Division for Kids: How Parents Can Help With Short Division and Long Division

We've worked with primary maths experts to create a parent's guide to short and long division, and in it we've explained everything you need to know to help your child with these tricky topics!

It doesn't matter whether it is short division or long division, at KS2 just the mere mention of the 'D' work can send shivers down the spine of many young mathematicians, but we are here to tell you (and them) that this doesn't need to be the case!

Here at Third Space Learning we are on a mission to make maths accessible for all, and this includes long (and short) division too...

In the past, division was taught without much concrete modelling (using physical items to help represent the maths problem), so it's no wonder that many of us parents find it difficult to this very day.

Nowadays though, with children spending a lot of time at school understanding *how* division works, rather than just memorising the method, the fear around KS2 division is melting away, but helping your child with division at home

is still highly beneficial for your child.

But before you find out everything you need to know about division for kids, we've prepared a brief division recap for you!

This blog is part of our series of blogs designed for parents supporting home learning and looking for home learning resources during the Covid-19 epidemic.

Division in a nutshell – The things you may have forgotten about short and long division since school

We know how devilishly difficult division can be for both you and your child, so here's everything you need to know about it in brief.

What is division in maths?

Division is the operation that is the opposite of multiplication and it involves splitting into equal parts or groups.

In primary school, 3 methods of division are taught, each of which vary in difficulty. They are:

- Chunking
- Short division (also known as the bus stop method)
- Long division

What is chunking?

Chunking is a method that is used to divide larger numbers that cannot be divided mentally.

When using the chunking method, children will repeatedly subtract the divisor from the dividend until there is an answer. For example, 12 ÷ 3 would be solved by doing 12 – 3 to get 9, 9 – 3 to get 6, 6 – 3 to get 3, and then 3 – 3 to get to 0.

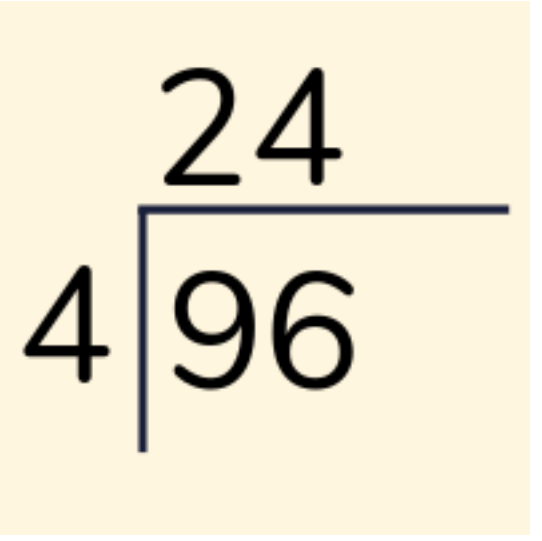
When all of the times 3 has been subtracted from 12 are counted up (4), it becomes clear that the answer is 4.

What is short division?

Short division, also known as the bus stop method, is a quick and effective method to work out division with larger numbers.

After your child becomes comfortable with chunking, they will move onto short division as it can be used to solve a division problem with a very large dividend by following a series of easy steps.

For example:



In this example four goes into nine two times, and it leaves a remainder of one.

This remainder is then passed onto the next number (six) to make it 16. Four goes into 16 four times, so when put together the answer becomes 24.

What is long division?

Long division is a method that is used when dividing a large number (usually three digits or more) by a two digit (or larger) number. It is set out in a similar way to the bus stop method that is used for short division.

Take a look at out example below to see long division explained in a visual example.

What does my child need to know about short division and long division in KS1 and KS2?

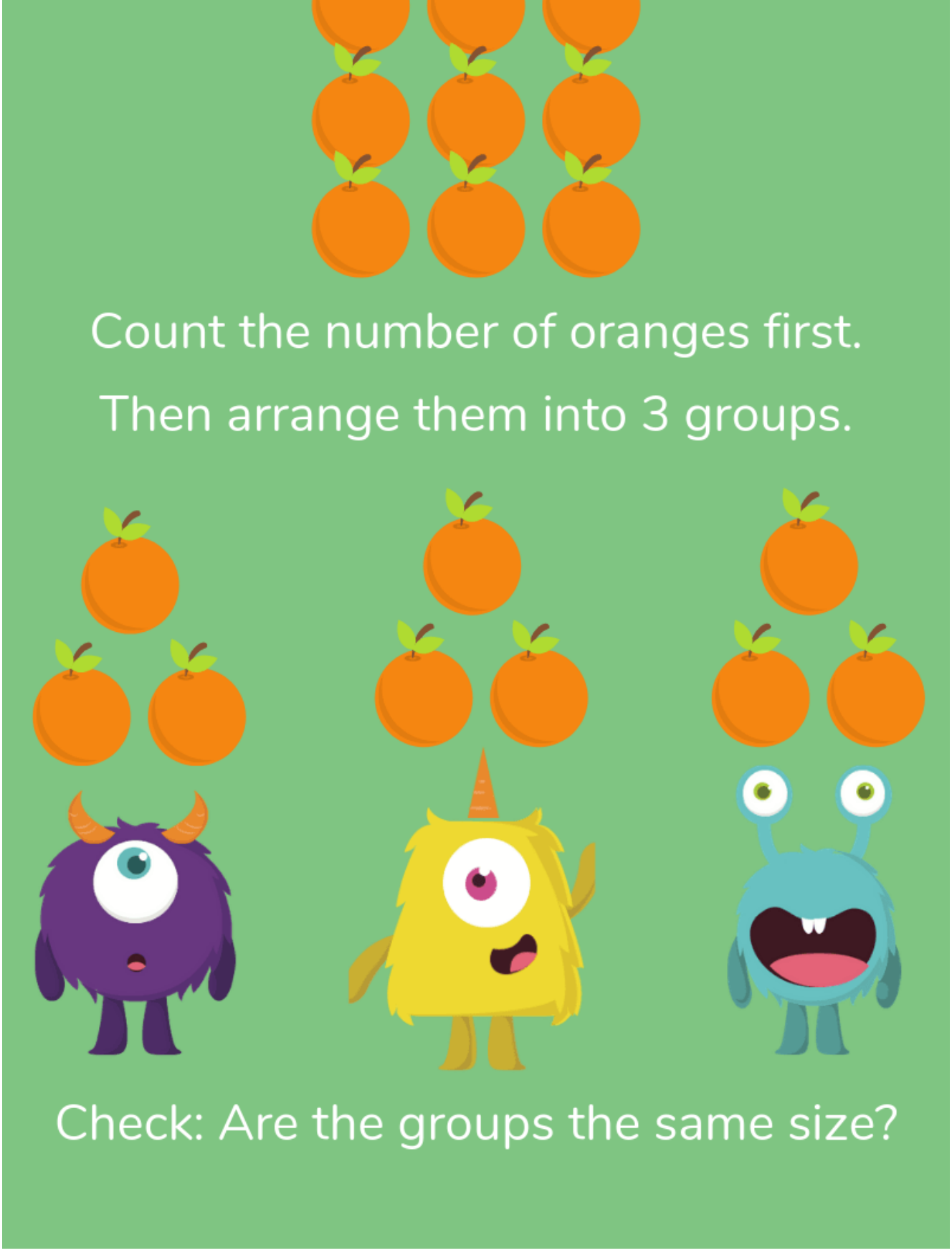
With short and long division for kids changing from year to year throughout primary school, there is a lot to cover in the blog, but to help you out we've broken it down on a year by year basis.

How to help your child with division and sharing in Year 1

In Year 1, division is always done using concrete items like counters, blocks, or even items of food such as pasta.

This helps children to understand division as ***sharing between groups.***

A simple example of this can be found below.



Some simple Year 1 division problems

Grab a set of blocks and help your child try to figure out these division problems.

Make sure that you remember to use words like ***share***

and ***divide*** throughout so that your child becomes familiar with the concepts.

Start with 4 blocks. Share them into 2 equally sized groups.

Start with 10 blocks. Share them into 2 equally sized groups.

Start with 6 blocks. Share them into 3 equally sized groups.

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How to help your child with division and commutativity in Year 2

In Year 2, children start to look at the way division works more deeply, and this means that there are a few more things for your child to learn.

A key concept to understand and really get to grips with at this age is ***commutativity***.

If you are struggling to remember exactly what

commutativity means, the definition is simple.

In maths, **the commutative property states that order does not matter.**

Multiplication is *commutative*; you can switch around the numbers and it makes no difference.

2 x 3 = 6

3 x 2 = 6

Division is not *commutative*. If you switch the order of the numbers, it changes the answer.

4 ÷ 2 = 2

2 ÷ 4 = 0.5

Why it's important to teach your child about commutativity in Year 2

At this age, it's good to practise learning the 2, 5, and 10 times tables with their corresponding division facts. For example:

Multiplication fact:

2 x 5 = 10

Corresponding division facts:

10 ÷ 5 = 2

10 ÷ 2 = 5

Knowing these facts makes division much easier later on, and they are a great example of why commutativity is important.

If your child is comfortable with the difference between 10 5 and 10 2 even after seeing that 5 x 2 is the same as 2 x 5, they will be best placed to move comfortably up to KS2 short division, and KS2 long division.

How to help your child with division in Year 3

In Year 3, your child will be focusing on writing down division calculations and solving simple division problems that involve missing numbers.

Knowing multiplication and division facts comes in really handy here, so as was the case in Year 2, it is very important that you practise these with your child.

This missing number problem will help you see why times table knowledge makes division much easier:

5 x 4 = 20

__ ÷ 5 = 4

20 ÷ __ = 5

There are also two written division methods that are

introduced at this age, and they will be broken down below.

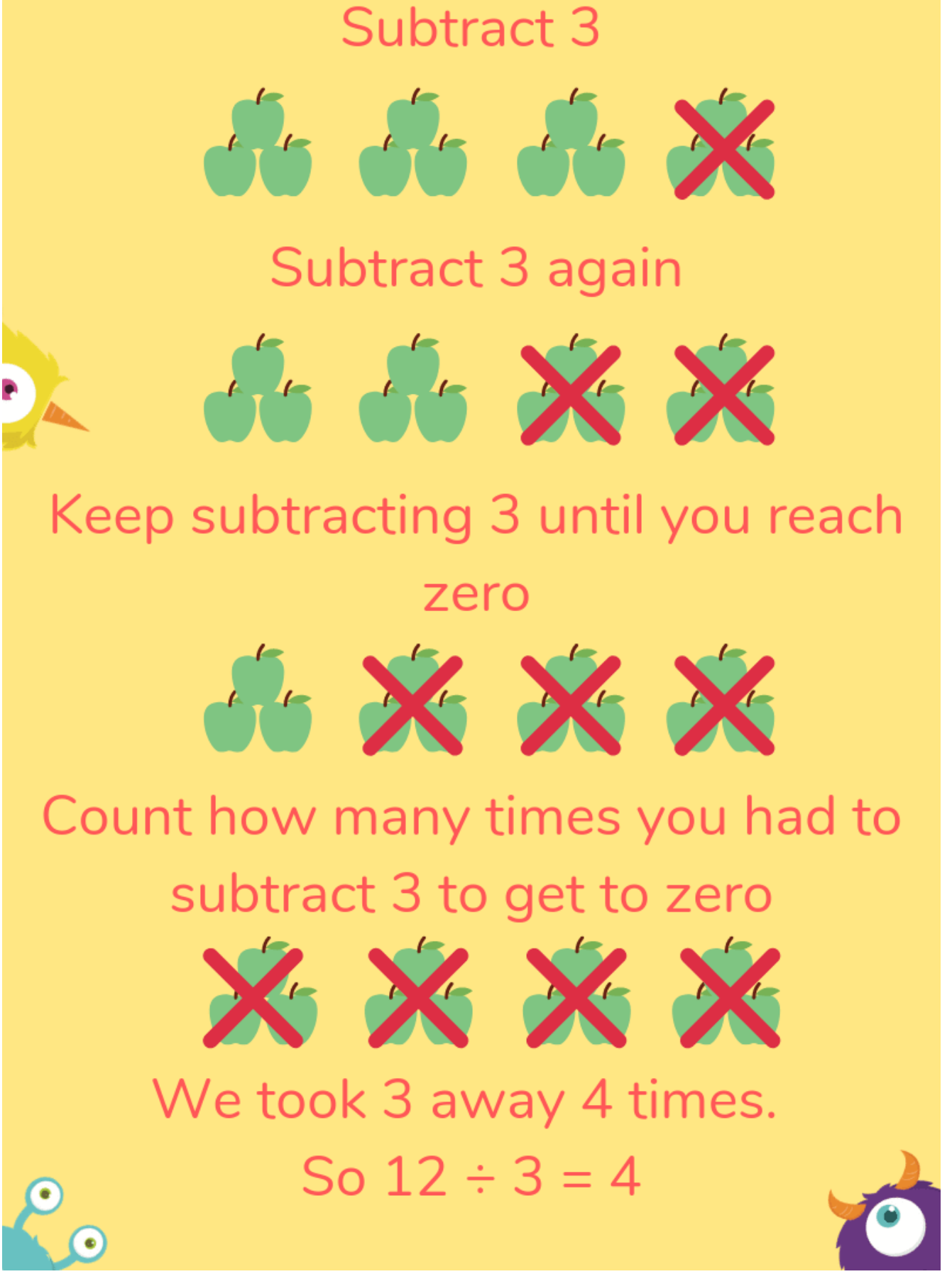
Division for kids explained: Learning to divide using chunking

Although this method is a bit slower than bus stop division, it's great for developing the mental skills children need for more complex division later down the line.

What is chunking?

Chunking is when you work out how many times a number fits into another number.

You work it out by repeatedly subtracting the divisor (or multiples of the divisor) until you get to zero to see how many times the divisor can go into the number you're dividing (the dividend).



Chunking is a good way to introduce your child to some of the more basic concepts of division, and once they have come to terms with this they can then move onto the short method of division.

How to help with your child bus stop division (also known as short division in KS2)

Often referred to as the bus stop method due to the fact that when drawn out onto a piece of paper, the calculation shares some visual similarities to a bus stop, this KS2 short division method is one of the most popular methods taught in schools.

This method is quicker than chunking, but it's important that children understand what they're doing (instead of just following a method).

This will make long division much easier in the future, but it is advisable to make sure your child has nailed chunking before moving on to short division.

Short division explained for parents: How to do short division with your child at home

Short division at this age will involve single digit divisors and 3 or 4 digit dividends.

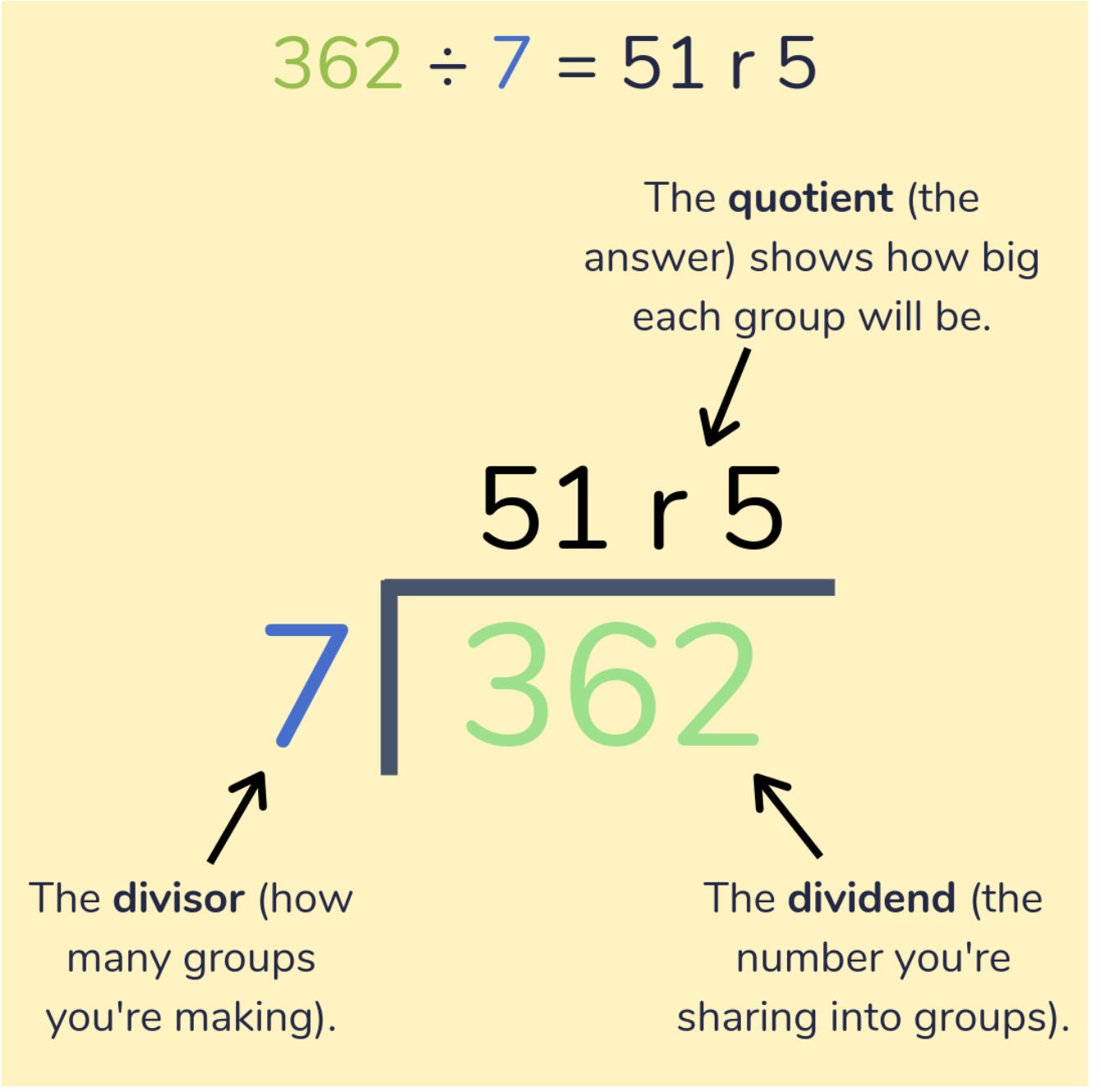
Sit down with your child and take a look at the diagram below to get to know the names and places for each part of the division problem.

They can look very unfamiliar when you're used to writing your sums out in a line, so work with your child to ensure they know their divisor from their dividend!

Parts of a division problem labelled for kids and

parents

By learning the correct vocabulary of all the parts of a division problem, your child will find lots of elements of division much simpler.



How to help your child divide a three or four digit number by a single digit number

With these types of division questions forming the majority of the one's your child will be tackling in Year 3, here's a graphic detailing how to divide a three or four

digit number by a single digit number.

HOW TO HELP DIVIDE A 3 OR 4 DIGIT NUMBER BY A SINGLE DIGIT NUMBER

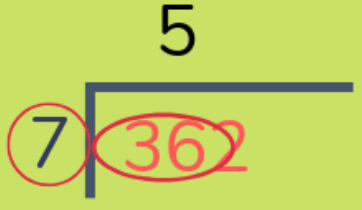
362 ÷ 7

Write out the problem using the short division sign (also known as a bus stop).

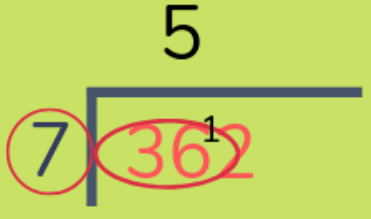
Work through the columns one by one. Can 7 fit into 3?

7 is too big to go into 3. We can use grouping to add the next number along. How many times does 7 fit into 36?

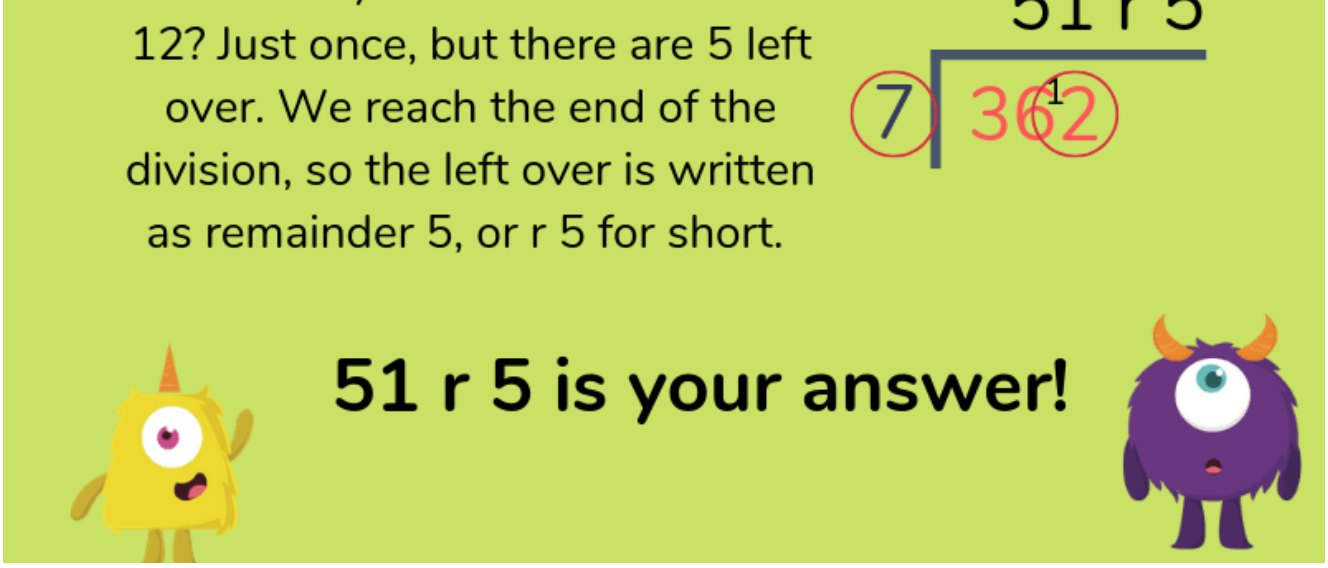
7 fits into 36 5 times, (7 x 5 = 35). Write 5 on the answer line above the last column you used.



There's one left over (36 - 35 = 1). So we take the 1 over to the next column. Now it's worth 12.



How many times does 7 fit into



How to help your child with division in Year 4

In Year 4, your child will use short division (the bus stop division method discussed above) to divide numbers up to four digits by two-digit numbers.

The method is exactly the same as with single digits, expect the first step will always involve grouping.

They'll also need to choose what kind of remainder to use depending on the question, and some common questions will involve real-life situations, like sharing groups between cars or items between boxes.

Deciding on the correct remainder depending on the division question

Remainders can be a tricky concept to grasp when children are first introduced to both short and long division, but it is important they your child understands them well as they can drastically change depending on

the question that is being asked.

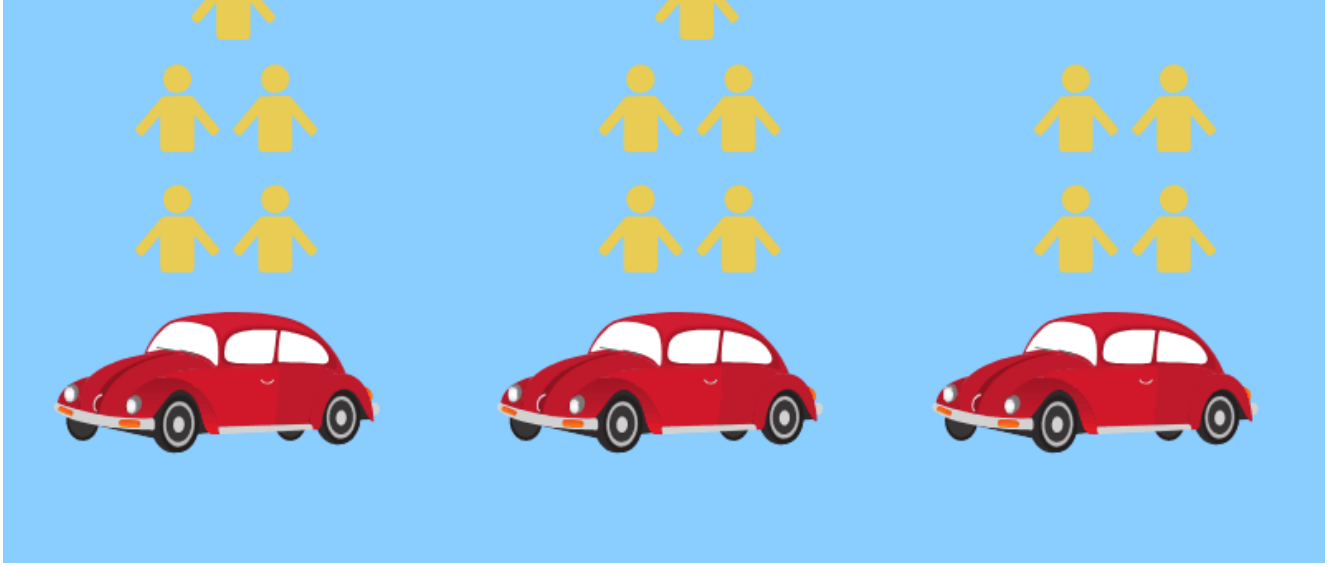
HOW TO HELP YOUR CHILD WORK OUT REMAINDERS IN CONTEXT

5 people can fit into 1 car.
There are 14 people.
How many cars are needed to transport everyone?

14 ÷ 5 = 2 remainder 4

We need to transport everyone. So even though the answer says 2 remainder 4, we would need 3 cars to fit everyone in.
Therefore the answer is **3 cars.**

5 5 4



Practise using factor pairs in Year 4 to help with written division

Factor pairs are two factors (numbers), which when multiplied together give a particular product (result).

Practising factor pairs with your child can help to speed up the process when it comes to division, as knowing that 4 x 5 = 20 will help them when it comes to working out 20 ÷ 4 = _ .

Get your child to find as many factors pairs as they can for the number below, and why not make this into a game?

Sit down with your child, grab a pen and a piece of paper each, and see who can figure out the most factor pairs in a minute. The results might be closer than you think!

20

68

12

30

100

How to help your child with division in Year 5

By Year 5, your child should be able to quickly halve or quarter amounts mentally.

If they're finding it tough, bringing maths into the real world can be a great way to help them get to grips with halves and quarters. For example, when you're out and about ask them how much an item would be if it were half off, or how many grammes would be in half of a 1kg bag of sugar.

Knowing how to divide by 2 (halving) and 4 (quartering) quickly will become an important part of division as your child progresses through school, so it is highly beneficial if they can learn these now.

Understanding short division with decimals is important in Year 5

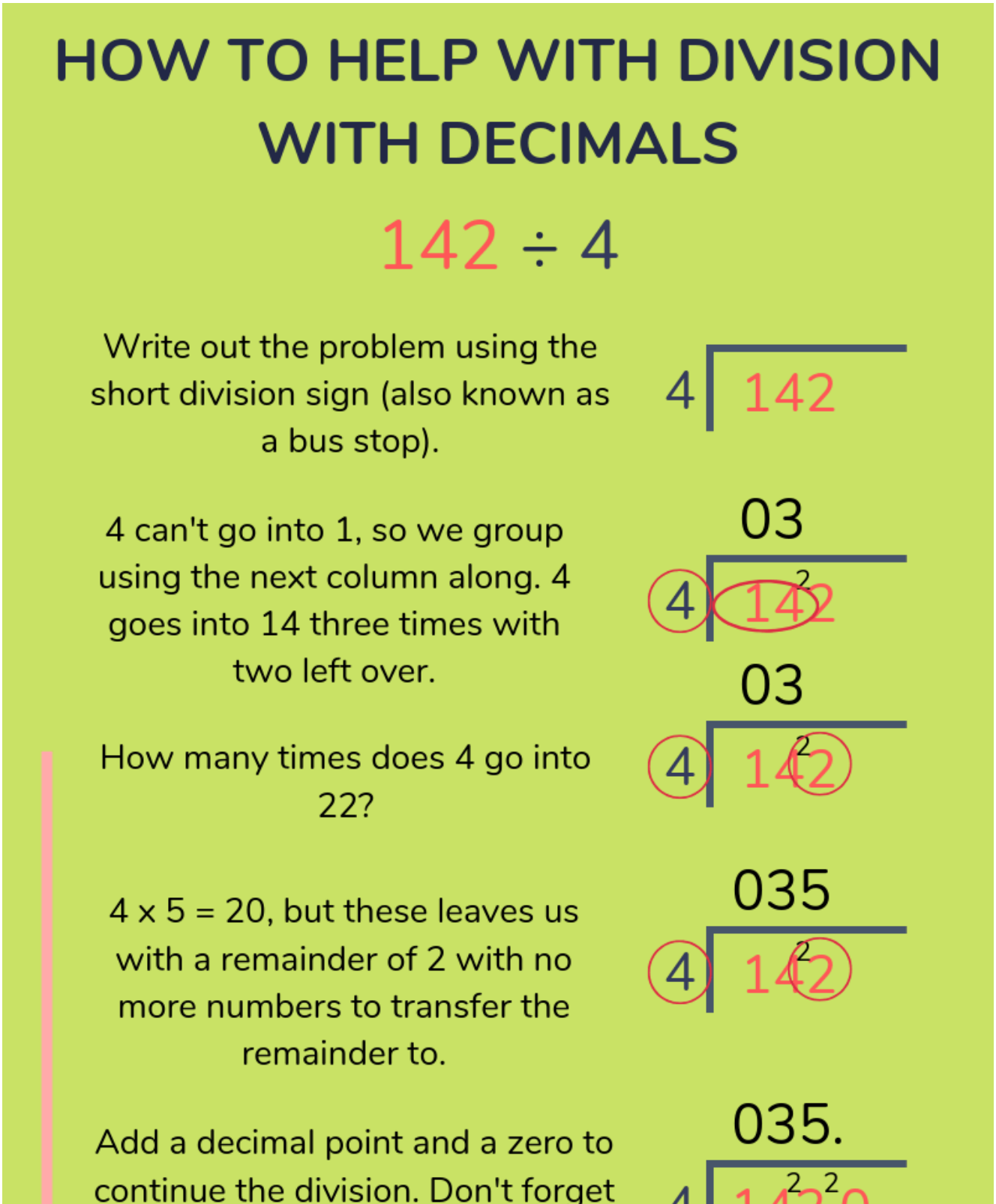
Short division will be used for numbers involving decimals for the first time in Year 5.

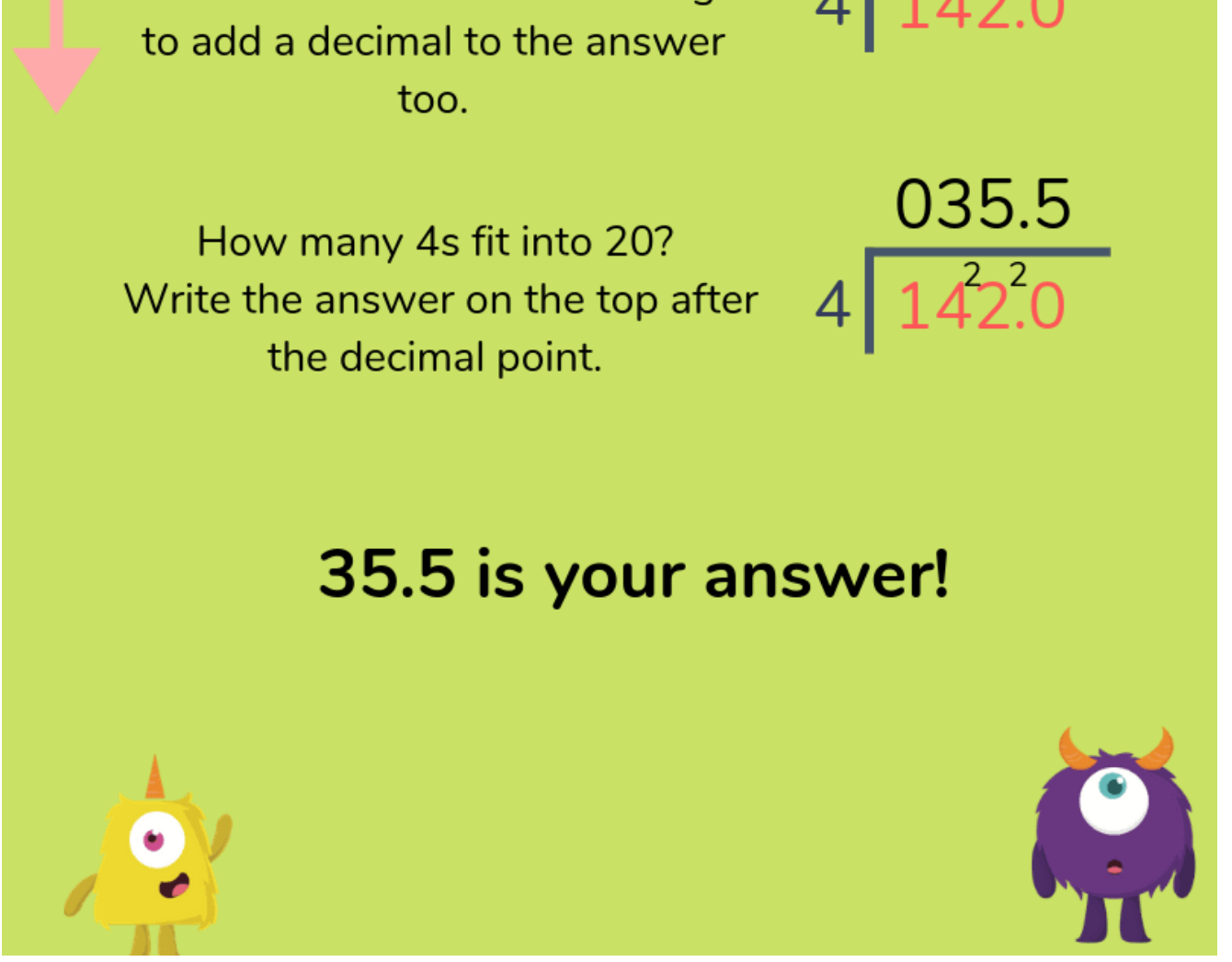
This means that it is a good time to revise place value so

that your child understands how decimals work.

Decimals are parts of a whole (similar to fractions), but the important thing to remember when it comes to dividing decimals is that place value columns decrease in value each time you move to the right.

An example of dividing with decimals





How to help your child with division in Year 6

In Year 6 your child will be introduced to the dreaded long division for the first time!

However, the good news is that once you've mastered chunking and short division, long division isn't bad at all!

The key when it comes to long division for kids is to go slow and encourage them to present their work neatly so that they can spot mistakes easily and work to rectify them.

Even when knowing this though, long division can still be

a daunting prospect for children (and parents alike!), so take a look at our example below to get to grips with how to tackle a long division problem.

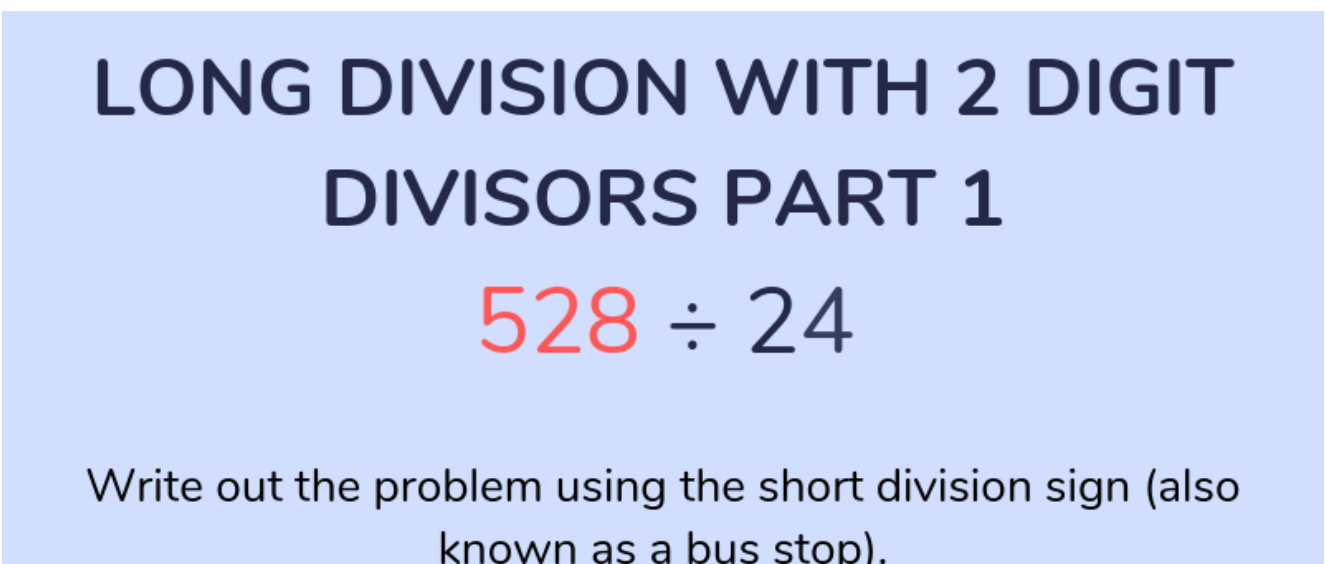
How to do long division for kids: A step by step long division method you can use at home

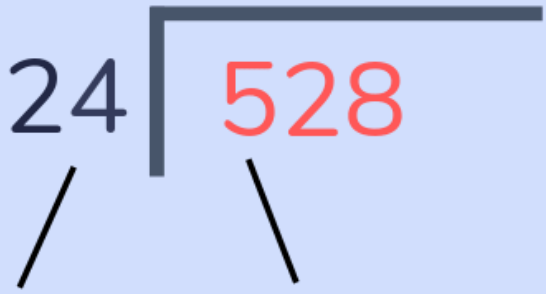
The example below is the most popular long division method for kids, and it is also the one that you may be familiar with from your time in primary school.

All you'll need to complete the calculation 528 ÷ 24 is a pen, some paper and a child who is willing to get to grips with this method!

After having a go at a few questions (with your help to begin with), your child will soon see that this method can help them figure out how to work out long division problems regardless of the numbers involved, and prove invaluable when it comes to the SATs.

Long division made easy: A step by step long division method to use throughout KS2

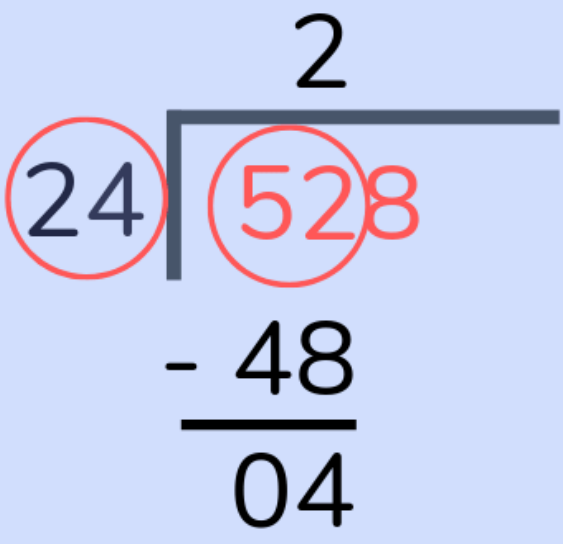




24 is bigger than the first number of the dividend (5). This means we need to look at the next column too.

24 goes into 52 **two times.** The answer to the multiplication is subtracted from the number you're dividing. That gives you the remainder.

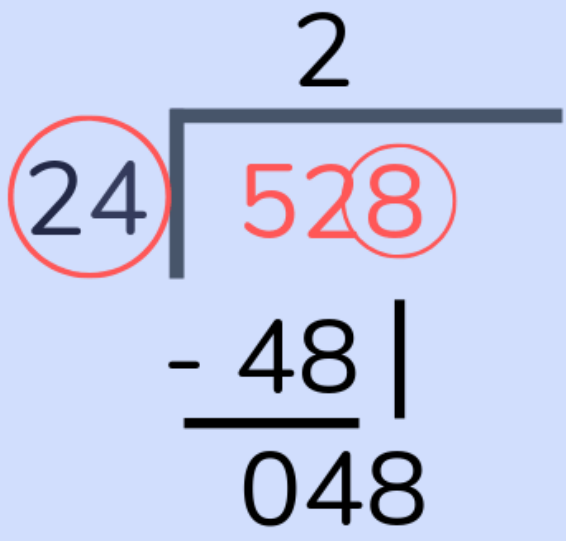
24 x 2 = 48
52 - 48 = 4



LONG DIVISION WITH 2 DIGIT

LONG DIVISION WITH 2 DIGIT DIVISORS PART 2

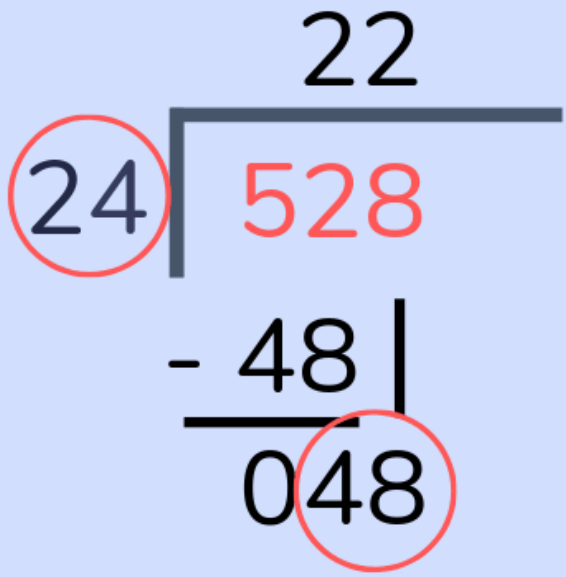
Now we move onto the next column. You drop the next digit down to join the remainder you just worked out.



Sometimes it helps to draw a line so you can remember what you did.

Once you've dropped the next digit down, you end up with a 2 digit number. This means we can divide it using our 2 digit divisor.

How many 24s fit into 48?



24 x 2 = 48

Once you've added the answer (2) to the top line, you have the answer to the initial division problem!

22 is your answer!

P.S. To double check your answer, try using divisions inverse, multiplication to see if you have gotten the answer correct.

22 x 24 = 528

Don't worry if it takes a while to truly embed the process. It's a long chain of things to remember, so it'll take regular practise to get this method memorised.

However, hard work will pay off in the long run, so it is worth putting the time in with your child now to make sure long division is explained well early on to lessen the number of times you will hear the inevitable:

> *"Mummmmm.....How do you do long division...?"*

How do we know when to divide and which method to use?

Different division questions call for different methods of division to solve them, but here is a quick and easy guide to show which method your child should use and when:

- Chunking is best for smaller numbers and arithmetic.
- Short division is great for dividing larger numbers by one digit numbers.
- Long division is handy for dividing large numbers by numbers with 2 or more digits.

Of course there may be occasions when each of the above methods can be used in slightly different scenarios, but as a general rule this should be enough to help your child make the right decision.

Will division problems be in the Year 6 SATs?

When it comes time to sit the maths SATs papers your child will have to answer some division based questions.

Problem solving and reasoning (Paper 2 and 3) in Year 6 can be tricky when it comes to division problems. Often, the problems require more than one operation to be solved which can add an element of complication into an already stressful environment, so encourage your child to look out for words like ***share*** or ***group*** to help them identify what needs to be done to solve the problem.

Division problems in Paper 1 (arithmetic) will be presented as number sentences, and your child will need to show their working out if the question is worth more than 1 mark.

It's easy to spot these questions because they will use the division symbols, either:

÷

or

 or they may involve fractions.

As a rule of thumb, encourage your child to divide mentally where possible.

While written methods are great for bigger numbers, being able to divide mentally will give them an edge. It means that when they are done using the written method, they will be able to see whether or not their answer is roughly correct by estimating.

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