

# Written methods for long division

## Learn

To divide something means to share it into equal amounts. Twelve divided by three equals four.

For larger numbers we sometimes need to use formal methods to help us calculate accurate answers.

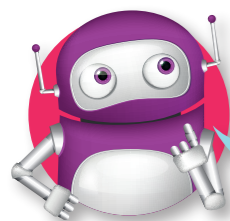
In short division we carry on the remainder at each stage.

	0	4	2	6	r2
8	3	<sup>3</sup> 4	<sup>2</sup> 1	<sup>5</sup> 0	

Answer: 426 r2

When we are dividing larger numbers we may need to use long division. This example shows you one method.

Can you see the difference between long division and short division? With long division we are calculating the remainder at each stage, so that there is less chance of making an error.



Whichever method you use, make sure you understand it!



Turn back a page to see formal methods for short division.

				2	2	3	r3
	1	6	3	5	7	1	
	(2 × 16 =)	-	3	2			
				3	7		
	(2 × 16 =)	-	3	2			
					5	1	
	(3 × 16 =)	-	4	8			
						3	

Answer: 223 r3

## ✓ Tips

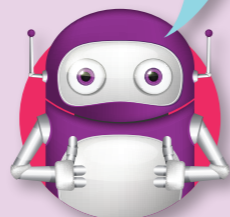
- In calculations it is fine to leave a remainder, but in problem solving these need to be presented carefully. You may need to show the remainder, write the remainder as a fraction or a decimal, or round off the answer.

For example:

If five pizzas are shared between four people you wouldn't say each person receives one pizza remainder one. You would say they get  $1\frac{1}{4}$  pizzas each.

Or, if a problem asks how many rows of ten can 93 seats be arranged in, the answer is nine. We round the answer and ignore the remainder.

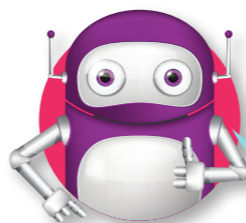
Here's a bit of friendly advice about remainders.



## Talk maths

Look at this long division and explain it aloud, saying how each stage was done.

Now try writing down and explaining the steps for this long division:  $2878 \div 13$



Remember that zero divided by anything is... zero.

				2	2	1	r5
	1	3	2	8	7	8	
	(2 × 13 =)	-	2	6			
				2	7		
	(2 × 13 =)	-	2	6			
					1	8	
	(1 × 13 =)	-	1	3			
						5	

Answer: 221 r5

## Activities



1. Copy and complete each of these long divisions.

a.

$$12 \overline{) 160}$$

b.

$$16 \overline{) 368}$$

c.

$$25 \overline{) 5264}$$

d.

$$15 \overline{) 3818}$$

2. On squared paper, complete each of these long divisions using a written method.

a.  $338 \div 15$

b.  $4438 \div 21$

c.  $6358 \div 18$

d.  $7318 \div 32$

## Problems



### Brain-teaser

A theatre has 2010 seats. If there are 15 seats per row, how many rows are there?

### Brain-buster

Sixteen people buy a lottery ticket and, altogether, they win £37,468. They agree to share it equally. How much will they each receive, to the nearest 1p?