Curriculum objectives

- To multiply and divide numbers mentally drawing upon known facts.
- To divide numbers up to four-digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Success criteria

- I can use short division to divide a three-digit number by a one-digit number.

You will need

Equipment

Bundles of straws in tens plus individual straws

Differentiation

Less confident learners

There may be some children for whom short division is a step too far and if they are confident using chunking they should continue to do so.

More confident learners

These children should check their answers using column multiplication.

Lesson 3

Oral and mental starter 25

Main teaching activities

Whole-class work: Explain that this lesson is to consolidate short division of HTU by U. Explain that they already know many TU ÷ U facts from the times tables, but having a written method is useful for bigger numbers. Short division assumes that the child is confident with place value. Work through an example such as 128 ÷ 3.

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  0 4 8  r2
3 | 1 12 8
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- Divide, starting with the most significant digit (the 1 hundred). 1 ÷ 3 is impossible. Mark the place value with a zero.
- Move the 1 across to join the tens. Now you have 12 ÷ 3 = 4. Record the 4 in the tens place.
- Move across to divide the units: 8 ÷ 3 = 2 remainder 2.

Once the children have grasped this idea, move on to dividing into digits that leave a remainder to be 'transferred along'.

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  0 7 9  r1
3 | 2 23 28
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- Divide, starting with the most significant digit (the 2 hundred). 2 ÷ 3 is impossible. Mark the place value with a zero.
- Move the 2 across to join the tens. Now you have 23 ÷ 3 = 7 remainder 2. Record the 7 in the tens place and transfer the 2 across to be divided with the units number.
- Move across to divide the units: 28 ÷ 3= 9 remainder 1.

Emphasise that the remainders must be passed on to the next digit: they cannot be left behind or ignored. For example, discuss 172 ÷ 3. Ask: *What should I put in the hundreds column? If I cannot divide 1 by 3 using whole numbers, what shall I do with the 1 hundred I have not used? Where should I put it so it can be divided? What value have I got in the tens column now? Can I divide it by 3? How much is the remainder? Where shall I put the remainder so it can be divided? How many units are there now to be divided by 3?*

Independent work: Provide some division questions for the children to solve using short division, for example, 265 ÷ 4; 163 ÷ 4; 257 ÷ 3; 264 ÷ 5; 288 ÷ 6.

Progress check: Since this is consolidation of work begun yesterday, some children may be very confident and others finding short division tricky. It might be helpful at this stage to pair up a less confident child with a confident partner,. Remind them that they are still using known times tables; the place holding zero will help them to put the digits in the correct place and carry unused digits across.

Review

Write this calculation on the board and work through it with the children, asking: *What should I record for the tens column? Why is it important to place the 0 there? What should I do with the 2 tens that have not yet been divided? How many units are there now to be divided by 4?*

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  1 0 6  r2
4 | 4 2 26
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Next, write up some examples with incorrect answers (three examples are shown below). Ask for individuals to explain where the calculations have gone wrong and why. Ask: *Is this correct? How do you know? How can we put it right? Think of some hints to stop other people making the same mistakes?* Design and display a 'Division health warning', using the children's suggestions.

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  0 1 1          1 0 1  r3          1 1 8
5 | 2 7 5      6 | 7 0 9      4 | 5 7 2
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