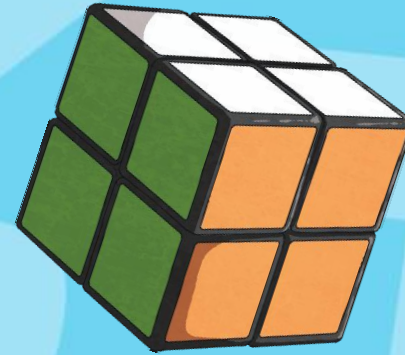
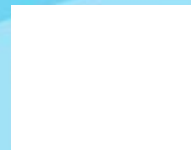
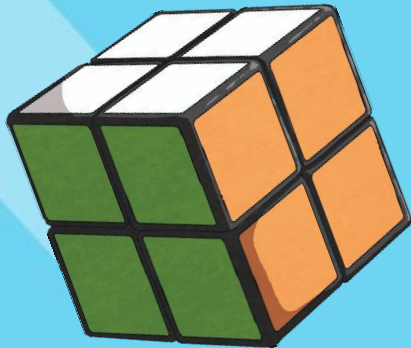


Mathematics

Number and Algebra



Number Puzzle



Aim

To calculate mentally with increasingly large numbers using all four operations.

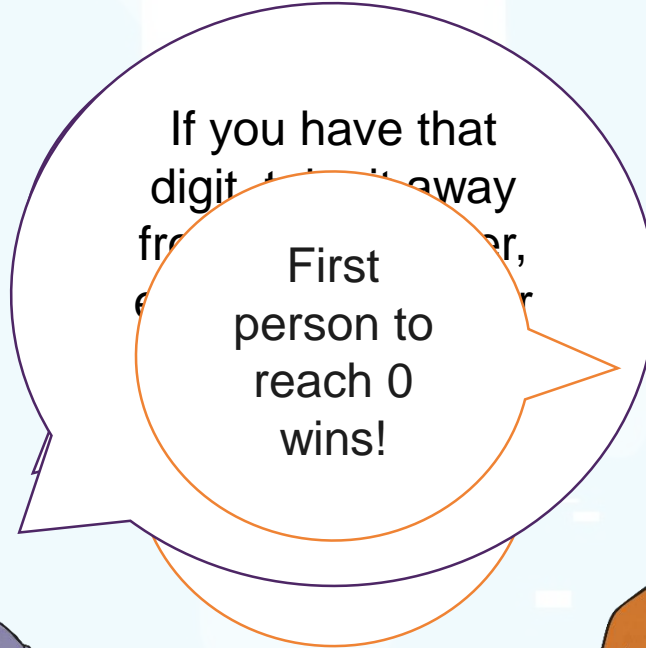
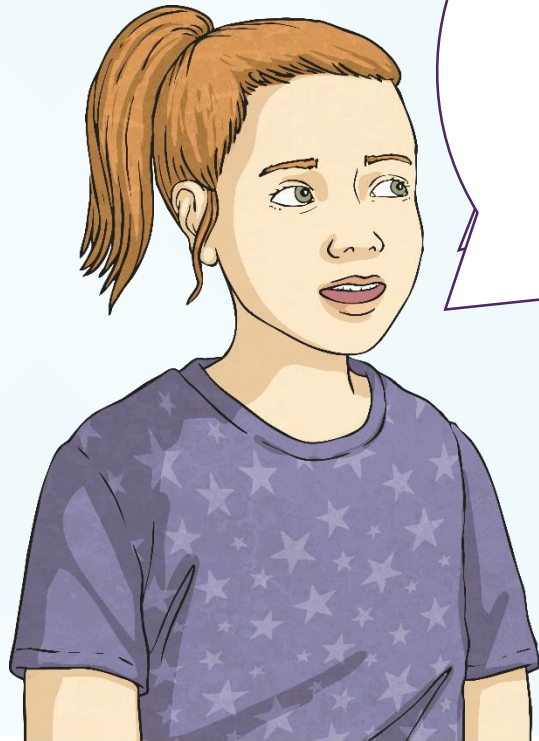
Success Criteria

- I can partition large numbers, and add the most significant digits first.
- I can add or subtract the nearest multiple of ten or 100 then adjust.
- I can identify near doubles.
- I can form an equivalent calculation, e.g. to multiply by eight, double then multiply by four.

Rolling For Gold



Get into pairs.



Select Player

There are lots of different strategies we can use to help us.

Let's have a look at some now!



Some calculations we can do in our head mentally. We can write notes to help us remember key numbers while working out the answer.



Select Player

Which strategy will be most useful when completing this calculation?

To make this easier to work on, we can use the method of partitioning.

This involves partitioning into hundreds, tens and ones, adding the hundreds first.

$385 + 200 = 585$
Then add the tens.
 $585 + 50 = 635$
Lastly add the ones.
 $635 + 4 = 639$.
The answer is 639.



$$385 + 254 = 639$$

Select Player

Which strategy will be most useful when completing this calculation?

To make this easier to work on, we can use the method of partitioning.

This involves partitioning into hundreds, tens and ones, adding the hundreds first

First subtract the hundreds.
 $962 - 400 = 562$
Then subtract the tens.
 $562 - 40 = 522$
Lastly, subtract the ones.
 $522 - 3 = 519$
The answer is 519.




$$926 - 443 = 519$$

Select Player

Which strategy will be most useful when completing this calculation?

<p>To make it easier to calculate, we can use the compensation method.</p>	<p>This involves adding to the nearest multiple of ten or 100 and then adjusting the answer.</p>	<p>The nearest multiple of 10 to 1459 is 1460. This is only 1 more than 1459.</p> <p>$1460 + 87 = 1547$</p>	<p>We then need to adjust our answer, to make up for the one that we added to get to 1460. Therefore we subtract one from our answer.</p> <p>$1547 - 1 = 1546$</p>
--	--	--	---

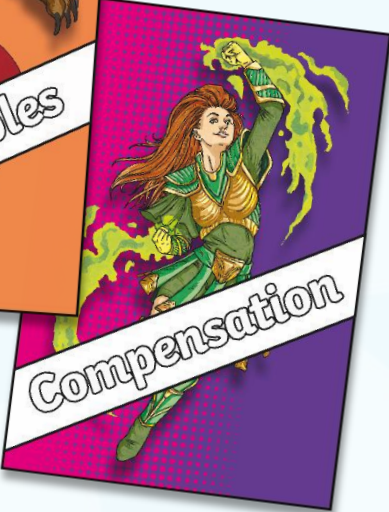



$$1459 + 87 = 1546$$

Select Player

Which strategy will be most useful when completing this calculation?

<p>We can use compensation when subtracting.</p>	<p>This strategy involves adding ten to the number being subtracted.</p>	<p>The multiplier is 104. This is the same as multiplying by 100 and then adding 4.</p>	<p>We then need to adjust our answer, to make up for the four ones that we didn't subtract. Therefore we subtract four from our answer. $545 - 4 = 541$</p>
--	--	---	--



$$645 - 104 = 541$$

Select Player

Which strategy will be most useful when completing this calculation?

To make it easier to do, we can use a compensation strategy. This involves doubling one of the numbers and then adjusting the other to compensate.

Double 170 + 170 = 340

We then need to adjust, as we needed to add 164 not 170. Therefore we subtract 6 from our answer.

$$340 - 6 = 334$$



Near doubles



Compensation

$$164 + 170 = 334$$

Select Player

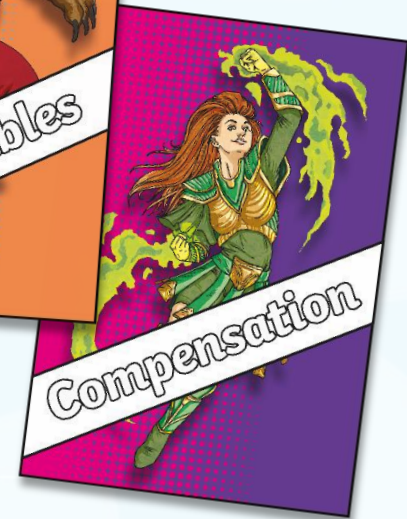
Which strategy will be most useful when completing this calculation?

W
repe
to
c
17 x
as

Double
If we
answ
equ

Double
If we
answ
equ

Double 68 = 136.
So 17 x 8 = 136.



$$17 \times 8 = 136$$

Select Player

Which strategy will be most useful when completing this calculation?

We can repeat the calculation to solve the same problem.

$$140 \div 4 = 35$$

Half of 140 is 70. If we halve the answer, we get the equivalent answer.

$$\begin{aligned} \text{Half of } 70 &= 35. \\ \text{So } 140 \div 4 &= 35. \end{aligned}$$

Near doubles

Compensation

$$140 \div 4 = 35$$

Select Player

Which strategy will be most useful when completing this calculation?

We
eq
calcu
so
doub
multi

Double
68 x

So $34 \times 20 = 680.$

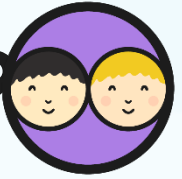
ing

Near doubles

Compensation

$$34 \times 20 = 680$$

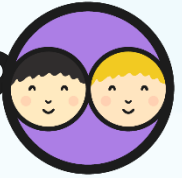
Can You Escape the Maze?



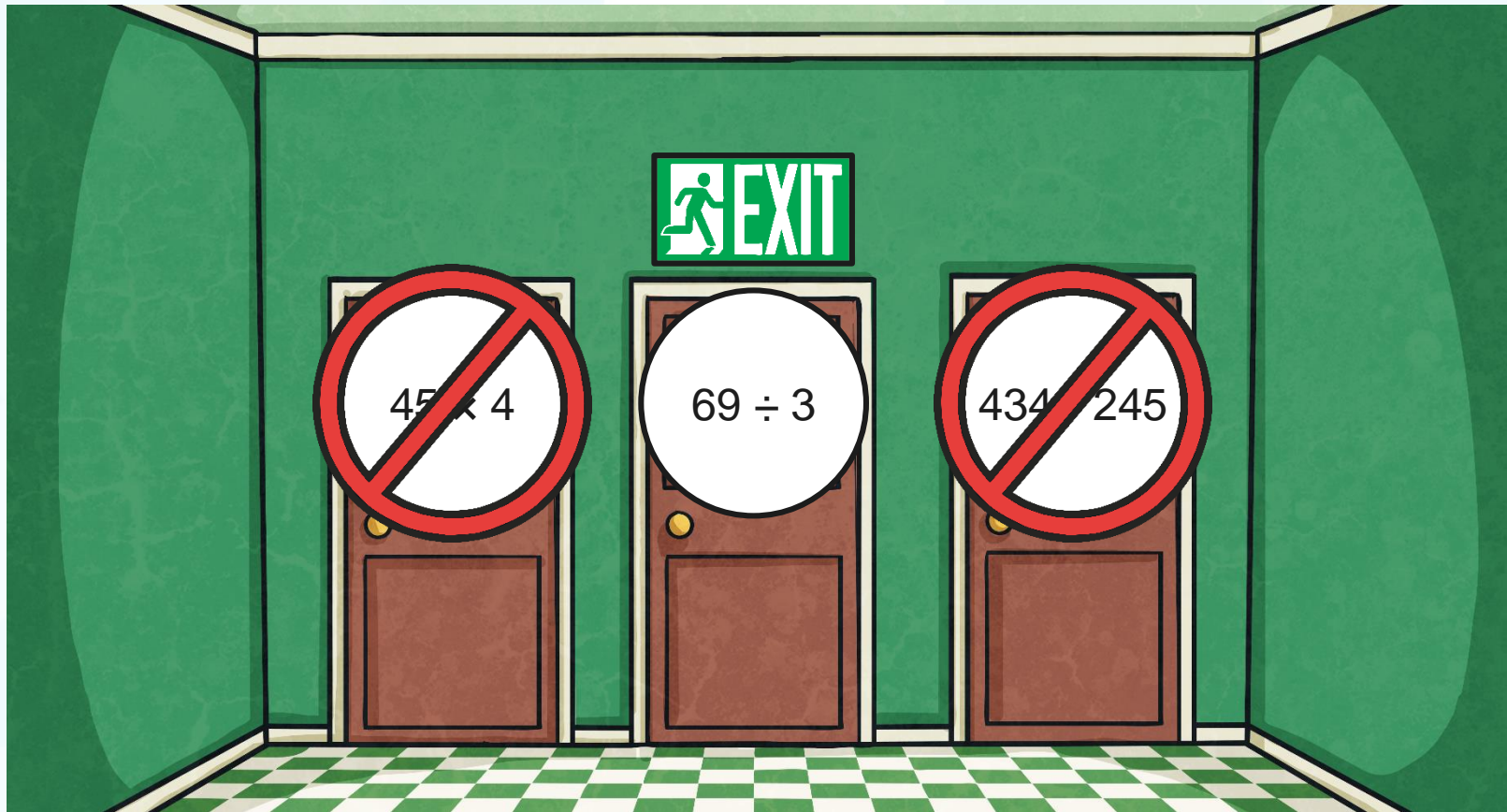
Which calculation gives an odd answer?
Select the correct calculation to help you escape the maze.



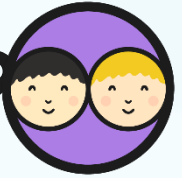
Can You Escape the Maze?



Which calculation has an answer that is a prime number?
Select the correct calculation to help you escape the maze.



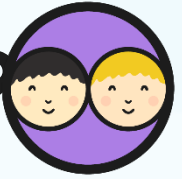
Can You Escape the Maze?



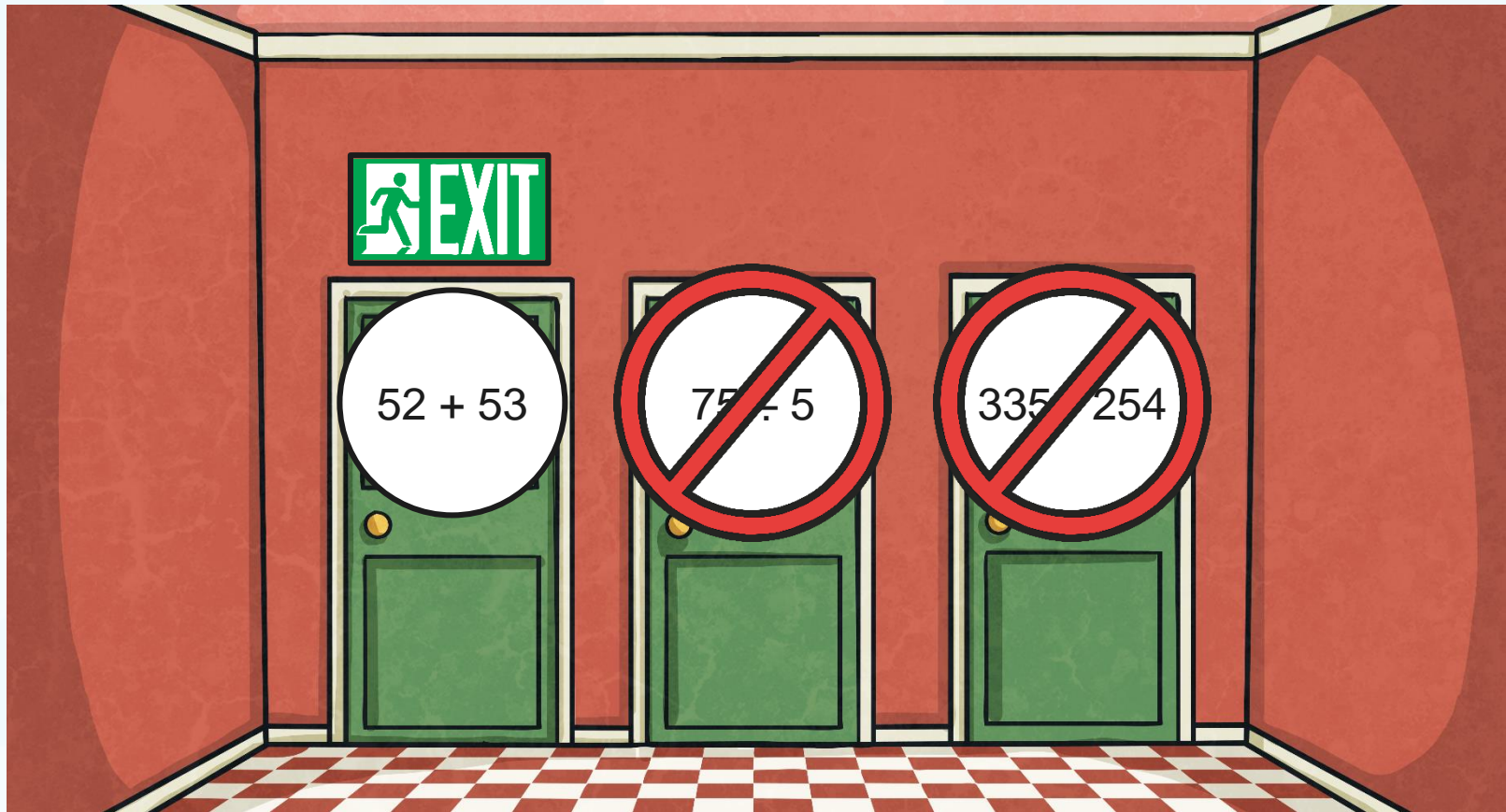
Which calculation gives an answer that is a square number?
Select the correct calculation to help you escape the maze.



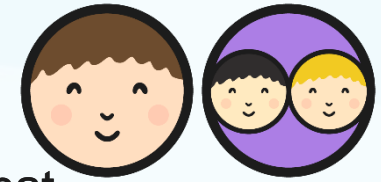
Can You Escape the Maze?



Which calculation gives an answer that is a multiple of 3?
Select the correct calculation to help you escape the maze.



Number Puzzle



You will be completing a range of questions that will require you to perform mental calculations.

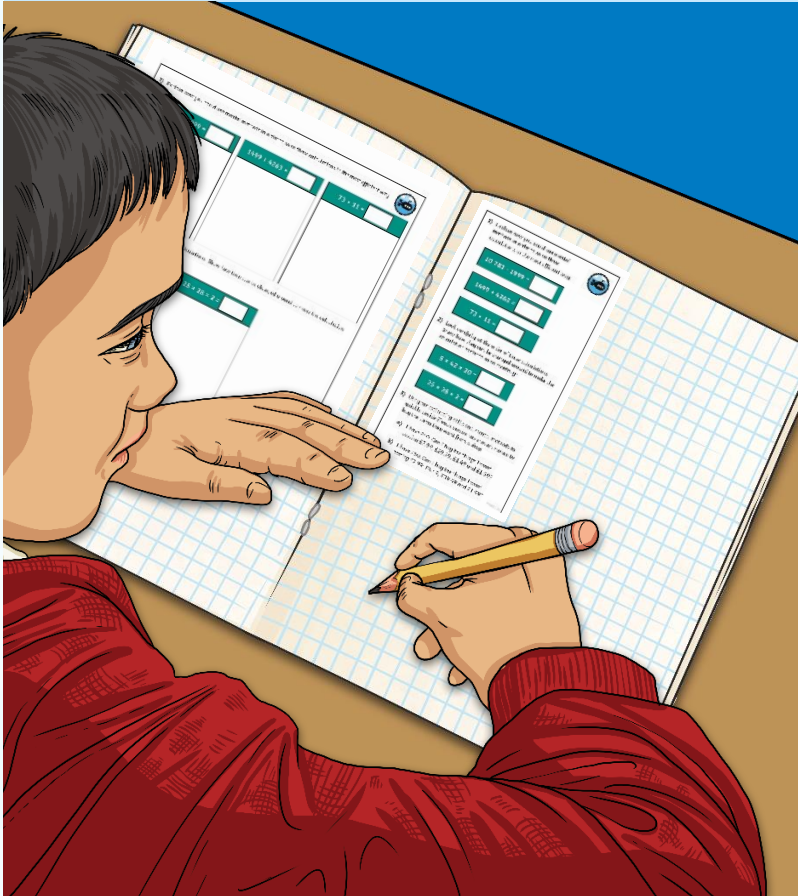


= 3	= 54	= 38	
= 125	= 336	= 136	
= 63	= 133	= 23	
- 5 2	+ 4 9	- 3 1	

Use the strategies demonstrated earlier in the lesson. Remember to check your answers once the calculations have been completed.

Diving into Mastery

Dive in by completing your own activity!



1) Explain how you could use mental methods in order to solve these calculations in the most efficient way.

$10\,783 - 1999 =$

$1499 + 4263 =$

$73 \times 11 =$

2) Look carefully at the order of these calculations. Show how they can be changed around to make the calculation easier to solve mentally:

$5 \times 42 \times 20 =$

$25 \times 28 \times 2 =$

3) Use your estimating skills and mental methods to quickly decide if each person has enough money to buy the items they want from a shop.

- a) I have £40. Can I buy the things I want costing £7.99, £29.99, £1.49 and £1.99?
- b) I have £30. Can I buy the things I want costing £2.99, £4.49, £39.49 and £1.99?

1) Explain how you could use mental methods in order to solve these calculations in the most efficient way.

$10\,783 - 1999 =$

$1499 + 4263 =$

$73 \times 11 =$

2) Look carefully at the order of these calculations. Show how they can be changed around to make the calculation easier to solve mentally:

$5 \times 42 \times 20 =$

$25 \times 28 \times 2 =$

3) Use your estimating skills and mental methods to quickly decide if each person has enough money to buy the items they want from a shop.

- a) I have £40. Can I buy the things I want costing £7.99, £29.99, £1.49 and £1.99?
- b) I have £50. Can I buy the things I want costing £2.99, £4.49, £39.49 and £1.99?

in the most efficient way.

$73 \times 11 =$

around to make the calculation

has enough money to buy the items

1.99?

1.99?

Still Puzzling?



How did you find the task?

Did you struggle with any of the calculations?

Is there any calculation you have completed that you are proud of?

Where can you use and apply this skill in other areas of mathematics or in other subjects?

Aim



To calculate mentally with increasingly large numbers using all four operations.

Success Criteria

- I can partition large numbers, and add the most significant digits first.
- I can add or subtract the nearest multiple of ten or 100 then adjust.
- I can identify near doubles.
- I can form an equivalent calculation, e.g. to multiply by eight, double then multiply by four.

