

Divide a 2-digit number by a 1-digit number (2)

Notes and guidance

In this small step, children continue to explore dividing a 2-digit number by a 1-digit number, but in this step the focus is on calculations with remainders.

Children encountered remainders in Year 3, so this concept is not new but it may need reinforcing.

Using place value counters to illustrate the sharing structure of division helps children to see what is meant by the remainder. Such representations should highlight the fact that the remainder can never be greater than the number they are dividing by.

Things to look out for

- Children may not fully divide and so will have a remainder that is greater than the number they are dividing by.
- Children may partition the 2-digit number correctly, but then divide the tens as if they are ones, for example $95 \div 3 = 9 \div 3 + 5 \div 3$
- Children may revert to less efficient methods, such as drawing circles and then drawing dots to share between the circles.
- Children may divide the whole number rather than partitioning into tens and ones and then unitising the tens.

Key questions

- Can the counters be shared equally? If not, how many are left over?
- What does “remainder” mean?
- What is the greatest remainder you can have when you are dividing by _____?
- How can you partition a 2-digit number?
- If you cannot share all the tens equally, what do you need to do?
- If you cannot share all the ones equally, what happens?
- How do you know that $43 \div 2$ will have a remainder?

Possible sentence stems

- If I am dividing by _____, then the greatest possible remainder is _____

National Curriculum links

- Recall multiplication and division facts for multiplication tables up to 12×12
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers

Divide a 2-digit number by a 1-digit number (2)

Key learning

- Tommy uses place value counters to divide 85 by 4



Tens	Ones
10 10	1
10 10	1
10 10	1
10 10	1

First, he shares the tens.
Then he shares the ones.
He has 1 one left over.

$$85 \div 4 = 21 \text{ r}1$$

Use Tommy's method to work out the divisions.

$$49 \div 2$$

$$95 \div 3$$

$$58 \div 5$$

- Work out the divisions.

- ▶ $86 \div 4$ ▶ $94 \div 3$
- ▶ $87 \div 4$ ▶ $95 \div 3$
- ▶ $88 \div 4$ ▶ $97 \div 3$
- ▶ $89 \div 4$ ▶ $98 \div 3$
- ▶ $90 \div 4$ ▶ $99 \div 3$

What do you notice?

- Alex uses place value counters to work out $97 \div 4$

Tens	Ones
10 10	1 1 1 1
10 10	1 1 1 1
10 10	1 1 1 1
10 10	1 1 1 1

10

$$97 \div 4 = 24 \text{ r}1$$

Why has Alex made an exchange?

Use Alex's method to work out the divisions.

$$57 \div 4$$

$$49 \div 3$$

$$68 \div 5$$

- Complete the divisions.

- ▶ $83 \div 3 = \text{_____} \text{ r} \text{_____}$ ▶ $\text{_____} \div 6 = 11 \text{ r}2$
- ▶ $95 \div 4 = \text{_____} \text{ r}3$ ▶ $\text{_____} \div 7 = 7 \text{ r}6$

- There are 95 pencils.

They are shared equally between 4 pots.

How many pencils will be left over?

Divide a 2-digit number by a 1-digit number (2)

Reasoning and problem solving

Filip is thinking of a 2-digit number that is less than 50

Work out Filip's number from the clues:

- When it is divided by 2, there is no remainder.
- When it is divided by 3, there is a remainder of 1
- When it is divided by 5, there is a remainder of 3

28

$85 \div 3 = 28 \text{ r}1$

85 must be 1 more than a multiple of 3

Is Rosie correct?
Explain your answer.

Yes

Whitney and Ron are working out $37 \div 4$

Whitney: The answer is 9 r1

Ron: The answer is 8 r5

Both children are incorrect. Explain the mistakes they have made. What is the correct answer?

8 r1