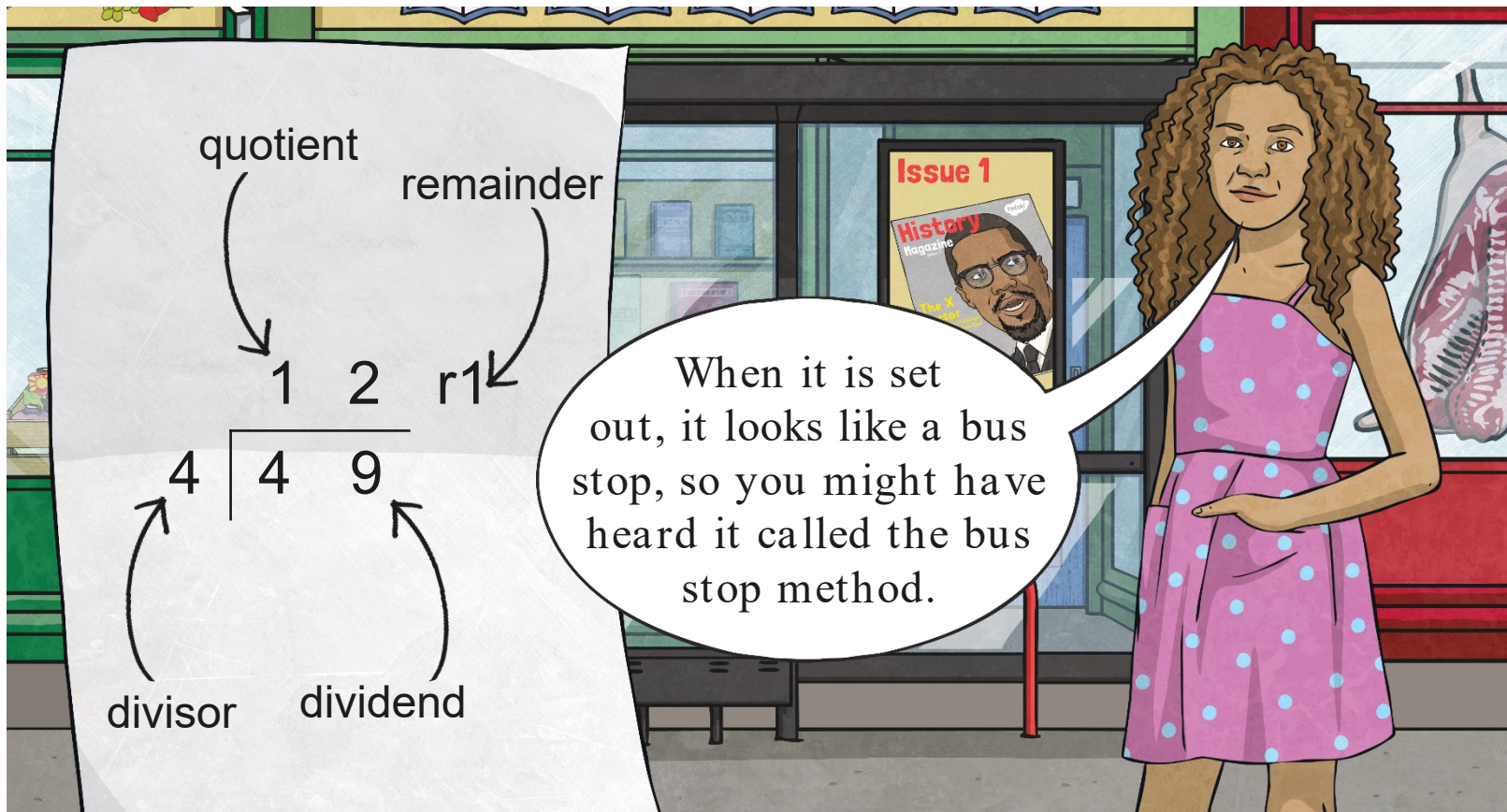


Left-Luggage Short Division



What Is Short Division?

Short division is a formal written method for division.



What Is Short Division?

Short division is a formal written method for division.

The illustration shows a woman with curly hair wearing a pink dress with white polka dots. She is standing next to a large sheet of paper that displays a short division problem. The problem is $4 \overline{) 49}$. The quotient is 12 and the remainder is 1, written as $12 \text{ r}1$. Labels with arrows point to the parts of the problem: 'quotient' points to 12, 'remainder' points to r1, 'divisor' points to 4, and 'dividend' points to 49. A speech bubble from the woman says: 'When calculating using short division, we start at the left and work towards the right.'

quotient

remainder

1 2 r1

4 4 9

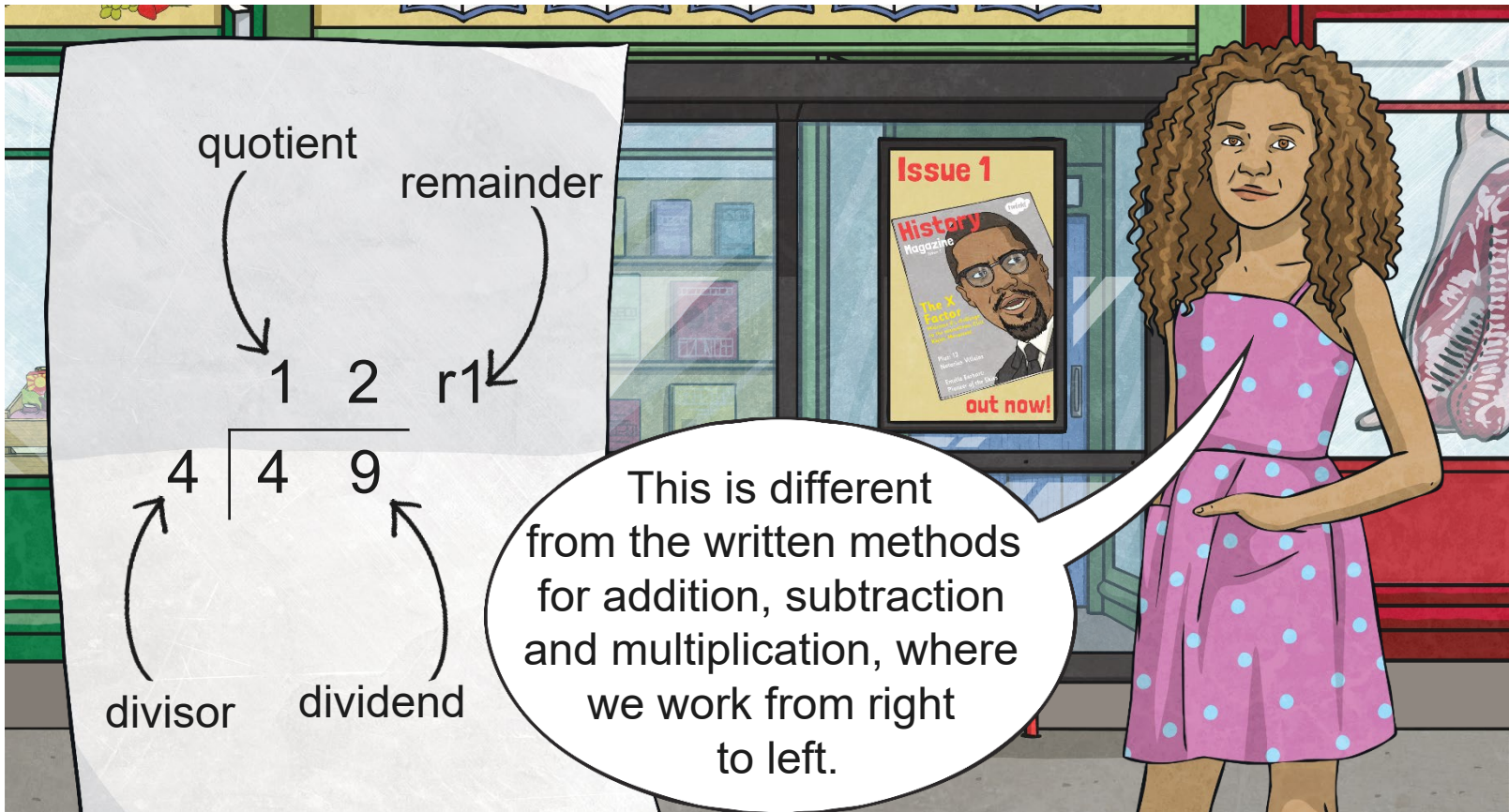
divisor

dividend

When calculating using short division, we start at the left and work towards the right.

What Is Short Division?

Short division is a formal written method for division.



The illustration shows a woman with curly hair in a pink polka-dot dress pointing to a whiteboard. The whiteboard displays a short division problem: $4 \overline{) 49}$. The quotient is written as '1 2' and the remainder as 'r1'. Labels with arrows identify the parts: 'quotient' points to '1 2', 'remainder' points to 'r1', 'divisor' points to '4', and 'dividend' points to '49'. A speech bubble from the woman contains the text: 'This is different from the written methods for addition, subtraction and multiplication, where we work from right to left.' In the background, there is a bookshelf and a poster for 'History Magazine' featuring a portrait of Martin Luther King Jr. and the text 'Issue 1', 'The 25 Greatest Moments in American History', 'Part 13: Martin Luther King Jr.', and 'out now!'.

quotient

remainder

1 2 r1

4 $\overline{) 49}$

divisor

dividend

This is different from the written methods for addition, subtraction and multiplication, where we work from right to left.

Issue 1

History Magazine

The 25 Greatest Moments in American History

Part 13: Martin Luther King Jr.

out now!

Bookings



Let's work through an example together:

The answer is 231.

Bookings have been taken for
twinkl Travel coaches. If the
bookings are shared equally between
the three coaches, how many jobs
will each coach need to do?

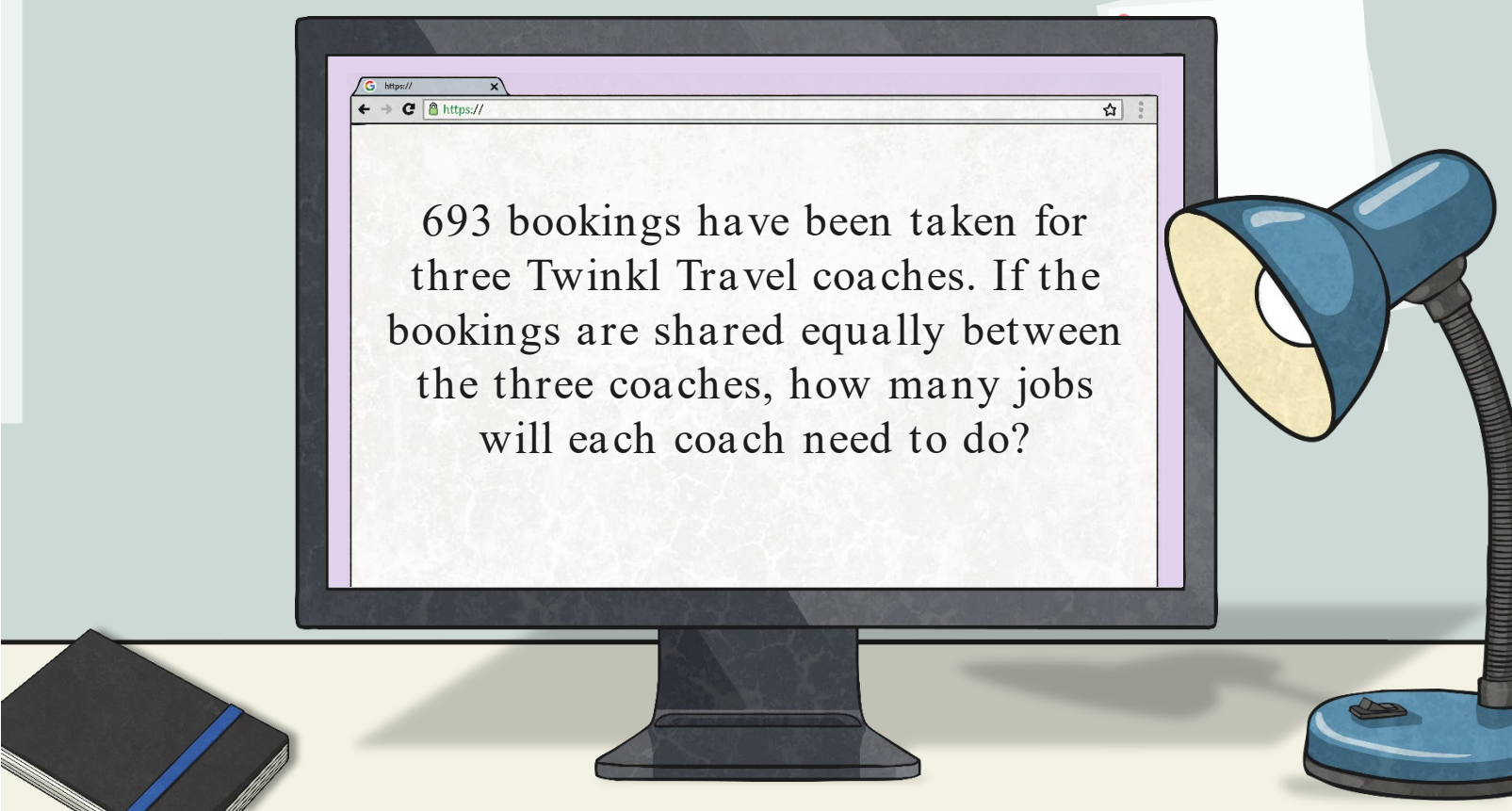
Finally, divide 3 by 3.

$3 \div 3 = 1$, so write 1 above the line.

Bookings



Let's work through an example together:

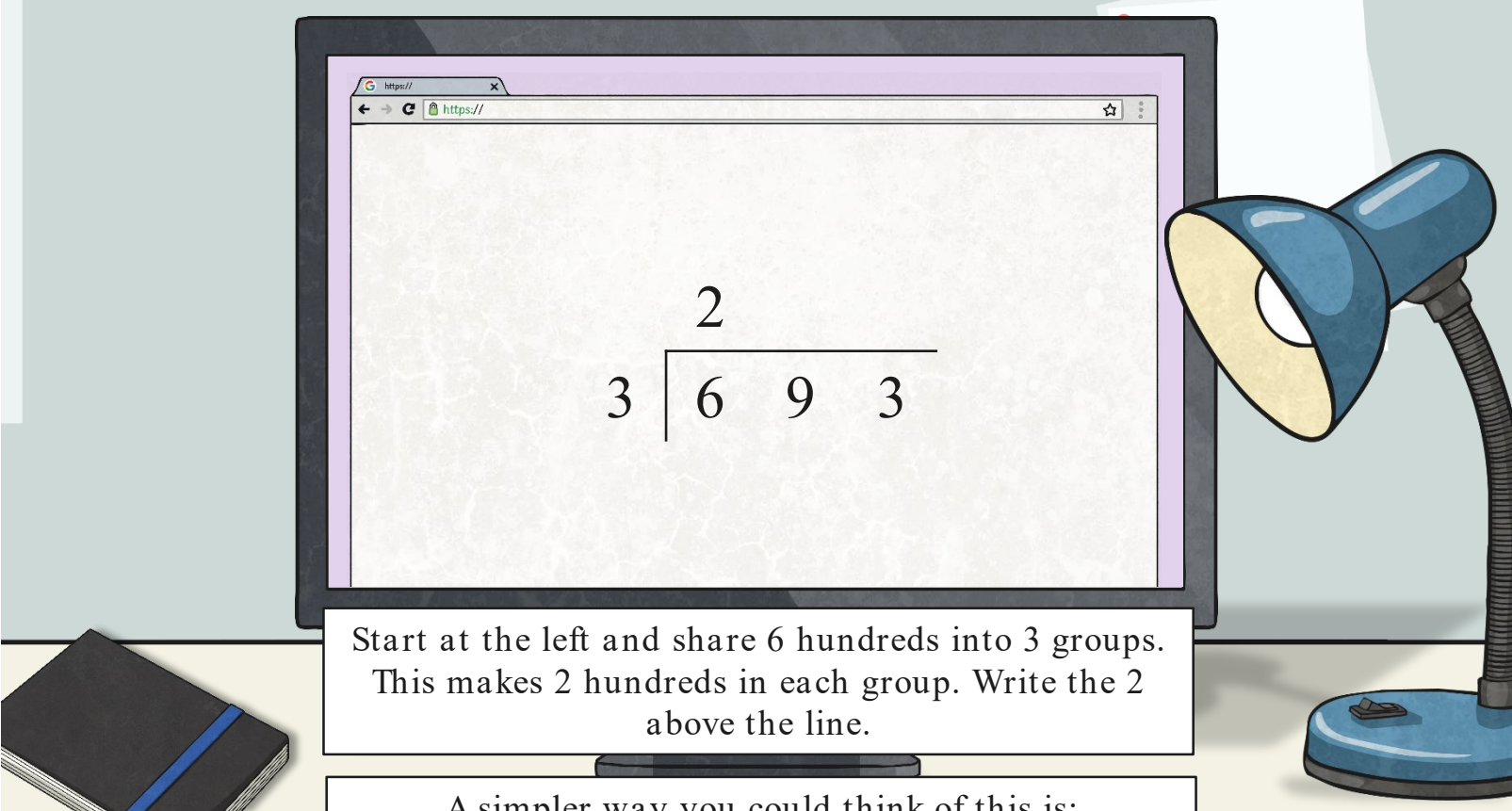
An illustration of a computer monitor on a desk. The monitor displays a web browser window with a math problem. To the right of the monitor is a blue desk lamp with a yellow light. In the bottom left corner of the desk is a black notebook with a blue spine.

693 bookings have been taken for three Twinkl Travel coaches. If the bookings are shared equally between the three coaches, how many jobs will each coach need to do?

Bookings



Let's work through an example together:


$$\begin{array}{r} 2 \\ 3 \overline{) 693} \end{array}$$

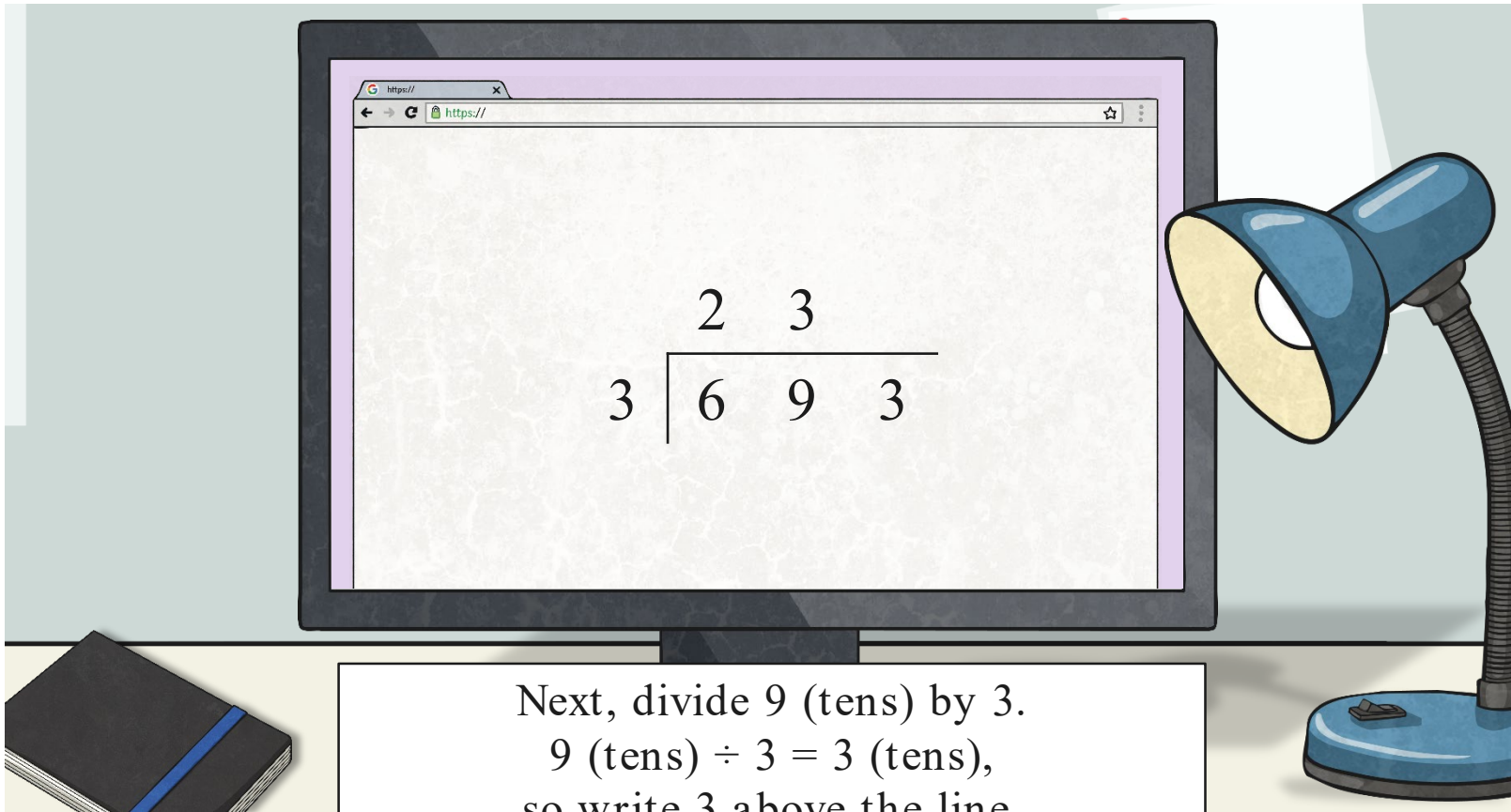
Start at the left and share 6 hundreds into 3 groups.
This makes 2 hundreds in each group. Write the 2
above the line.

A simpler way you could think of this is:
 $6 \text{ (hundreds)} \div 3 = 2 \text{ (hundreds)}$,
so write 2 above the line.

Bookings



Let's work through an example together:



Next, divide 9 (tens) by 3.
 $9 \text{ (tens)} \div 3 = 3 \text{ (tens)}$,
so write 3 above the line.

Bookings



Let's work through an example together:

The
answer is
231.

$$\begin{array}{r} 231 \\ 3 \overline{) 693} \end{array}$$

Finally, divide 3 by 3.
 $3 \div 3 = 1$, so write 1 above the line.

Regroup



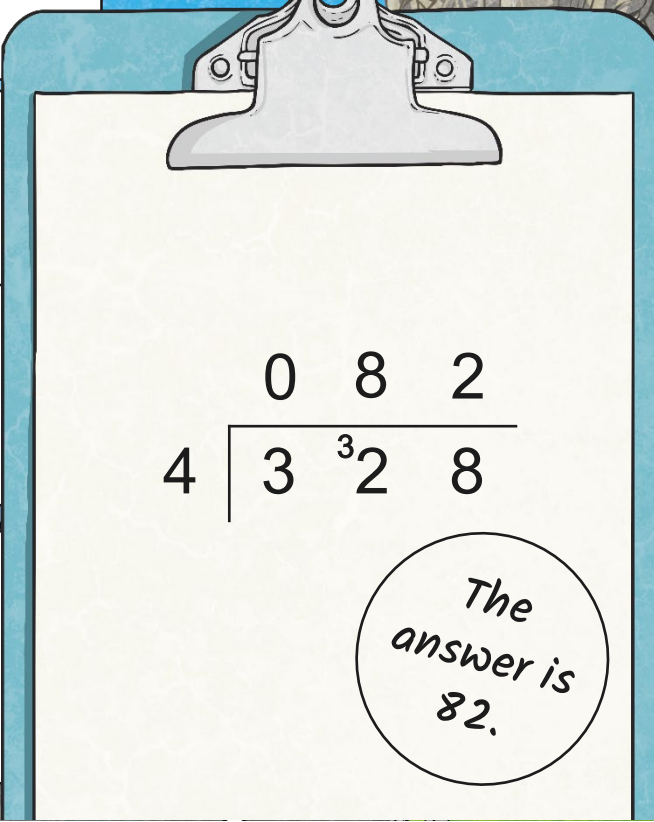
Let's work through an example of the short written method where we need to regroup:

Finally, share 8 into 4 groups.
 $8 \div 4 = 2$, so write 2 above the line.

Now, we have 32 tens to share into 4 groups. $32 \text{ (tens)} \div 4 = 8 \text{ (tens)}$, so write 8 above the line.

This can't be done without breaking up the hundreds, so we write 0 above the line and regroup, moving the 30 tens across into the tens column.

A simpler way you could think of this is: 3 (hundreds) \div 4 can't be done, so move the 3 (hundreds) into the tens column.


$$\begin{array}{r} 0 \ 8 \ 2 \\ 4 \overline{) 328} \end{array}$$

The
answer is
82.

Regroup



Let's work through an example of the short written method where we need to regroup:

First, look at the hundreds column.
Share these 3 hundreds into 4 groups.

This can't be done without breaking up the hundreds, so we write 0 above the line and regroup, moving the 30 tens across into the tens column.

A simpler way you could think of this is: 3 (hundreds) \div 4 can't be done, so move the 3 (hundreds) into the tens column.

$$\begin{array}{r} 0 \\ 4 \overline{) 328} \end{array}$$

Regroup



Let's work through an example of the short written method where we need to regroup:

Now, we have 32 tens to share into 4 groups. $32 \text{ (tens)} \div 4 = 8 \text{ (tens)}$, so write 8 above the line.

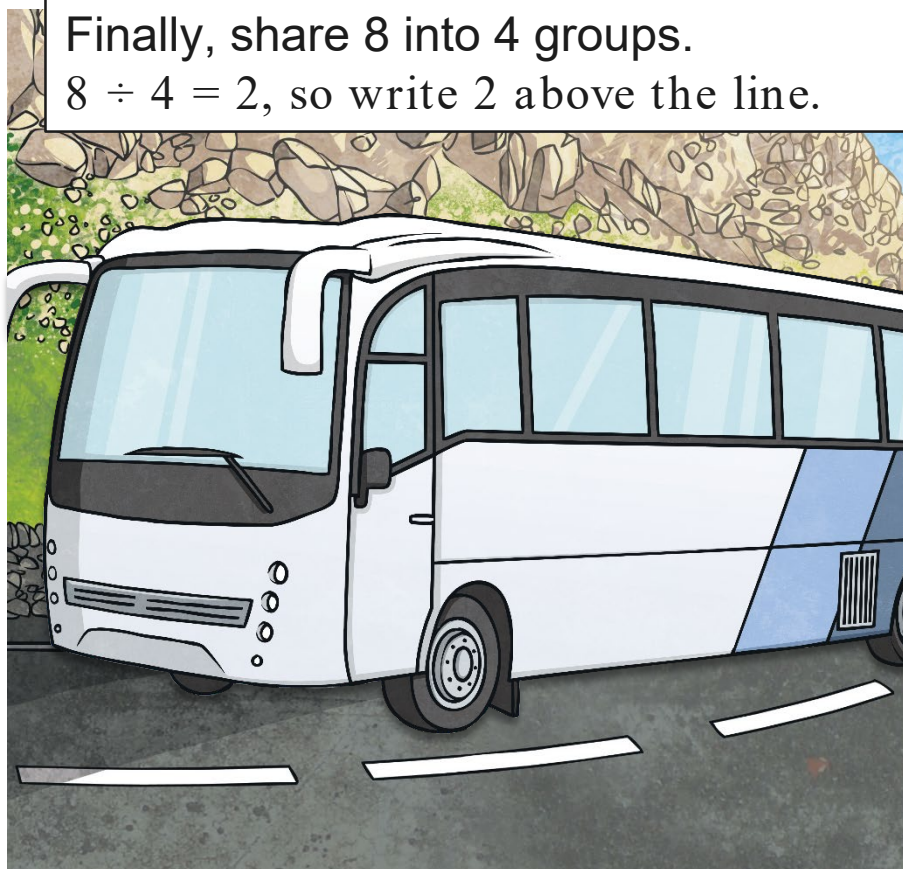
An illustration of a white bus with blue accents parked on a road next to a rocky hill. In the foreground, there is a large blue clipboard with a silver clip at the top. On the clipboard, a short division problem is written.
$$\begin{array}{r} 08 \\ 4 \overline{) 328} \end{array}$$

Regroup



Let's work through an example of the short written method where we need to regroup:

Finally, share 8 into 4 groups.
 $8 \div 4 = 2$, so write 2 above the line.

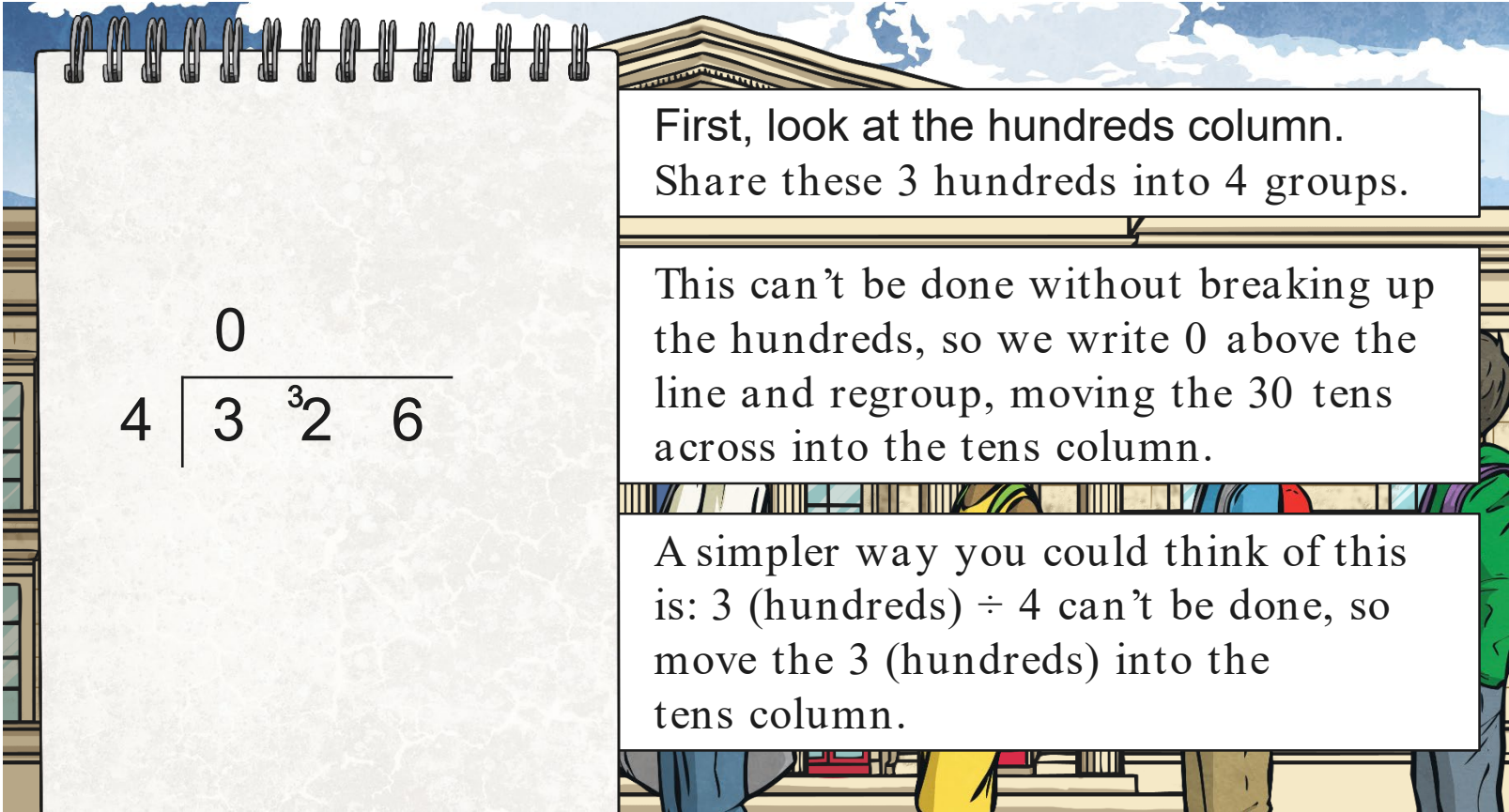


$$\begin{array}{r} 0 \ 8 \ 2 \\ 4 \overline{) 328} \end{array}$$

The
answer is
82.

Remainders

What happens if the last digit won't divide exactly by the divisor?


$$\begin{array}{r} 0 \\ 4 \overline{) 326} \end{array}$$

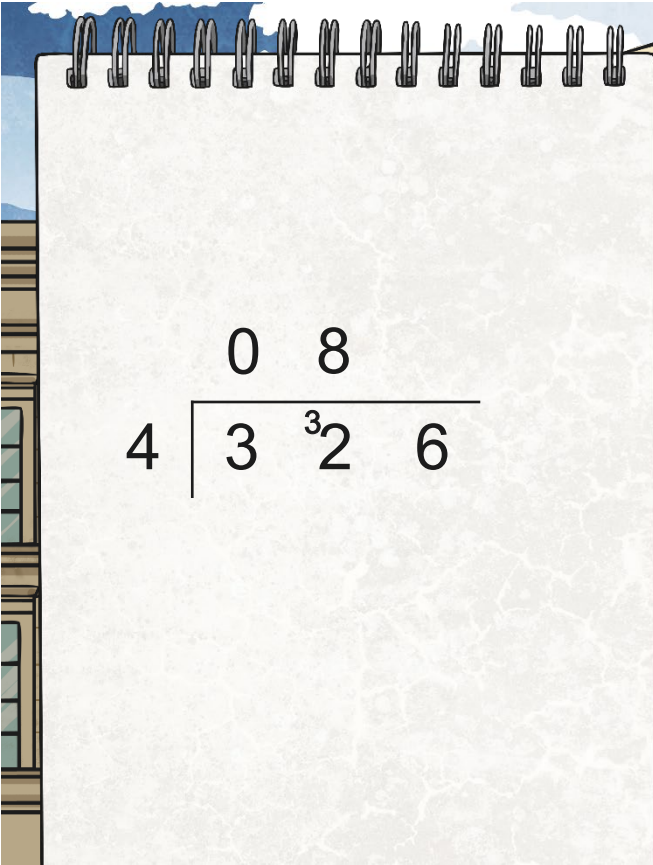
First, look at the hundreds column.
Share these 3 hundreds into 4 groups.

This can't be done without breaking up the hundreds, so we write 0 above the line and regroup, moving the 30 tens across into the tens column.

A simpler way you could think of this is: 3 (hundreds) \div 4 can't be done, so move the 3 (hundreds) into the tens column.

Remainders

What happens if the last digit won't divide exactly by the divisor?


$$\begin{array}{r} 08 \\ 4 \overline{) 326} \end{array}$$

Now, we have 32 tens to share into 4 groups. $32 \text{ (tens)} \div 4 = 8 \text{ (tens)}$, so write 8 above the line.



Remainders

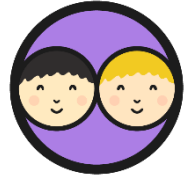
What happens if the last digit won't divide exactly by the divisor?

$$\begin{array}{r} 081 \text{ r}2 \\ 4 \overline{) 326} \end{array}$$

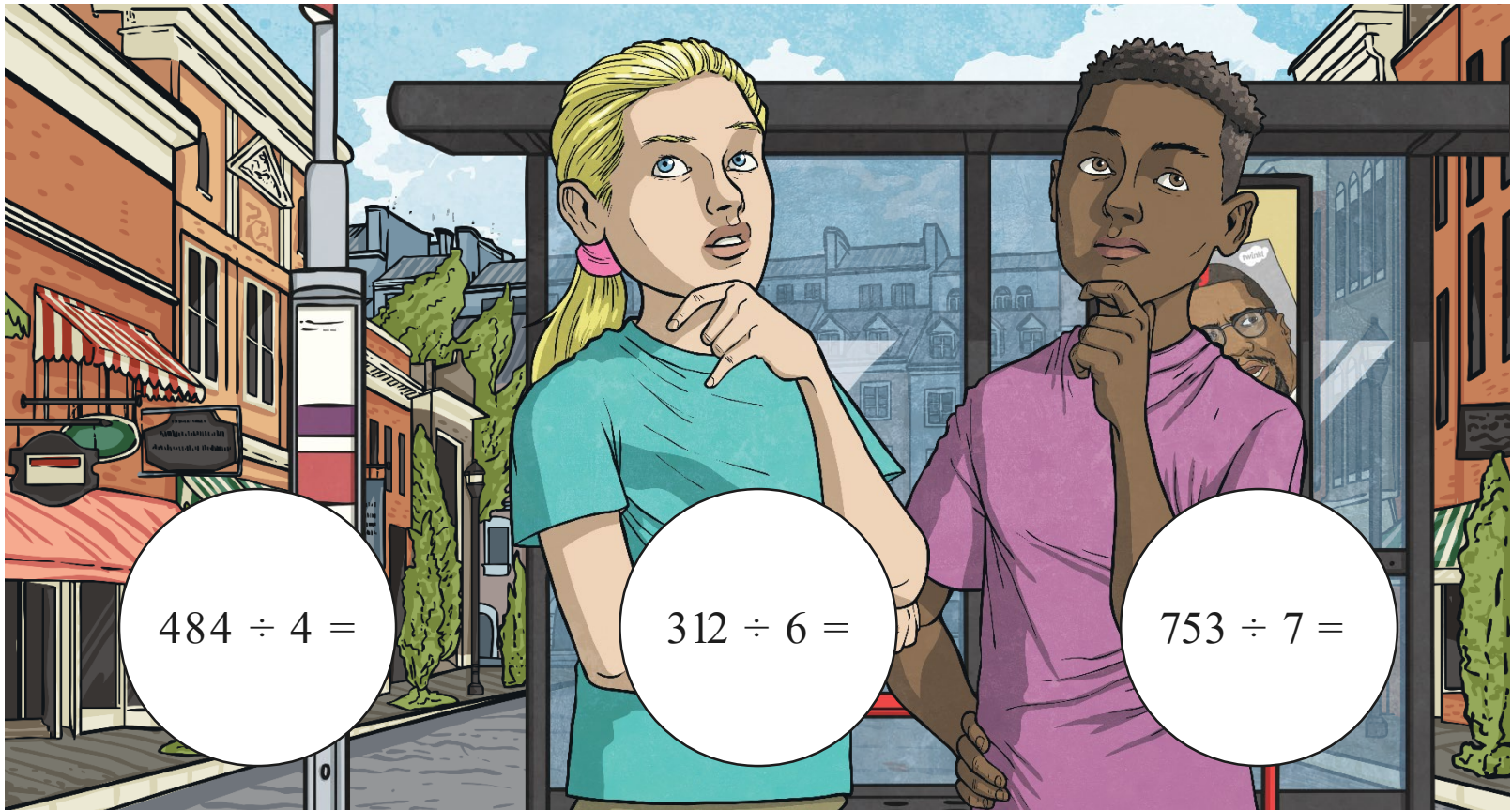
The
answer is
81r2.

Finally, share 6 into 4 groups. This makes 1 group of 4 but leaves 2 left over. Write r (remainder). 1r2.

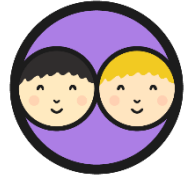
Checkup



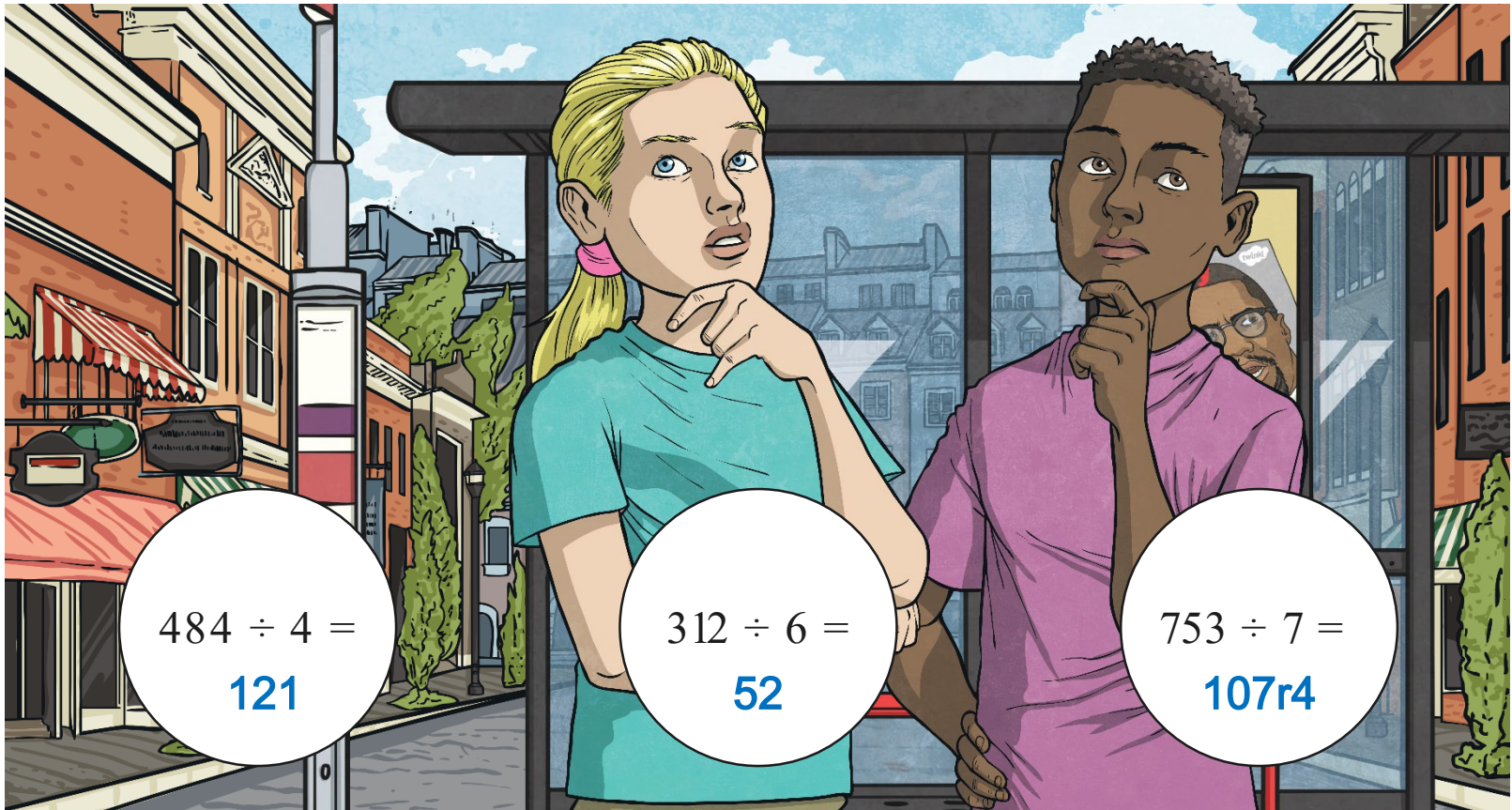
Work in pairs to complete these.



Checkup



Work in pairs to complete these.



Cupcake Calculation



Let's work through an example together:

$$\begin{array}{r} 2 \\ 3 \overline{) 6933} \end{array}$$

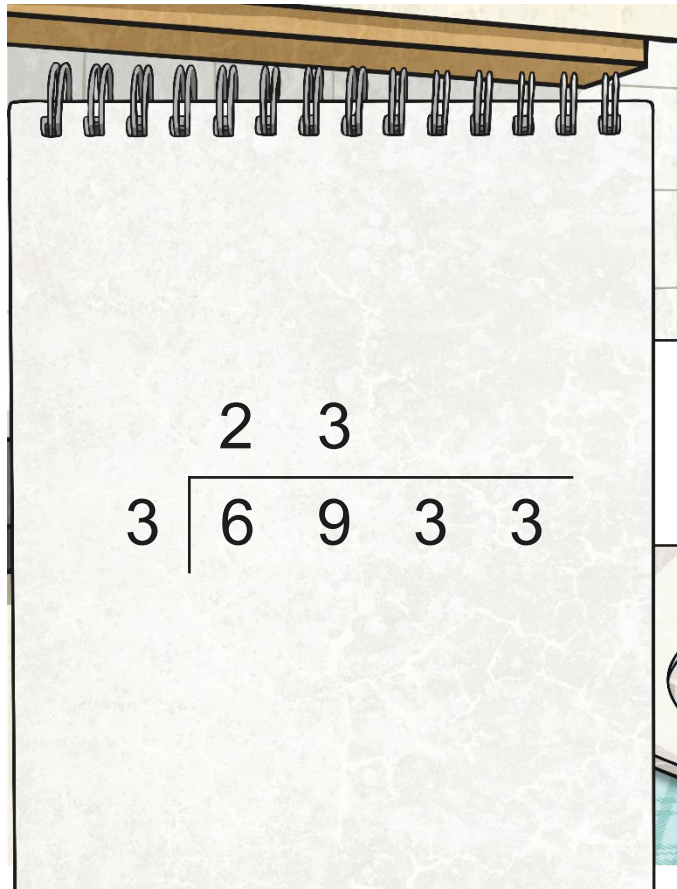
6933 cupcakes are shared equally by three (incredibly greedy) children. How many cupcakes does each child get?

Start at the left in the thousands column. Share 6 thousands into 3 groups. This makes 2 thousands in each group. Write the 2 above the line. A simpler way you could think of this is: $6 \text{ (thousands)} \div 3 = 2 \text{ (thousands)}$, so write 2 above the line.

Cupcake Calculation



Let's work through an example together:



Next, divide 9 hundreds into 3 groups.
 $9 \text{ (hundreds)} \div 3 = 3 \text{ (hundreds)}$,
so write 3 above the line.



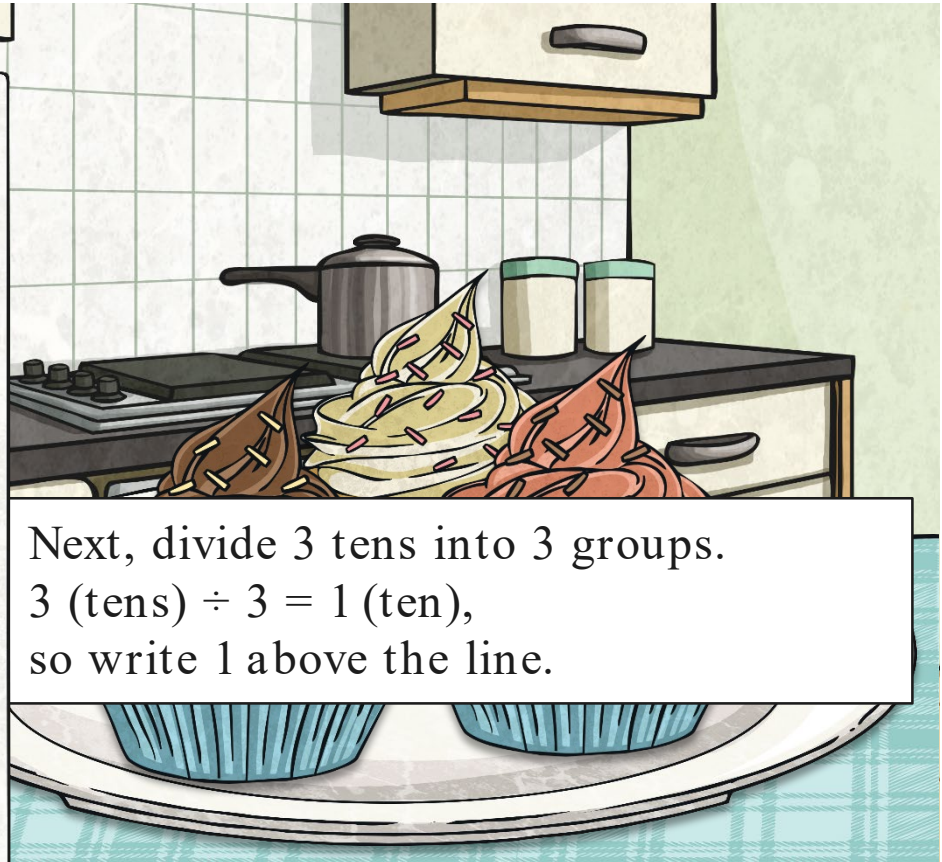
Cupcake Calculation



Let's work through an example together:

$$\begin{array}{r} 2 \quad 3 \quad 1 \\ 3 \overline{) 6 \quad 9 \quad 3 \quad 3} \end{array}$$

Next, divide 3 tens into 3 groups.
 $3 \text{ (tens)} \div 3 = 1 \text{ (ten)}$,
so write 1 above the line.



Cupcake Calculation



Let's work through an example together:

$$\begin{array}{r} 2 \ 3 \ 1 \ 1 \\ 3 \overline{) 6 \ 9 \ 3 \ 3} \end{array}$$

Finally, divide 3 by 3.

$$3 \div 3 = 1,$$

so write 1 above the line.

The answer is 2311 each
(that's a lot of cupcakes!).

Regroup



Great work so far!

Now, let's work through a calculation where we need to regroup:

Starting at the left, share 3 thousands into 4 groups. This can't be done. So take 30 hundreds and share into 4 groups. Finally, share 4 into 4 groups.

3 (thousands) can't be shared so we have the 30 hundreds. $30 \div 4 = 7$ with a remainder of 2. So write 7 above the line and regroup the 2 hundreds across into the hundreds column.

$$\begin{array}{r}
 0821 \\
 4 \overline{) 3284} \\
 \underline{28} \\
 48 \\
 \underline{48} \\
 00
 \end{array}$$

Regroup



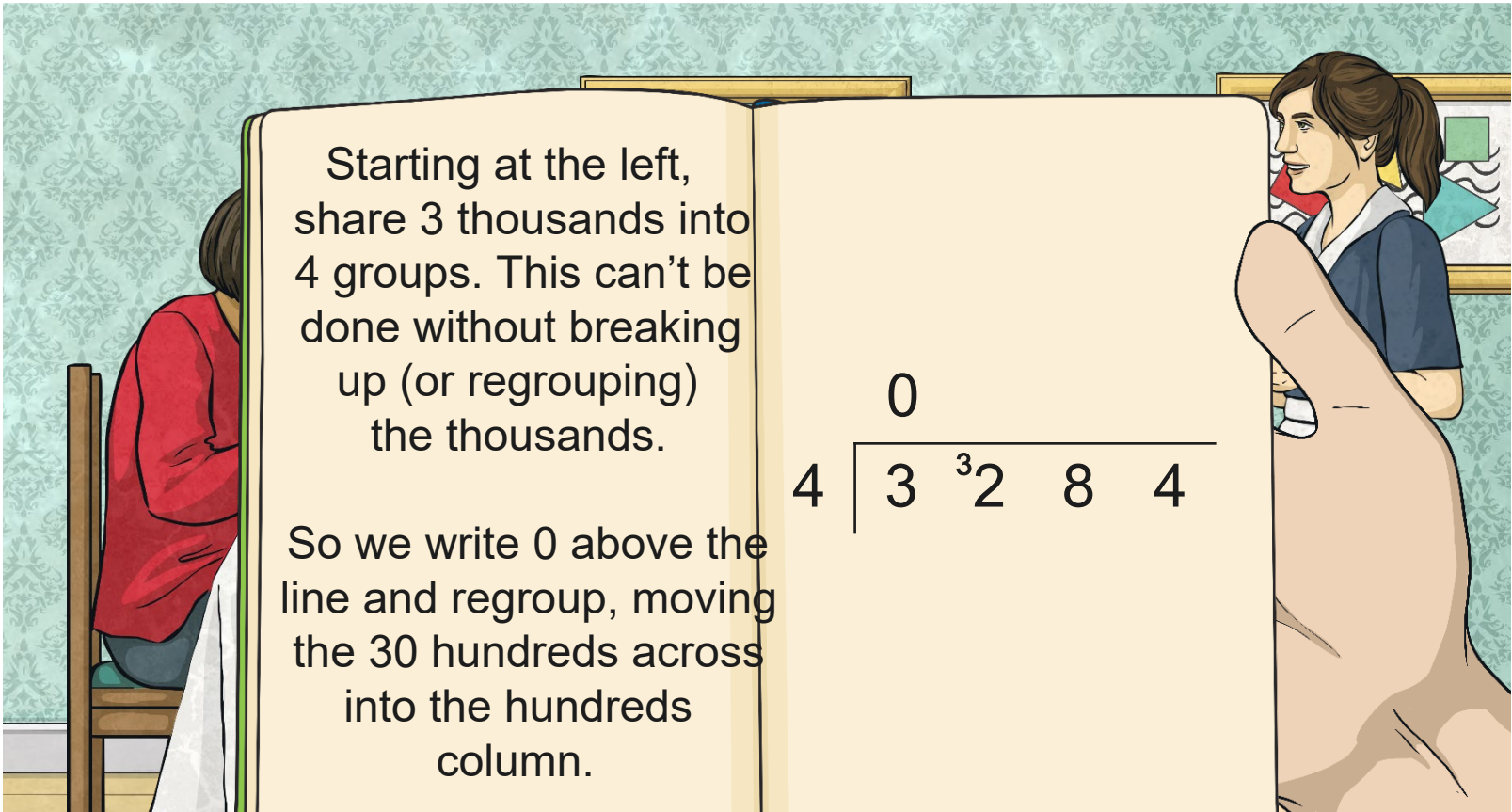
Great work so far!

Now, let's work through a calculation where we need to regroup:

Starting at the left,
share 3 thousands into
4 groups. This can't be
done without breaking
up (or regrouping)
the thousands.

So we write 0 above the
line and regroup, moving
the 30 hundreds across
into the hundreds
column.

$$\begin{array}{r} 0 \\ 4 \overline{) 3284} \end{array}$$



Regroup



Great work so far!

Now, let's work through a calculation where we need to regroup:

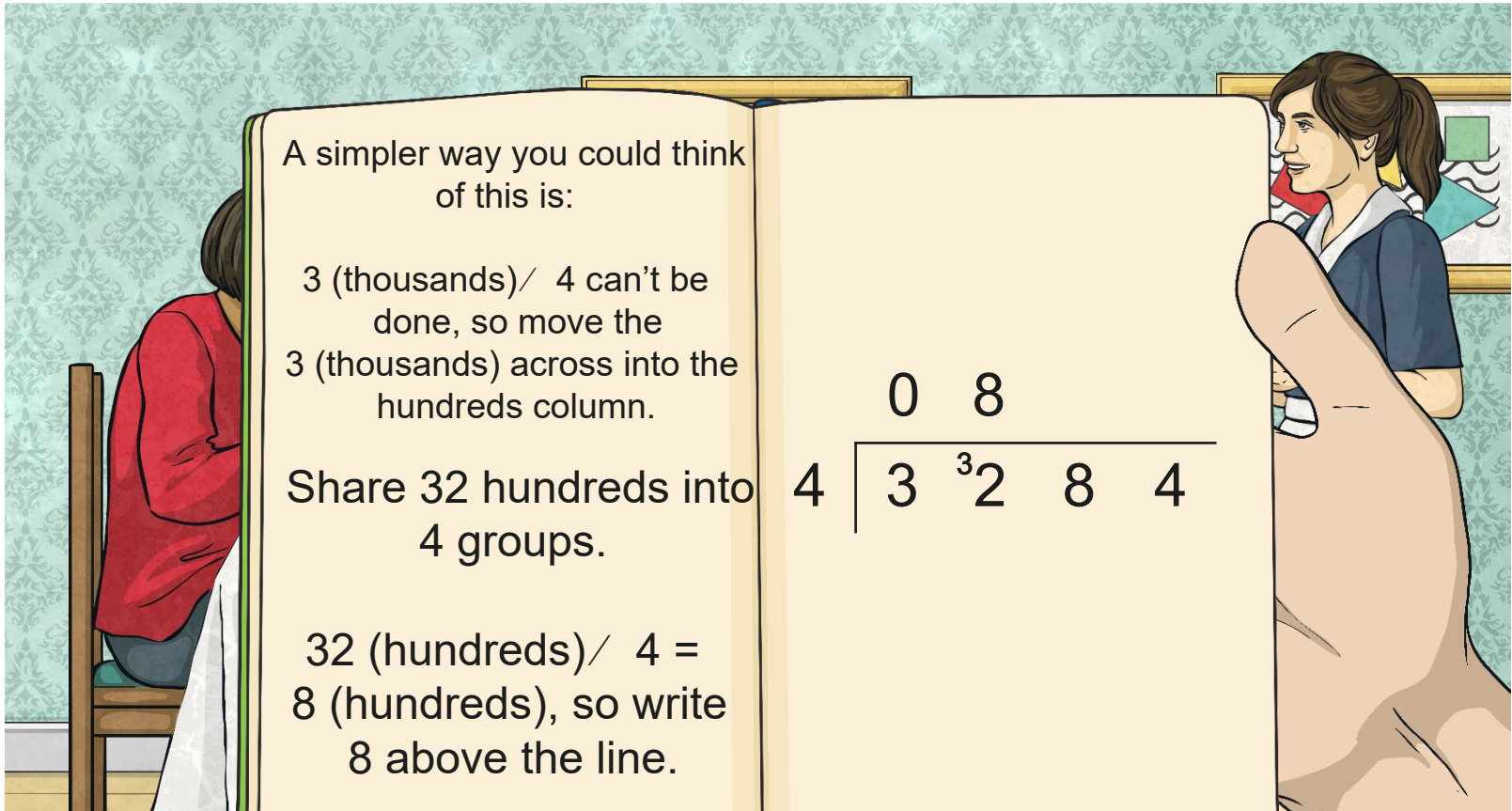
A simpler way you could think of this is:

3 (thousands) \div 4 can't be done, so move the 3 (thousands) across into the hundreds column.

Share 32 hundreds into 4 groups.

32 (hundreds) \div 4 = 8 (hundreds), so write 8 above the line.

$$\begin{array}{r} 0 \quad 8 \\ 4 \overline{) 3284} \end{array}$$



Regroup



Great work so far!

Now, let's work through a calculation where we need to regroup:

An illustration of a classroom scene. A teacher with brown hair in a ponytail, wearing a blue shirt, is pointing at a large open book. Two students, a girl in a red shirt and a boy in a blue shirt, are sitting at a desk, looking at the book. The book is open to two pages. The left page contains text about sharing 8 tens into 4 groups. The right page contains a long division problem: 4328 divided by 4, with a 3 written above the 2 in the quotient.

Share 8 tens into
4 groups.

$8 \text{ (tens)} \div 4 = 2$
(tens), so write 2 above
the line.

$$\begin{array}{r} 0 \quad 8 \quad 2 \\ 4 \overline{) 3 \text{ } ^3 2 \quad 8 \quad 4} \end{array}$$

Regroup



Great work so far!

Now, let's work through a calculation where we need to regroup:

An illustration of a classroom scene. A large, open book is the central focus, held by a large hand. The book's pages contain text and a division problem. To the left, a child in a red shirt is seated at a desk. To the right, a teacher with brown hair in a ponytail, wearing a blue shirt, is looking at the book. The background features a green patterned wallpaper and a whiteboard with some drawings.

Finally, share 4 into
4 groups.

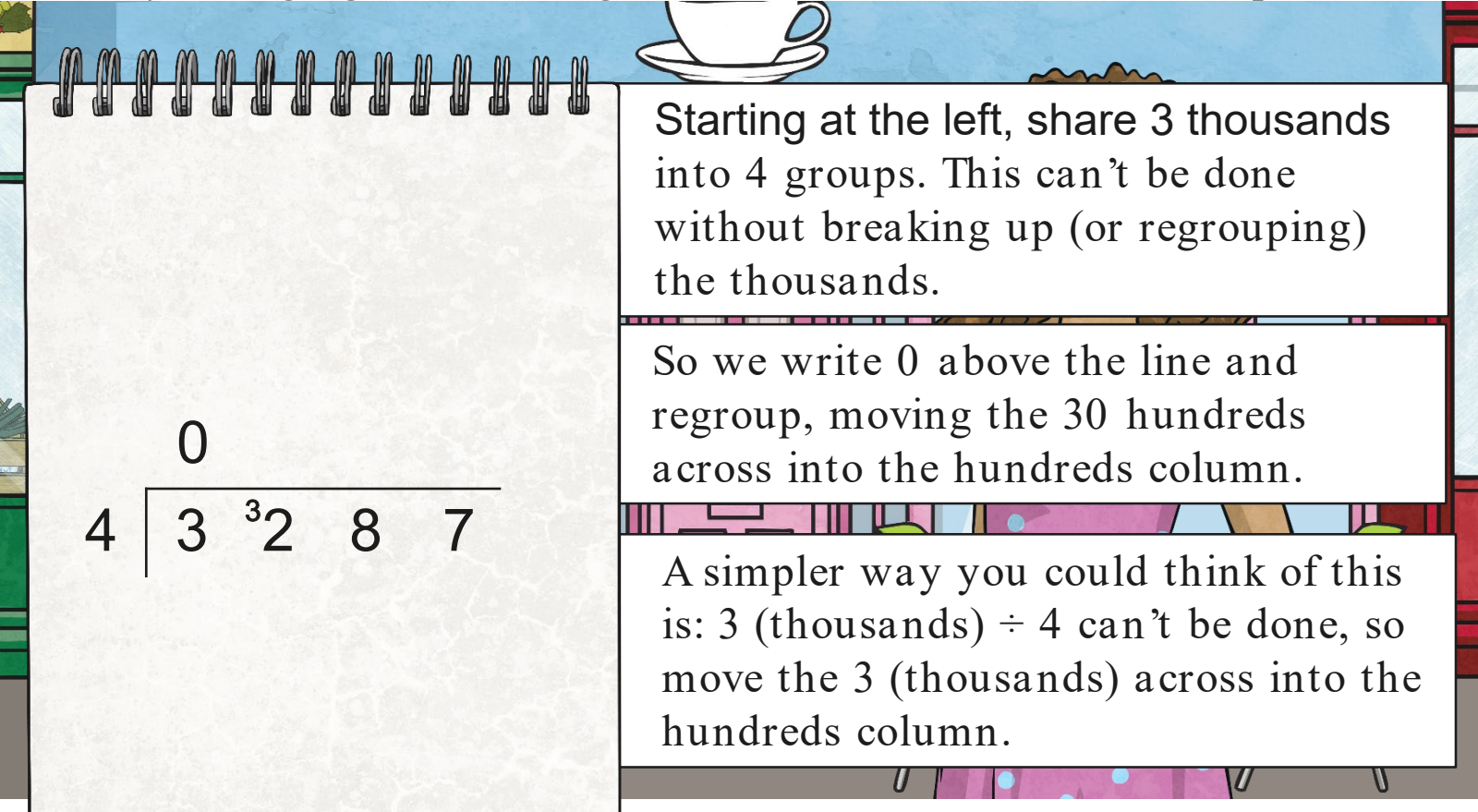
$4 \div 4 = 1$, so write 1
above the line.

The answer is 821.

$$\begin{array}{r} 0821 \\ 4 \overline{) 3284} \end{array}$$

Remainders

What happens if the last digit won't divide exactly by the divisor?
Let's try changing the final digit to a number that isn't a multiple of four:


$$\begin{array}{r} 0 \\ 4 \overline{) 3287} \\ \underline{3} \end{array}$$

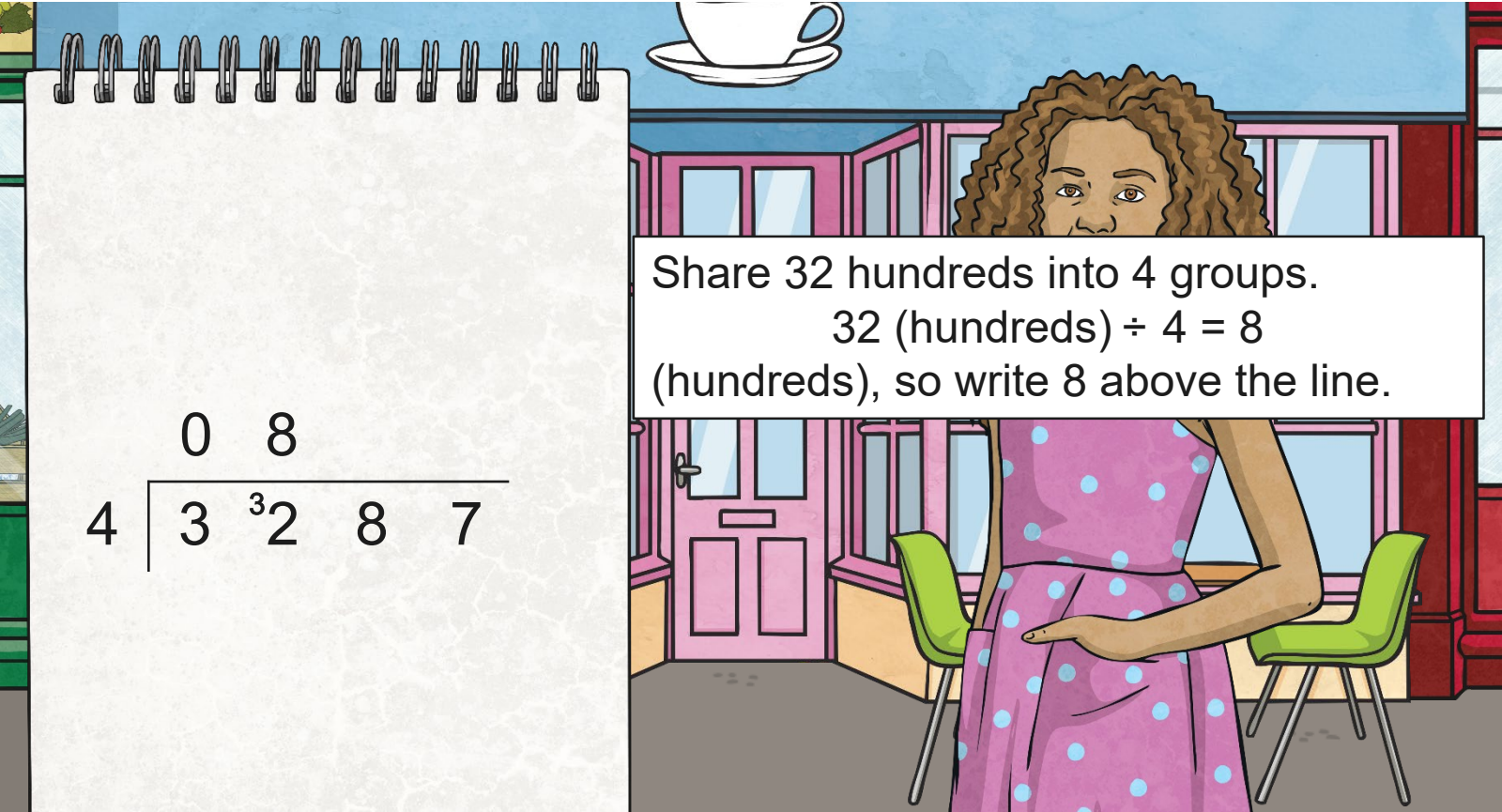
Starting at the left, share 3 thousands into 4 groups. This can't be done without breaking up (or regrouping) the thousands.

So we write 0 above the line and regroup, moving the 30 hundreds across into the hundreds column.

A simpler way you could think of this is: 3 (thousands) \div 4 can't be done, so move the 3 (thousands) across into the hundreds column.

Remainders

What happens if the last digit won't divide exactly by the divisor?
Let's try changing the final digit to a number that isn't a multiple of four:


$$\begin{array}{r} 0 \ 8 \\ 4 \overline{) 3287} \end{array}$$

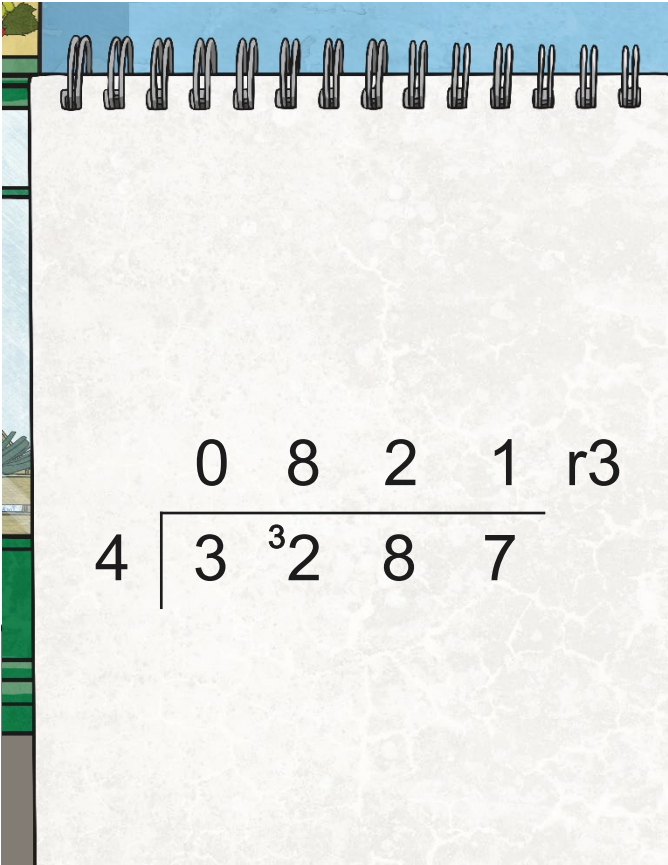
Share 32 hundreds into 4 groups.

$$32 \text{ (hundreds)} \div 4 = 8$$

(hundreds), so write 8 above the line.

Remainders

What happens if the last digit won't divide exactly by the divisor?
Let's try changing the final digit to a number that isn't a multiple of four:


$$\begin{array}{r} 0 \ 8 \ 2 \ 1 \ r3 \\ 4 \overline{) 3 \text{ } ^3 2 \ 8 \ 7} \end{array}$$

Share 8 tens into 4 groups.

8 (tens) \div 4 = 2 (tens), so write 2 above the line.

Remainders

What happens if the last digit won't divide exactly by the divisor?
Let's try changing the final digit to a number that isn't a multiple of four:



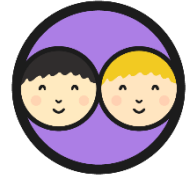
The answer is 821r3.

$$\begin{array}{r} 0 \ 8 \ 2 \ 1 \ r3 \\ 4 \overline{) 3 \ 2 \ 8 \ 7} \end{array}$$

Finally, share 7 into 4 groups. This makes 1 group of 4, so we write 1 above the line.

But 3 is left over because $7 - 4 = 3$. This is the remainder. We write 1r3.

Your Turn



Work in pairs to complete these.

$$4884 \div 4 =$$

$$3612 \div 6 =$$

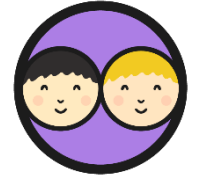
$$7499 \div 7 =$$

Did you both get the same answer?

Which calculation was the easiest? Why?

Which was the most difficult? Why?

Your Turn



Work in pairs to complete these.

$$4884 \div 4 = 1221$$

$$3612 \div 6 = 602$$

$$7499 \div 7 = 1071\text{r}2$$

Did you both get the same answer?

Which calculation was the easiest? Why?

Which was the most difficult? Why?

twinkl