

# Diving into Mastery



## Multiples of 10, 100 and 1000

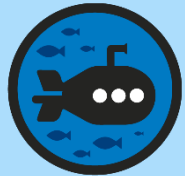
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# Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



**Diving**



**Deeper**



**Deepest**

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

# Aim

- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.



$$26 \times 20 = 520$$

$$36 \times 25 = 900$$

$$26 \times 200 = 5200$$

$$360 \times 25 = 9000$$

$$20 \times 130 = 2600$$

$$360 \times 250 = 90\ 000$$

$$130 \times 200 = 26\ 000$$

$$18 \times 50 = 900$$

$$650 \div 25 = 26$$

$$5400 \div 200 = 27$$

$$6500 \div 25 = 260$$

$$5400 \div 20 = 270$$

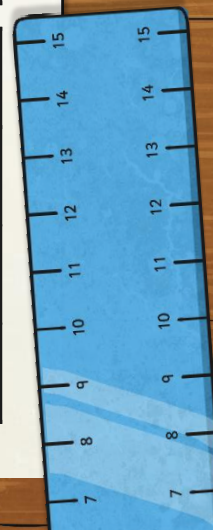
$$6500 \div 250 = 26$$

$$540 \div 20 = 27$$

$$325 \div 25 = 13$$

$$2700 \div 100 = 27$$

Use the facts at the top of the table to help you complete the other calculations.





Zak says that he needs to use a formal long multiplication method to complete the calculation  $35 \times 20$ .

Can you find 3 different methods that he could use other than a formal method, using your knowledge of mental strategies?

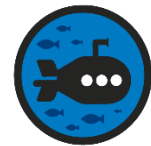
Have you suggested any of these methods?

$$35 \times 2 = 70$$
$$70 \times 10 = 700$$

$$35 \times 10 = 350$$
$$350 \times 2 = 700$$

$$70 \times 10 = 700$$

(Here, one side of the multiplication has been doubled and the other side has been halved.)



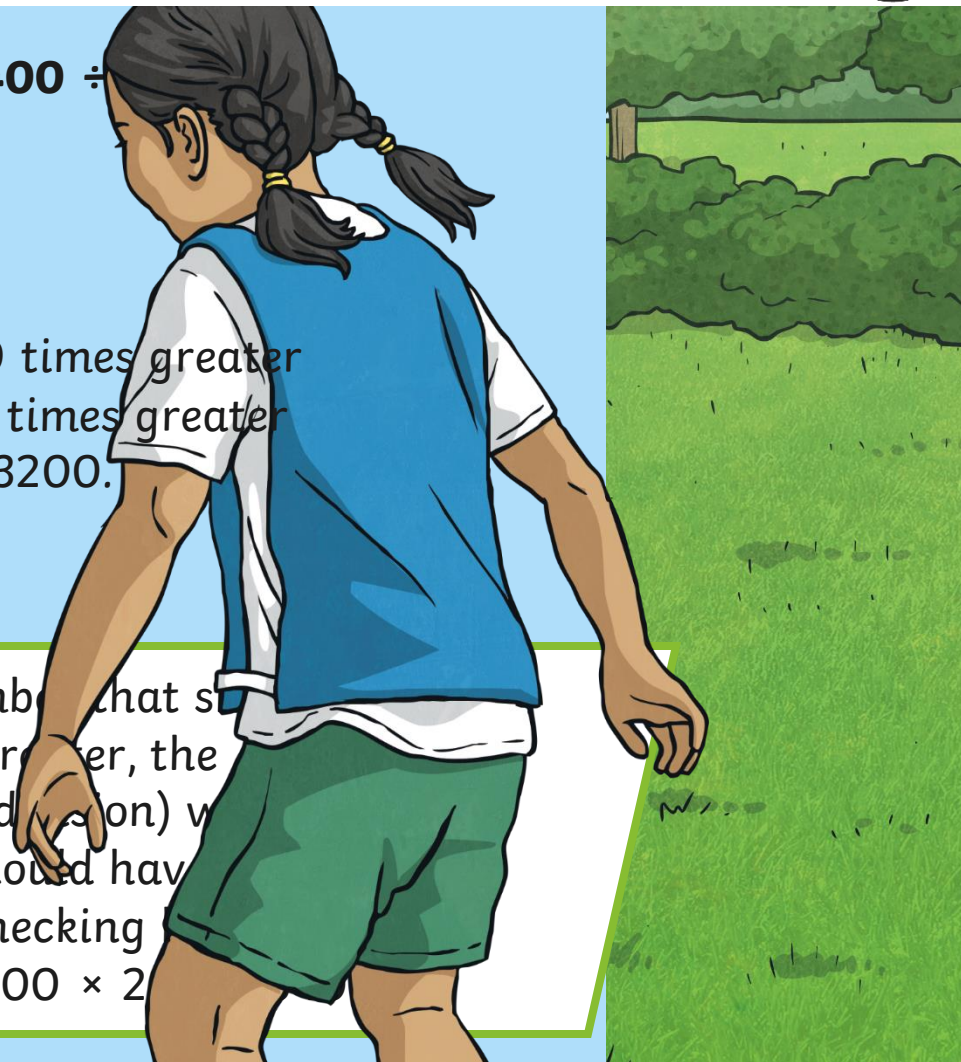
Cleo has been given this fact:  $6400 \div 20 = 320$

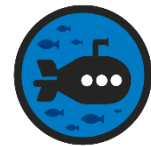
She has been asked to solve the calculation  $6400 \div 200$ .

She says that, because 200 is 10 times greater than 20, the answer must be 10 times greater too, so  $6400 \div 200$  must equal 3200.

Cleo is incorrect. Explain why.

Because the divisor (the number that she is dividing by) is ten times greater, the quotient (the answer to her division) will be ten times smaller. Cleo should have recognised her mistake by checking her answer using the inverse ( $3200 \times 200$ ).





$$320 \times 25 = 32 \times 250$$

Prove it!

When multiplying, if you make one of the factors (numbers that are being multiplied) 10 times smaller and the other 10 times greater, this creates an equivalent calculation. This means that the calculations have the same value.

$$320 \times 25 = 32 \times 250 = 8000$$

Write down 3 of your own equivalent calculations similar to the ones above.



2 answers:

$$25$$
$$100 \times 20$$
$$10$$



In the calculation below, each square represents a missing digit.

Find 5 possible solutions to make the statement correct.

You cannot use commutativity (just swapping the order of the numbers), such as  $40 \times 30 = 30 \times 40$ .

$$\square 0 \times \square 0 = \square 0 \times \square 0$$

Possible answers include the following:

$$40 \times 30 = 20 \times 60$$

$$30 \times 60 = 90 \times 20$$

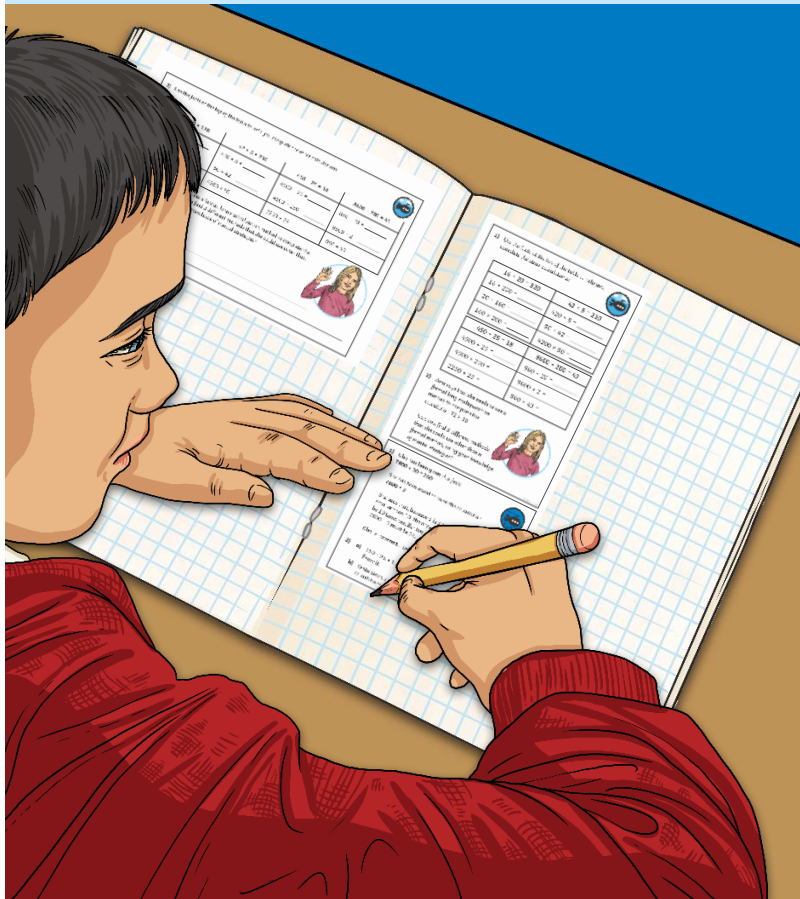
$$10 \times 40 = 20 \times 20$$

$$30 \times 20 = 60 \times 10$$



# Multiples of 10, 100 and 1000

Dive in by completing your own activity!



1) Use the facts to complete the table.

$16 \times 2 =$	$42 \times 5 =$	$450 \div 25 =$	$8600 \div 200 =$
$16 \times 200 =$			
$20 \times 160 =$			
$160 \times 200 =$			
$450 =$			
$4500 \div 25 =$			
$4500 \div 25 =$			
$2250 \div 25 =$			

2) Zara says that she needs to use a formal long multiplication method to complete the calculation  $72 \times 50$ . Can you find 3 different methods that she could use other than a formal method, using your knowledge of mental strategies?

3) Cleo has been given this fact:  $7800 \div 30 = 260$ . She has been asked to solve the calculation  $78000 \div 3$ . She says that, because 3 is 10 times smaller than 30, the answer must be 10 times smaller too, so  $78000 \div 3$  must be 26. Cleo is incorrect. Explain why.

4)  $150 \times 25 = 15 \times 250$ . Prove it!

5) Write down 3 of your own equivalent calculations similar to the ones above in a).

6) Write down 3 of your own equivalent calculations similar to the ones above in a).

7) In the calculation square represent Find 5 possible statements: can You cannot use the numbers)  $0 =$

8) In the calculation square Find 5 possible statements: can You cannot use the numbers)  $0 =$

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# Need Planning to Complement this Resource?

## National Curriculum Aim

Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.

For more planning resources to support this aim, [click here](#).

This block shows a collection of educational resources for 'Abundant Numbers'. At the top, there is a video player titled 'Abundant Numbers' with a play button. To the left of the video is a 'Factor Race' activity card. Below the video are several worksheets: 'Multiplication and Division: Abundant Numbers', 'Awesome!', 'Awesome!', and 'Awesome Abundant Numbers'. The Twinkl and Planit logos are visible at the bottom right of the worksheets.

This block shows two 'Number Cruncher' worksheets. The first worksheet is titled 'Number Cruncher' and contains a grid of math problems such as 'Write down 5 multiples of 9', 'What are the factors of 12?', 'Calculate 12^2', 'Is 21 a square number?', 'Is 12 an abundant number?', 'Is 16 a factor of 54?', 'Calculate 11^2', 'Is 20 an abundant number?', 'Which of these numbers is not a multiple of 7?', and 'What is a composite number?'. The second worksheet is a similar 'Number Cruncher' with more problems. The Twinkl and Planit logos are visible at the bottom right of the worksheets.

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