

Welcome to your free sample of PlanBee's **Short Division** scheme of work!

This is Lesson 2 in a series of 5 lessons. It teaches children how to use the 'bus stop' method of short division.



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SHORTDIVISION50

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Like all PlanBee lessons, this lesson pack contains a detailed lesson plan, slideshow presentation and a range of printable resources:

Short Division

Maths Year 5 Lesson 2 of 5

Learning Objective
To be able to use the formal written method of short division.

Resources
Slides
Calculation Cards 2A/2B/2C
Points Cards
Missing Number Challenge 2A/2B/2C (FSD? activity only)

Teaching Input

- Show children the same division calculation solved using both the chunking method and short division method on the slides. Can you explain how each of these methods work? What is the same about these methods? What is different? Invite children to share their responses.
- Tell children that today we will be focusing on the short division method. Show children the calculation $744 \div 6$ on the slides. How can we set up this calculation in the short division format? Children to try formatting the calculation correctly on mini-whiteboards, then check on the slides. Go through each of the steps to recap the method, checking children's understanding as you do so.
- Go through the calculations on the slides, starting with simple three-digit by one-digit calculations, then moving on to those that include remainders, then finally four-digit by one-digit calculations. Children to use the chunking method to check and prove each of their answers.
- Show children the missing number short division calculation on the slides. What are the missing numbers? How do you know? Repeat this with the other example.

Main Activity

Lower ability:	Middle ability:	Higher ability:
Provide children with a set of Calculation Cards 2A in pairs and ask them to lay the cards face down on the table. Children pick one calculation at a time to solve, then use the Points Card to work out how many points their answer is worth. Each child can keep a tally of the points they have scored on their card. They are able to randomly check up to three of their opponent's answers to check that there is no cheating!	Provide children with a set of Calculation Cards 2B in pairs and ask them to lay the cards face down on the table. Children pick one calculation at a time to solve, then use the Points Card to work out how many points their answer is worth. Each child can keep a tally of the points they have scored on their card. They are able to randomly check up to three of their opponent's answers to check that there is no cheating!	Provide children with a set of Calculation Cards 2C in pairs and ask them to lay the cards face down on the table. Children pick one calculation at a time to solve, then use the Points Card to work out how many points their answer is worth. Each child can keep a tally of the points they have scored on their card. They are able to randomly check up to three of their opponent's answers to check that there is no cheating!

Fancy something different...?

- Provide children with Missing Number Challenge 2A, 2B or 2C in pairs (depending on ability). Give children a set amount of time to solve as many of the calculations as they can individually. After this time, children to swap their sheet with their partner who checks they are correct using the chunking method. Encourage children to support each other in explaining any errors that have occurred and in working out any missing numbers they were unable to find.

Plenary
How do you feel about short division now that you've had some more practice? What do you find most difficult? Why? How do you think you can make the process easier? Children to think, pair, share their ideas.

Assessment Questions

- Can children format a short division question correctly?
- Can children solve division problems using the short division method?
- Can children check their calculations using other division and multiplication methods?

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Short Division

Learning Objective:
To be able to use the short division method.

Today we are going to be focusing on the short division method.

Have a look at this division question. Can you set it out as a short division calculation? Think carefully about where each number needs to go!

Unlike formal multiplication methods, when we do short division, we always start with the digit with the largest value. This is always the digit nearest the divisor.

What we are really doing in this step is working out how many sixes there are in 700, but we can use our understanding of place value to shorten it to seven to make it easier.

$744 \div 6 =$

I like to think of short division as being like a bus stop! The dividend goes inside the bus stop and the divisor goes outside.

Now that we have set out the calculation correctly, what do we have to do next?

In this case, we first need to work out how many sixes there are in seven.

Short Division **Calculation Cards 2B**

A 6 8 5 4 3 $8543 \div 6 =$	B 5 8 7 4 5 $8745 \div 5 =$	C 3 7 6 5 1 $7651 \div 3 =$
D 8 2 6 9 4 $2694 \div 8 =$	E 3 1 3 5 9 $1359 \div 3 =$	F 6 7 4 6 4 $7464 \div 6 =$
G 9 7 3 9 4 $7394 \div 9 =$	H 7 6 5 9 2 $6592 \div 7 =$	I 5 1 8 1 0 $1810 \div 5 =$
J 4 2 2 7 2 $2272 \div 4 =$	K 9 9 5 4 9 $9549 \div 9 =$	L 6 8 9 2 3 $8923 \div 6 =$
M 3 1 9 5 7 $1957 \div 3 =$		
P 5 7 8 2 7 $7827 \div 5 =$		

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Short Division **Calculation Cards 2C**

A 9 7 6 4 1 $7641 \div 9 =$	B 8 9 0 4 9 $9049 \div 8 =$	C 7 8 2 1 4 $8214 \div 7 =$
D 5 6 7 0 9 $6709 \div 5 =$	E 8 5 1 6 0 $5160 \div 8 =$	F 9 9 2 8 7 $9287 \div 9 =$
G 7 5 9 6 6 $5966 \div 7 =$	H 6 8 7 2 5 $8725 \div 6 =$	I 4 9 1 3 6 $9136 \div 4 =$
J 3 7 2 5 6 2 $72562 \div 3 =$	K 4 7 1 6 5 3 $71653 \div 4 =$	L 5 2 4 3 9 8 $24398 \div 5 =$

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Short Division **Points Cards**

In pairs, choose one Calculation Card at a time to solve. Use the Carroll diagram below to work out how many points you get for each answer and keep a tally. Who can get the most points?

Odd number	Even number	Tally:
Has remainders	1 point	2 points
No remainders	3 points	4 points

Repeat for four more cards.

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Short Division **Missing Number Challenge 2A**

Name: _____ Date: _____

See if you can find each of the missing numbers in these short division calculations.

A $4 \overline{) 8620}$	B $3 \overline{) 5251}$	C $6 \overline{) 2314}$	D $5 \overline{) 6125}$
E $3 \overline{) 5292}$	F $0 \overline{) 9136}$	G $4 \overline{) 1424}$	H $1 \overline{) 81628}$

Now swap your work with a partner who will check if each of your calculations are correct using the chunking method!

A	B	C	D
Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>
E	F	G	H
Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the calculation correct? Yes <input type="checkbox"/> No <input type="checkbox"/>

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(This page shows just a small preview of the resources included)

Scroll through the next slides for a preview of the
slideshow presentation for this lesson...

Open in Adobe Reader, then go to View > Full Screen Mode to view as a slideshow



Short Division

Learning Objective:

To be able to use the formal written method of short division.



$$672 \div 4 = 168$$

Chunking method

$$\begin{array}{r} \overset{5}{\cancel{6}} \overset{1}{7} \overset{2}{2} \\ - 4 \ 8 \ 0 \quad (120 \times 4) \\ \hline 1 \ 9 \ 2 \\ 1 \ 6 \ 0 \quad (40 \times 4) \\ \hline 0 \ 3 \ 2 \\ 3 \ 2 \quad (8 \times 4) \\ \hline 0 \end{array}$$

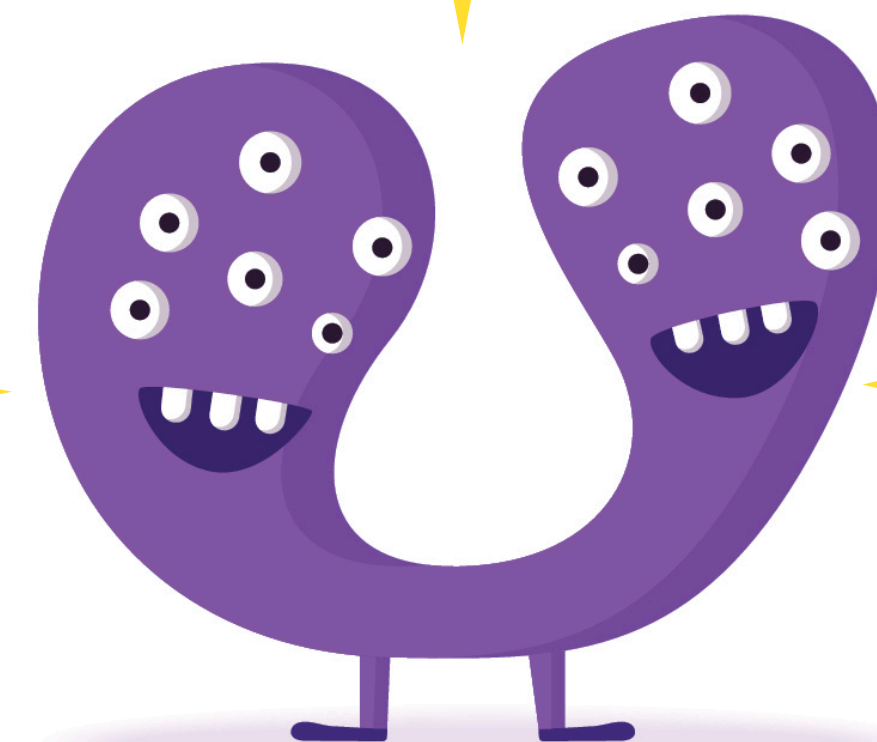
$$120 + 40 + 8 = 168$$

Short division method

$$\begin{array}{r} 1 \ 6 \ 8 \\ 4 \overline{) 6 \ 27 \ 32} \end{array}$$

How do these two division methods work?

What is the same about them?



What is different about them?

Today we are going to be focusing on the short division method.



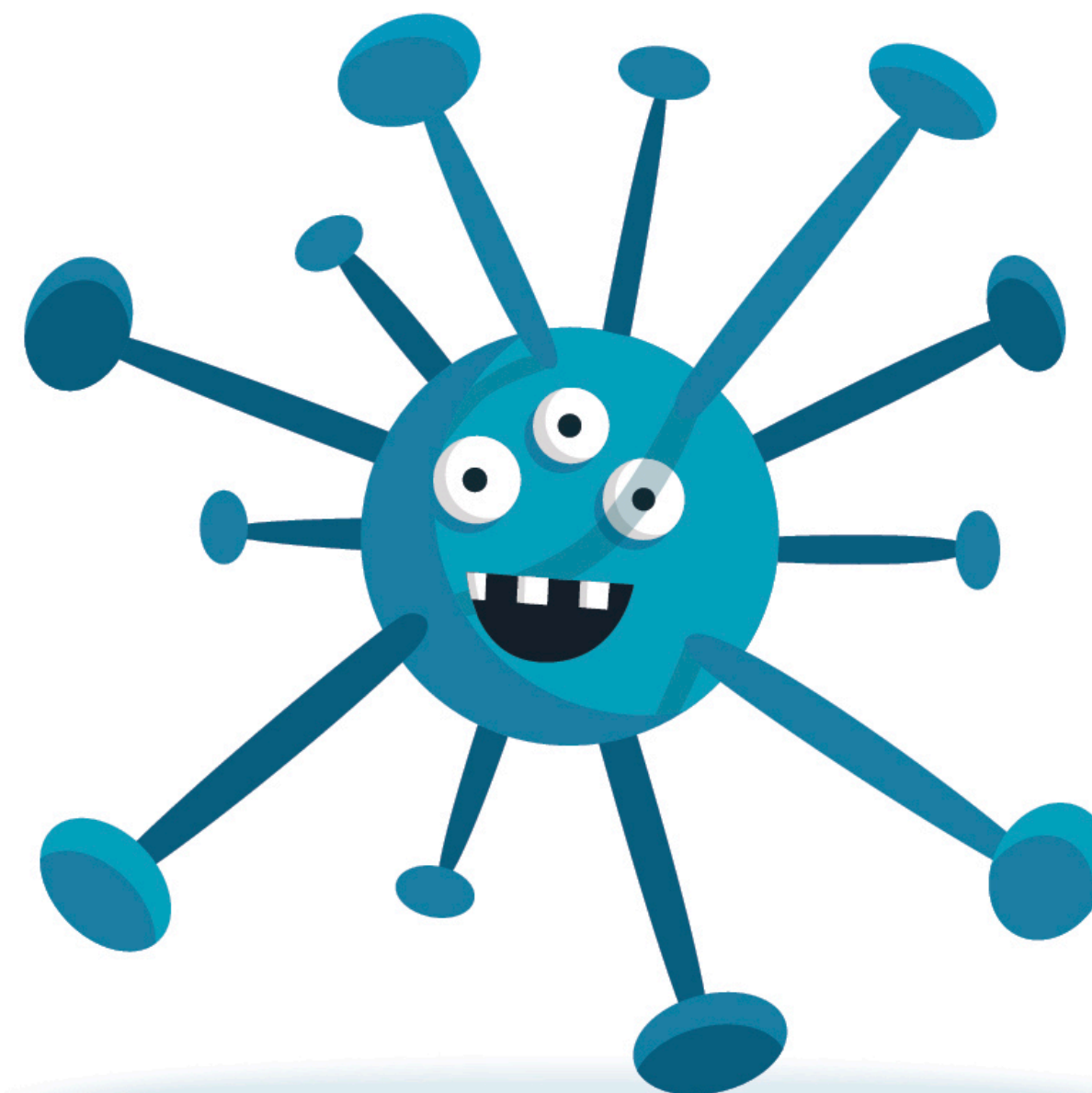
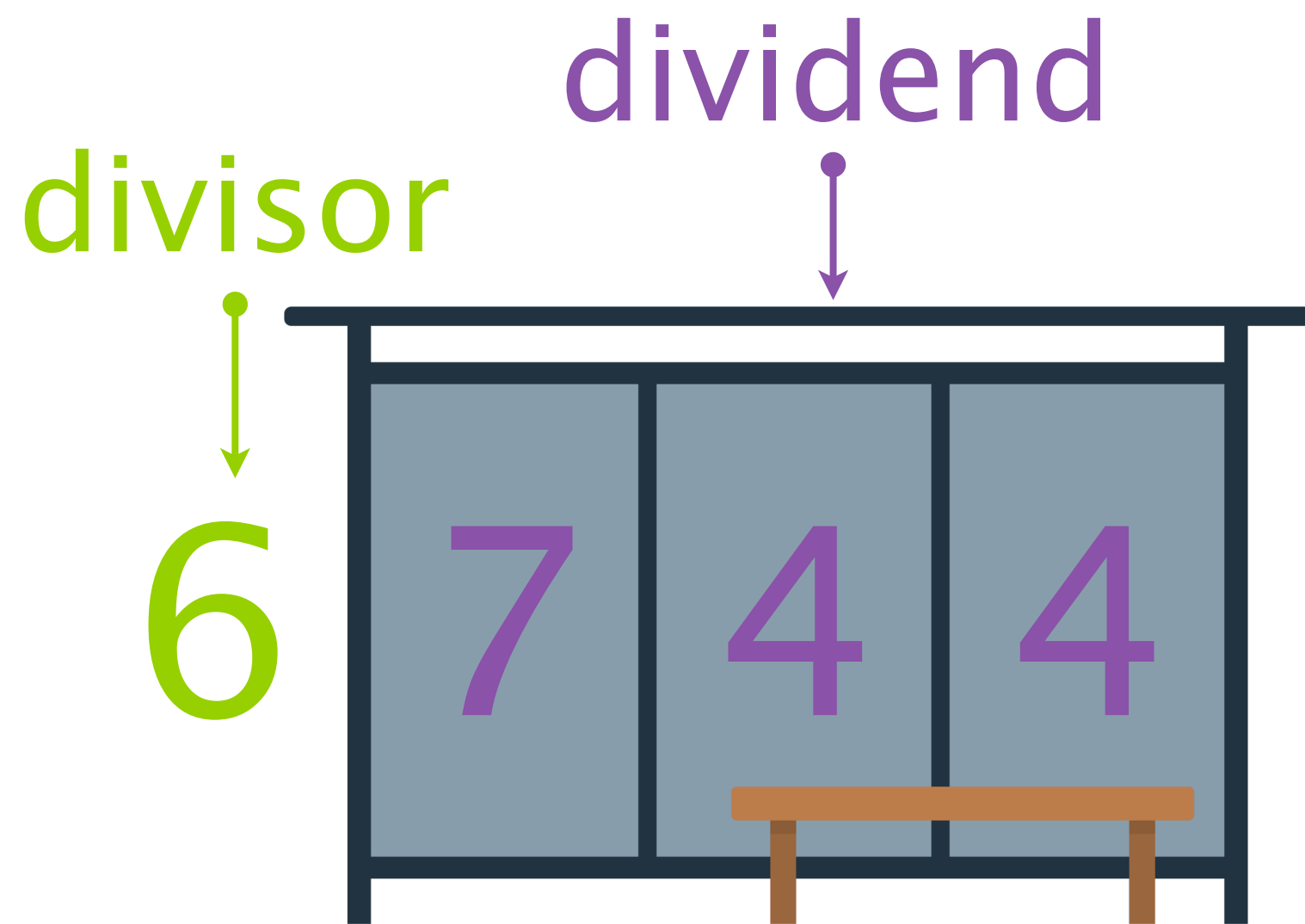
Have a look at this division question.
Can you set it out as a short division calculation? Think carefully about where each number needs to go!

$$744 \div 6 =$$

$$744 \div 6 =$$

$$6 \overline{) 744}$$

I like to think of short division as being like a bus stop! The dividend goes inside the bus stop and the divisor goes outside.



Now that we have set out the calculation correctly, what do we have to do next?

Unlike formal multiplication methods, when we do short division, we always start with the digit with the largest value. This is always the digit nearest the divisor.

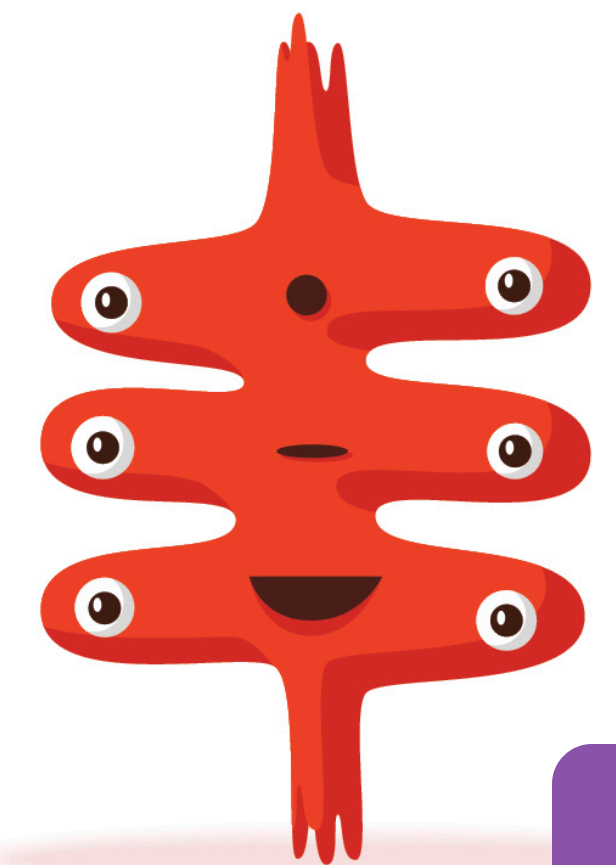
$$\begin{array}{r} ? \\ 6 \overline{) 744} \end{array}$$

In this case, we first need to work out how many sixes there are in seven.



What we are really doing in this step is working out how many sixes there are in 700, but we can use our understanding of place value to shorten it to seven to make it easier!

As long as we keep all the digits in the correct columns, we can look just at the digits and not the actual value.



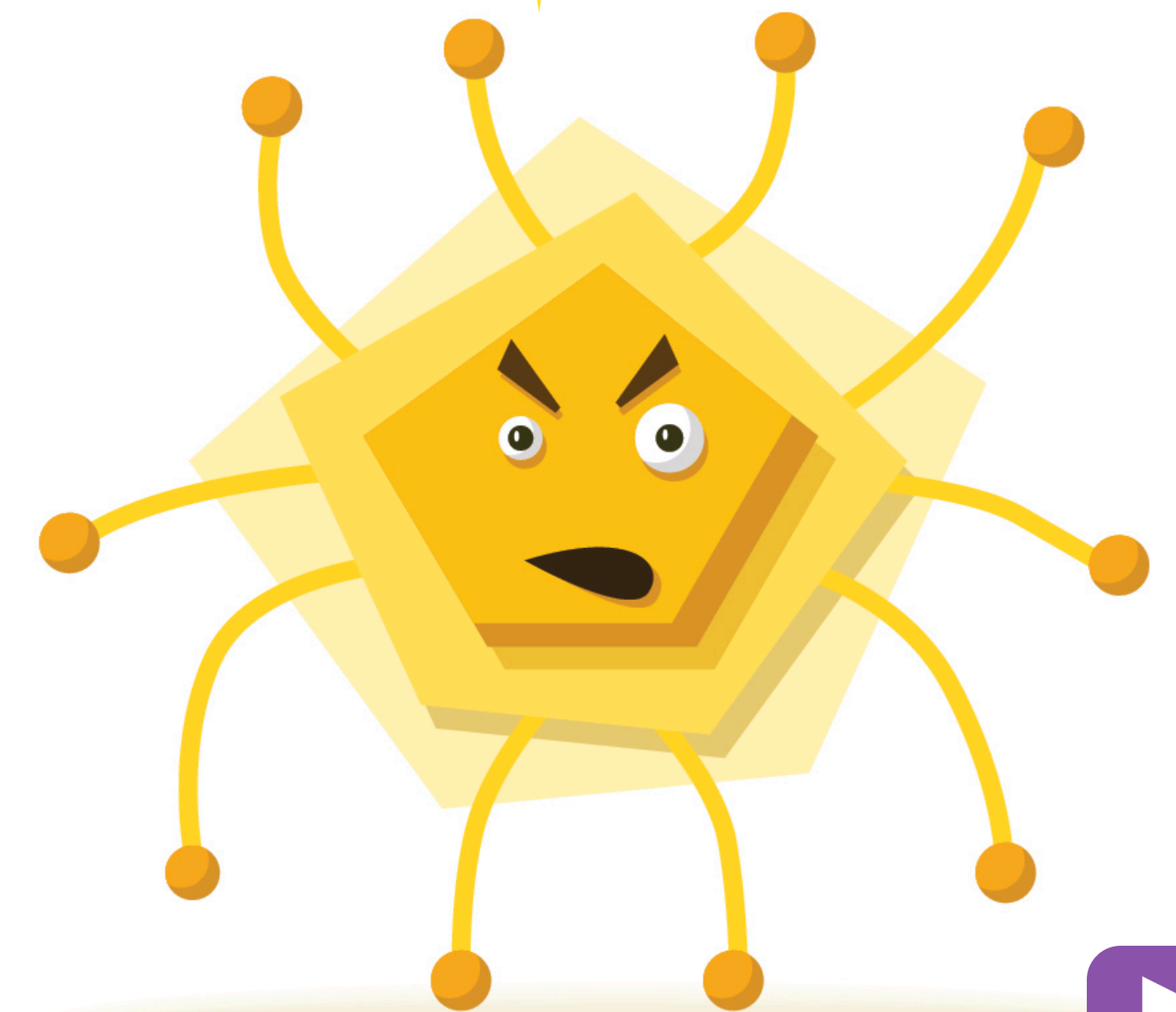
$$\begin{array}{r} 1 \\ 6 \overline{) 744} \end{array}$$

There is one lot of six in **seven**, so we record this above the seven...

$$\begin{array}{r} 1 \\ 6 \overline{) 7^144} \end{array}$$

...but we have **one** left over so we exchange this for the next part of the calculation.

What do you think our next step will need to be?



What we are really showing here is that there are 100 sixes in 700!

$$\begin{array}{r} 1 \quad ? \\ 6 \overline{) 7 \overset{1}{4} 4} \end{array}$$

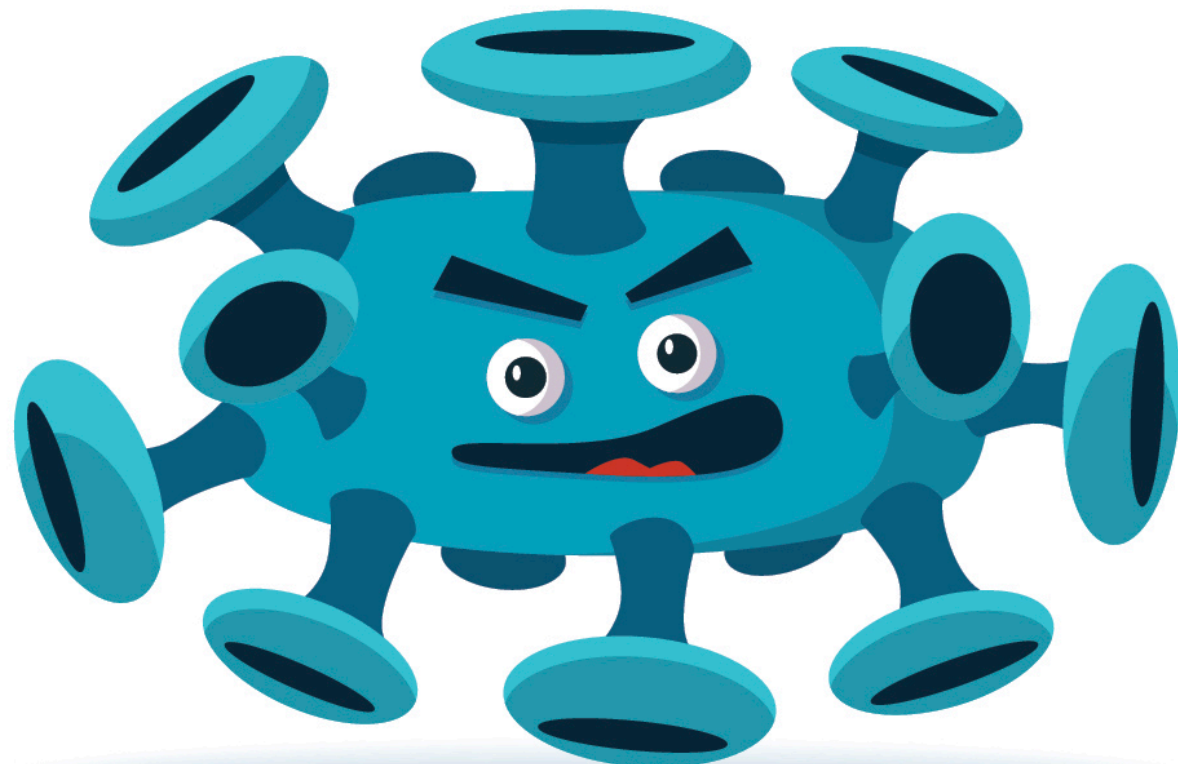
Next, we need to look at how many sixes there are in 14.

$$\begin{array}{r} 1 \quad 2 \\ 6 \overline{) 7 \overset{1}{4} 4} \end{array}$$

There are 2 sixes in 14, so we record this above the 14...

$$\begin{array}{r} 1 \quad 2 \\ 6 \overline{) 7 \overset{1}{4} \overset{2}{4}} \end{array}$$

...but we also have **two** remaining so we will exchange it to use in the next part of the calculation.



What do we need to do next?

$$\begin{array}{r} 12 \\ 6 \overline{) 744} \\ \underline{42} \\ 44 \\ \underline{42} \\ 20 \end{array}$$

Finally, we need to work out how many sixes there are in 24.

$$\begin{array}{r} 124 \\ 6 \overline{) 744} \\ \underline{42} \\ 44 \\ \underline{42} \\ 20 \end{array}$$

There are exactly 4 sixes in 24, so we record this above the line.

We don't have any remainders so this makes our answer 124!

$$744 \div 6 = 124$$



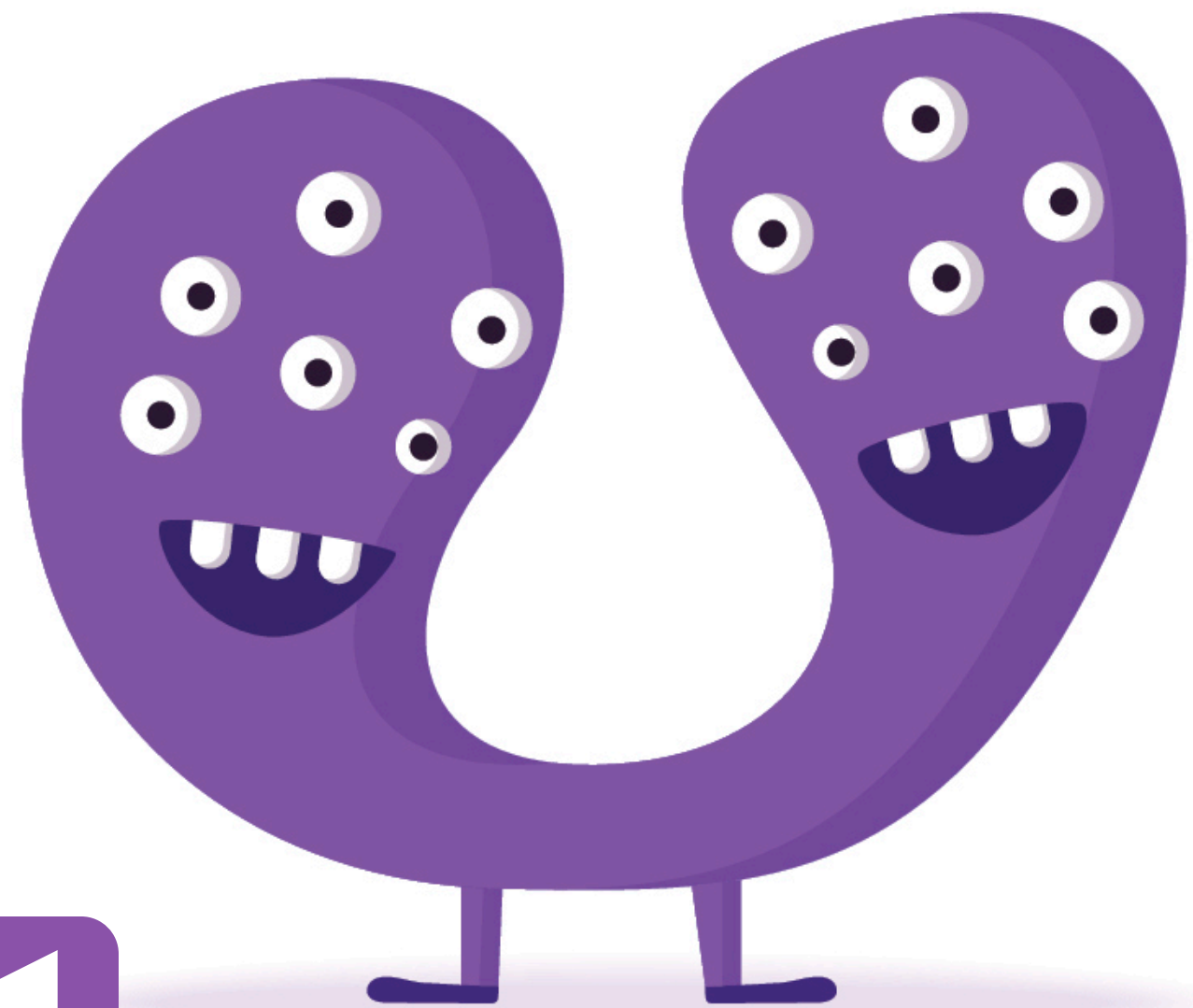


I find
short division quite
tricky. How confident do
you feel with this
method?



$$845 \div 5 =$$

$$5 \overline{) 845}$$



Let's do this one together.
What do we need to do
first?

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SHORTDIVISION50

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lessons for £5, or an
individual lesson for just
£1.50...

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