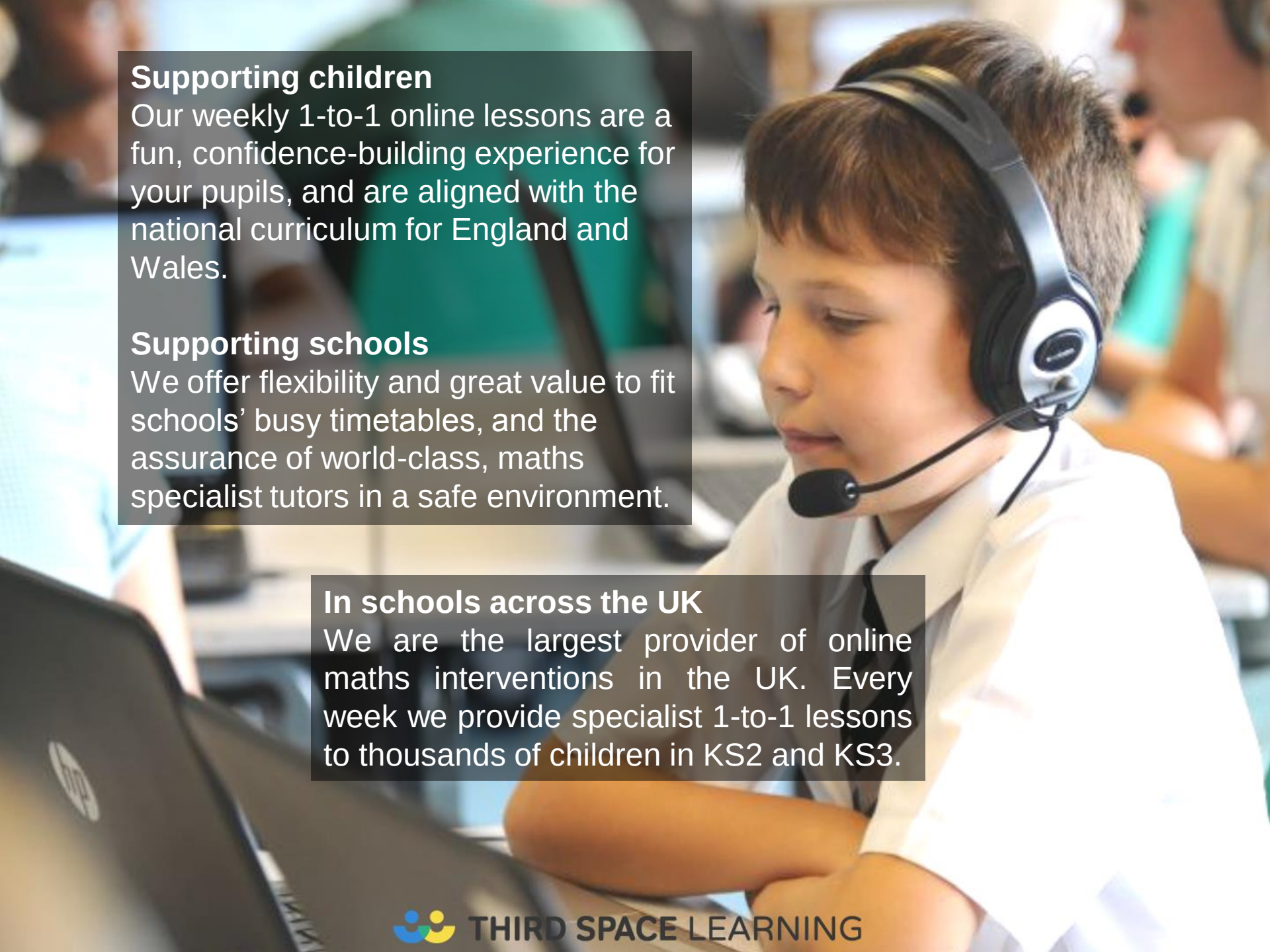

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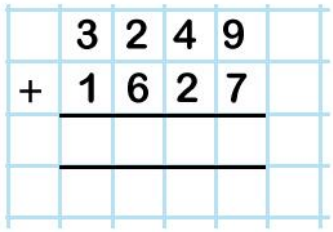
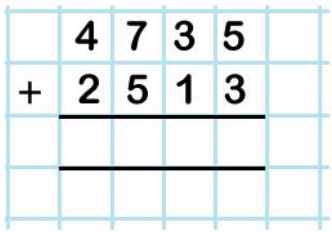
THIRD SPACE LEARNING

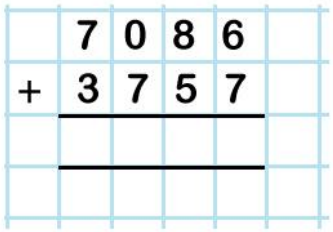
# To be able to add two 4-digit numbers

**STARTER:**

Which one is more difficult?




*Think about what you need to do to find each answer.*

**Success Criteria:**

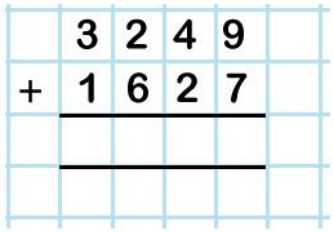
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

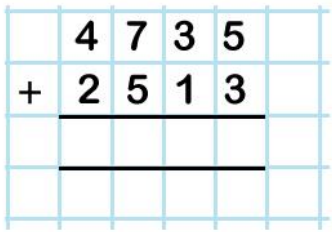
**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

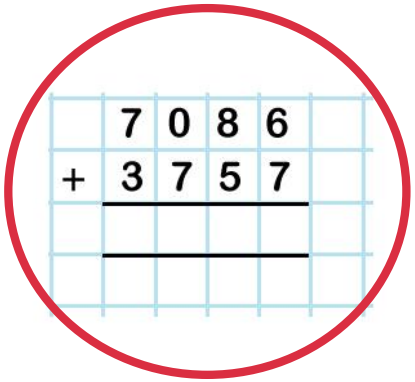
# To be able to add two 4-digit numbers

**STARTER:**

Which one is more difficult?




**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

**The third calculation is slightly more difficult than the other two. This is because two of the columns make totals that are more than 9. Each column can only hold 9 in it and so we need to exchange twice to find each answer. In the other two calculations we only need to exchange in one of the columns.**

# To be able to add two 4-digit numbers

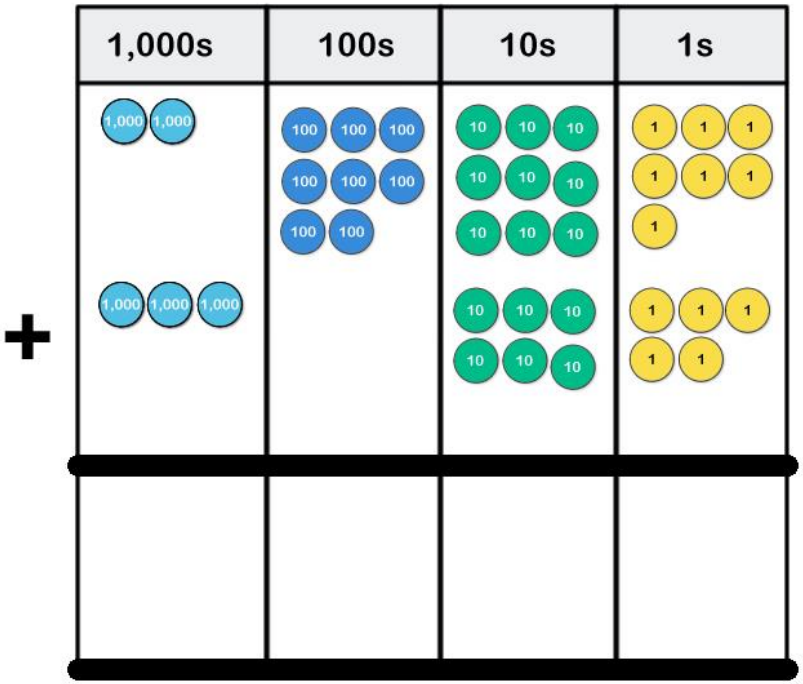
**TALKING TIME:**

Add 2,897 and 3,065 using the column method.
Use a place-value grid and counters to model each step.

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.



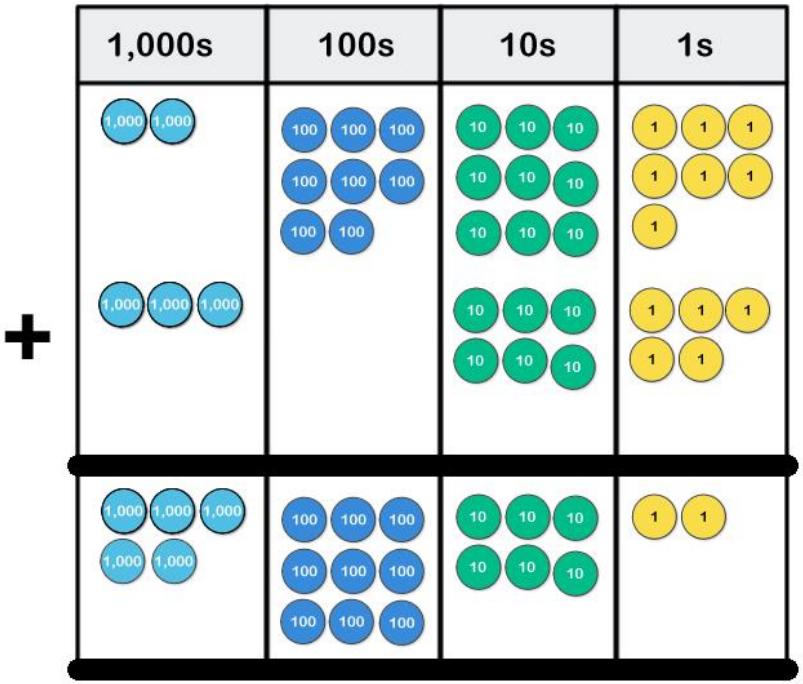

| | | | | |
|---|---|---|---|---|
| | 2 | 8 | 9 | 7 |
| + | 3 | 0 | 6 | 5 |
| | | | | |
| | | | | |

*Will you need to exchange in this calculation?*
*How do you know?*

# To be able to add two 4-digit numbers

**TALKING TIME:**

Add 2,897 and 3,065 using the column method.
Use a place-value grid and counters to model each step.




| | | | | |
|---|---|---|---|---|
| | 2 | 8 | 9 | 7 |
| + | 3 | 0 | 6 | 5 |
| | 5 | 9 | 6 | 2 |

*Will you need to exchange in this calculation? How do you know?*

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

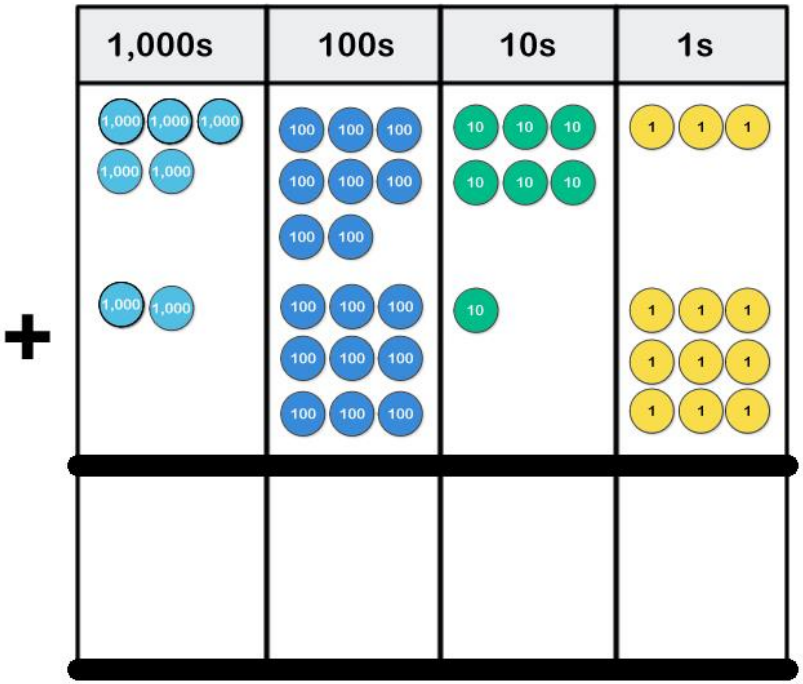
**TALKING TIME:**

Add 5,863 and 2,919 using the column method.
Use a place-value grid and counters to model each step.

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.



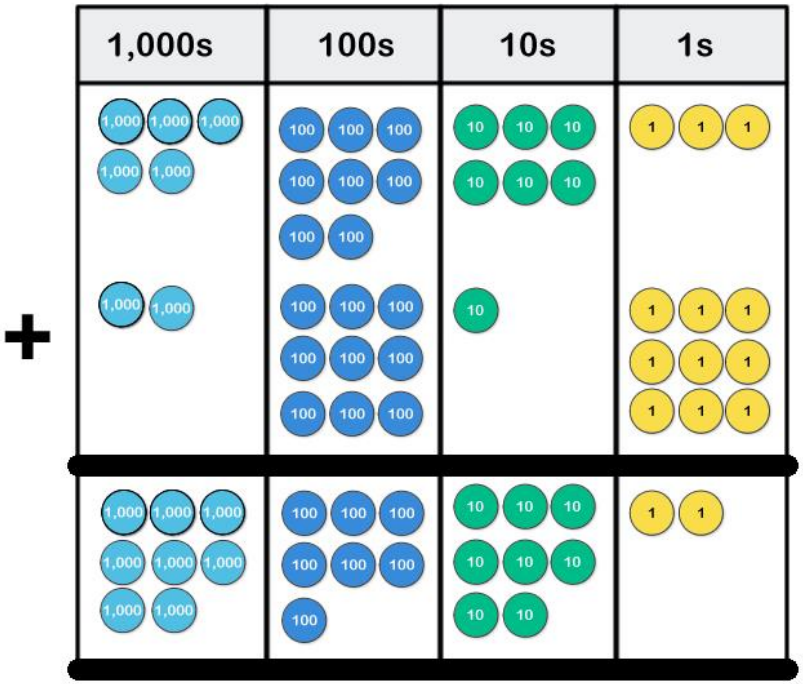

| | | | | |
|---|---|---|---|---|
| | 5 | 8 | 6 | 3 |
| + | 2 | 9 | 1 | 9 |
| | | | | |
| | | | | |

*Explain where you will need to exchange in this calculation before you begin.*

# To be able to add two 4-digit numbers

**TALKING TIME:**

Add 5,863 and 2,919 using the column method.
Use a place-value grid and counters to model each step.




| | | | | |
|---|---|---|---|---|
| | 5 | 8 | 6 | 3 |
| + | 2 | 9 | 1 | 9 |
| | 8 | 7 | 8 | 2 |

**Success Criteria:**

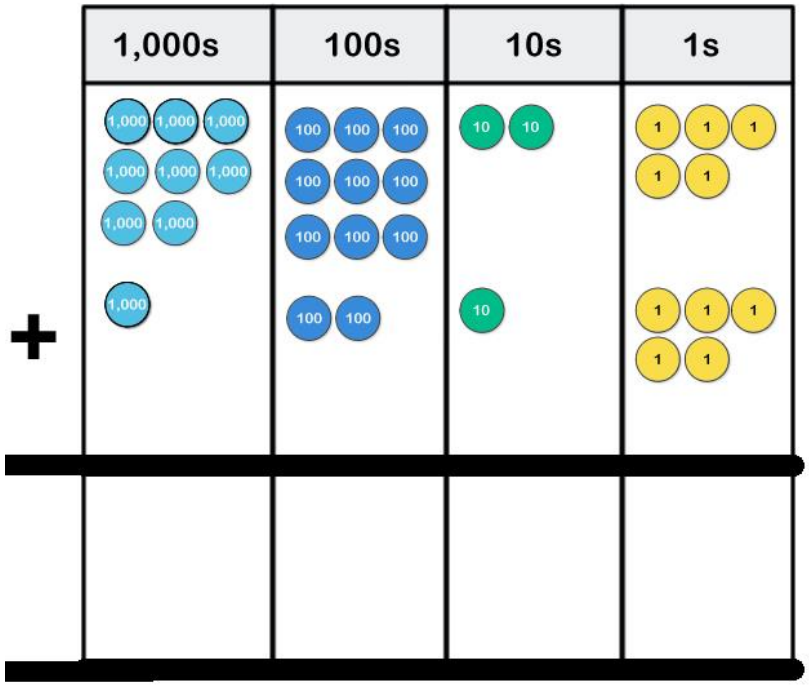
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**TALKING TIME:**

There are 8,925 adults at an outdoor concert and 1,215 children. How many people are there altogether?




| | | | | |
|---|---|---|---|---|
| | 8 | 9 | 2 | 5 |
| + | 1 | 2 | 1 | 5 |
| | | | | |
| | | | | |

**Success Criteria:**

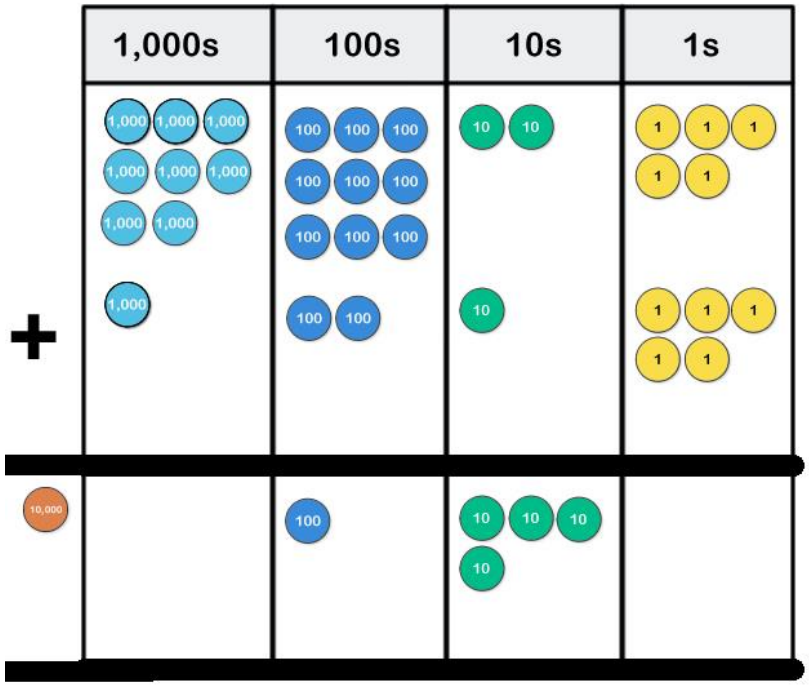
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**TALKING TIME:**

There are 8,925 adults at an outdoor concert and 1,215 children. How many people are there altogether?




| | | | | |
|---|---|---|---|---|
| | 8 | 9 | 2 | 5 |
| + | 1 | 2 | 1 | 5 |
| 1 | 0 | 1 | 4 | 0 |

*What has happened in the thousands column? How do you say your answer?*

**There are 10,140 people altogether.**

**Success Criteria:**

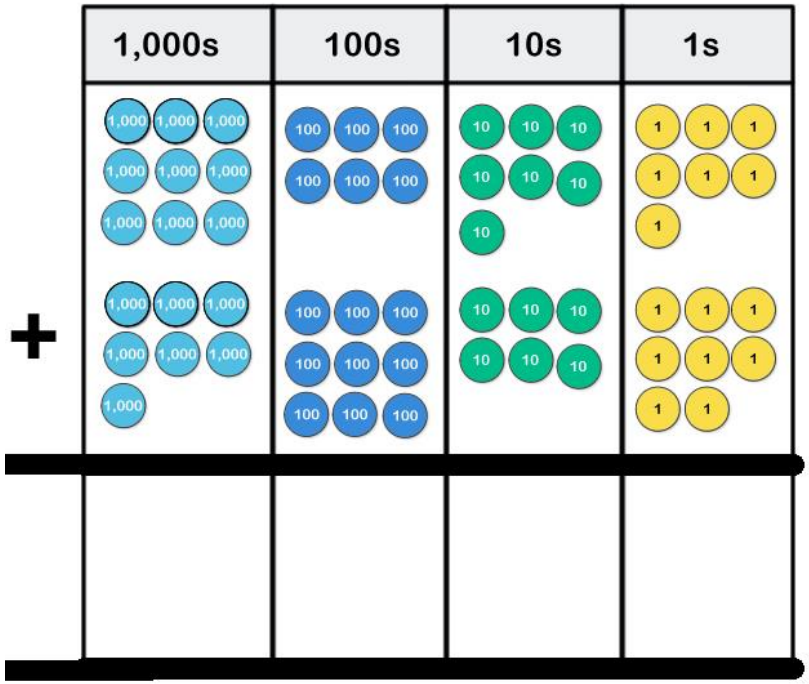
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 1:**

A puppy weighed 9,677g last time he was weighed.
The vet says, “He weighs 7,968g more this time!”
How heavy is the puppy (in grams) now?




| | 9 | 6 | 7 | 7 | |
|---|---|---|---|---|---|
| + | 7 | 9 | 6 | 8 | |
| | | | | | |
| | | | | | |

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

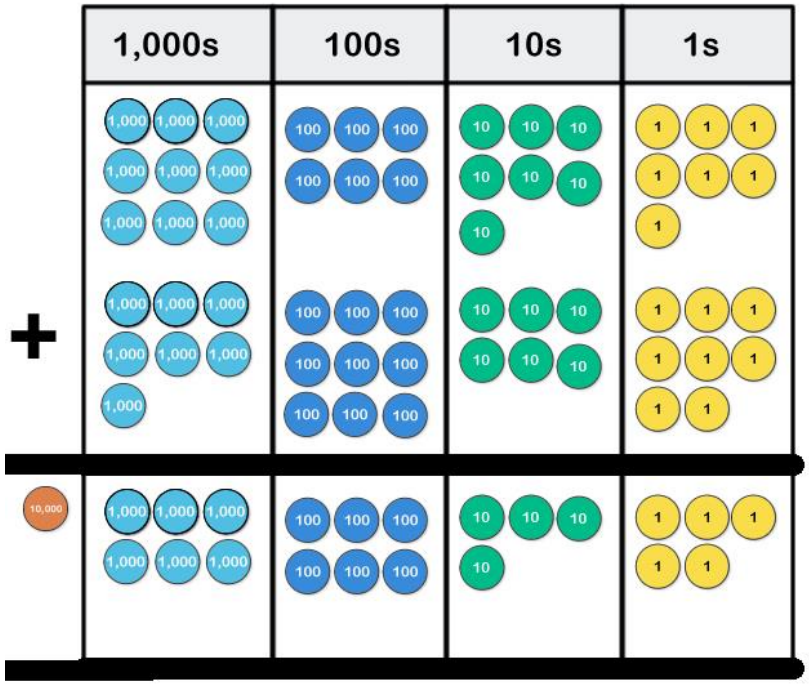
**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

*Explain why it is important to work from right to left when using column addition.*

# To be able to add two 4-digit numbers

**ACTIVITY 1:**

A puppy weighed 9,677g last time he was weighed.
The vet says, “He weighs 7,968g more this time!”
How heavy is the puppy (in grams) now?




| | 9 | 6 | 7 | 7 |
|---|---|---|---|---|
| + | 7 | 9 | 6 | 8 |
| 1 | 6 | 6 | 4 | 5 |

**The puppy is 16,645g.**
(He is clearly no longer a puppy!)

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**TALKING TIME:**

Describe how to find the total of 5,453 and 3,652.

| | | | | |
|---|---|---|---|---|
| | 5 | 4 | 5 | 3 |
| + | 3 | 6 | 5 | 2 |
| | | | | |

*Which columns will you need to exchange in?*

**Success Criteria:**

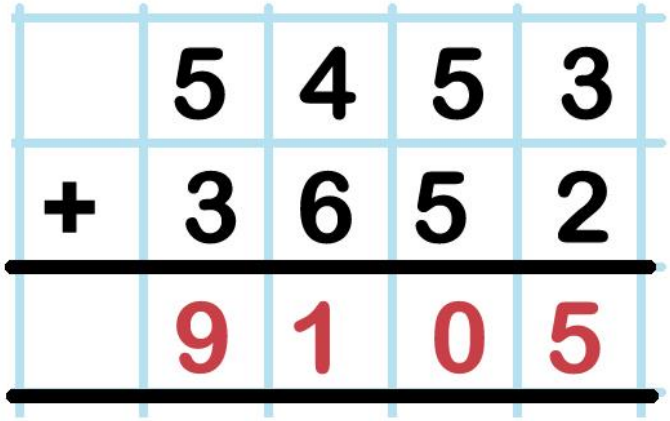
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**TALKING TIME:**

Describe how to find the total of 5,453 and 3,652.



| | | | | |
|---|---|---|---|---|
| | 5 | 4 | 5 | 3 |
| + | 3 | 6 | 5 | 2 |
| | 9 | 1 | 0 | 5 |

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

**Extension:**
Two 4-digit numbers are added together.
They make a total of 8,356 and the addition contains two exchanges.

What could the numbers be?

Find three different answers.

# To be able to add two 4-digit numbers

**ACTIVITY 2:**

Only find the answers to the addition problem(s).

a) A mystery number is 5,628 more than 3,529.
What is the mystery number?

b) In September a plane flew 7,254 km more than it did in August.
In September it flew 9,466 km. How far did it fly in August?

c) A bottle holds 1,545 ml, a glass holds 336 ml and a tea cup holds 210ml.
How much liquid do they hold altogether?

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 2:**

Only find the answers to the addition problem(s).

**a) A mystery number is 5,628 more than 3,529. What is the mystery number?**

$$\begin{array}{r} 5628 \\ +\,3529 \\ \hline 9157 \end{array}$$

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

b) In September a plane flew 7,254 km more than it did in August. In September it flew 9,466 km. How far did it fly in August?

**c) A bottle holds 1,545 ml, a glass holds 336 ml and a tea cup holds 210ml. How much liquid do they hold altogether?**

$$\begin{array}{r} 1545 \\ 336 \\ +\ 210 \\ \hline 2091 \text{ ml} \end{array}$$

# To be able to add two 4-digit numbers

**ACTIVITY 3:**

Use the column method to find all the possible totals made by adding these numbers (two at a time).

5,258 4,852 6,389 1,791

*Do you think you will you need to exchange in all of your additions?*

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 3:**

Use the column method to find all the possible totals made by adding these numbers (two at a time).

5,258 4,852 6,389 1,791

The possible totals are:

$$\begin{array}{r} 5258 \\ +\ 4852 \\ \hline 10110 \end{array} \qquad \begin{array}{r} 5258 \\ +\ 1791 \\ \hline 7049 \end{array} \qquad \begin{array}{r} 4852 \\ +\ 1791 \\ \hline 6643 \end{array}$$

$$\begin{array}{r} 5258 \\ +\ 6389 \\ \hline 11647 \end{array} \qquad \begin{array}{r} 4852 \\ +\ 6389 \\ \hline 11241 \end{array} \qquad \begin{array}{r} 6389 \\ +\ 1791 \\ \hline 8180 \end{array}$$

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

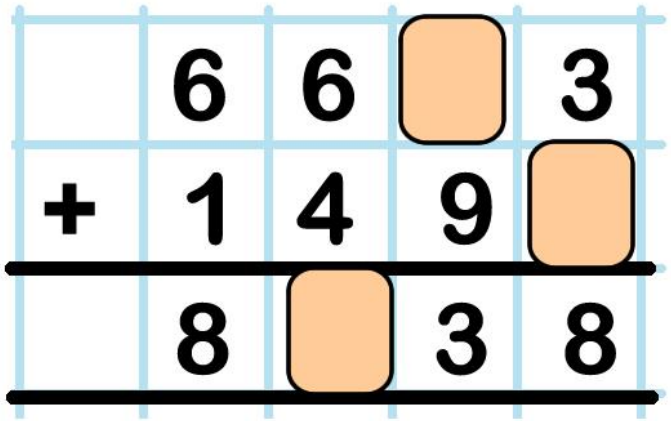
**Extension:**
How many possible totals would there be if there were 5 different numbers?

Invent a 5 number problem for your friend to solve. If you have worked out the number of possible totals correctly, you know how many answers to expect!

# To be able to add two 4-digit numbers

**ACTIVITY 4:**

Use your knowledge of adding 4-digit numbers (and exchanging!) to work out the missing digits.



| | | | | |
|---|---|---|---|---|
| | 6 | 6 | ☐ | 3 |
| + | 1 | 4 | 9 | ☐ |
| | 8 | ☐ | 3 | 8 |

**Success Criteria:**

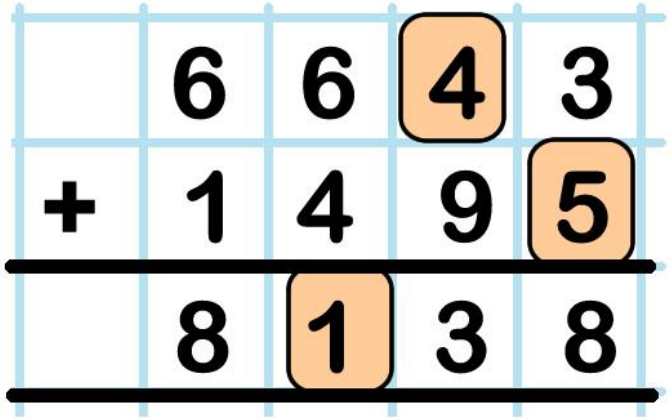
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 4:**

Use your knowledge of adding 4-digit numbers (and exchanging!) to work out the missing digits.



| | | | | |
|---|---|---|---|---|
| | 6 | 6 | 4 | 3 |
| + | 1 | 4 | 9 | 5 |
| | 8 | 1 | 3 | 8 |

**Success Criteria:**

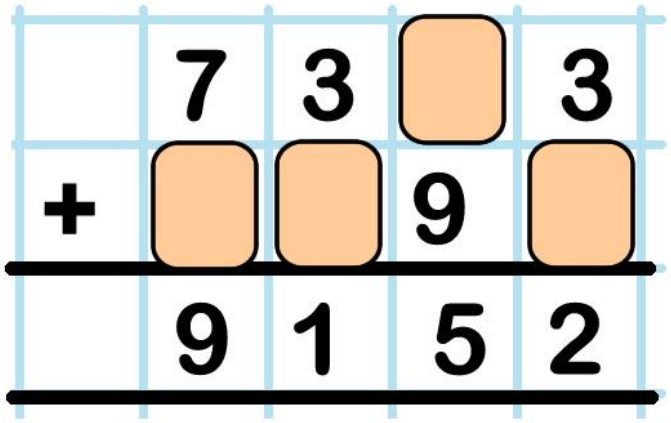
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 5:**

Use your knowledge of adding 4-digit numbers (and exchanging!) to work out the missing digits.




**Success Criteria:**

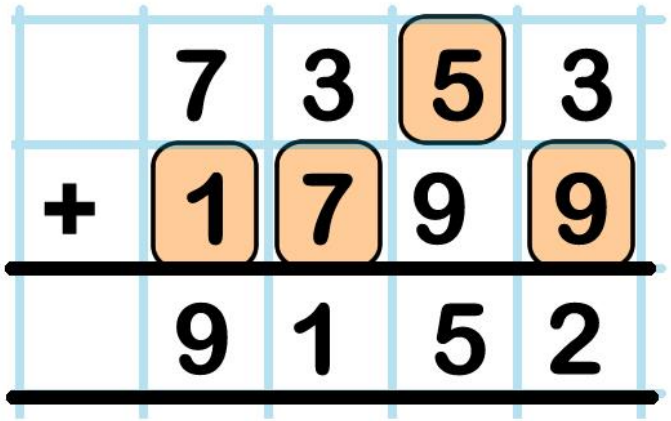
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 5:**

Use your knowledge of adding 4-digit numbers (and exchanging!) to work out the missing digits.




**Success Criteria:**

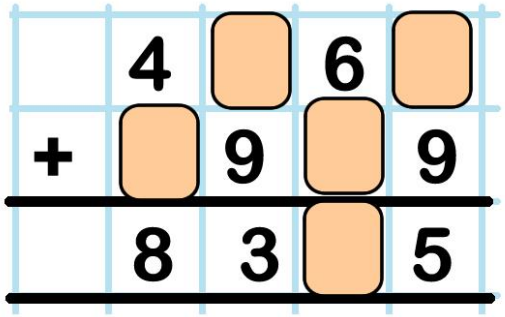
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 6:**

This missing digit problem has more than one answer. What are some possible answers?




**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

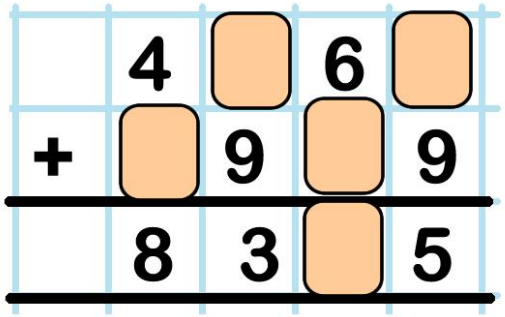
**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

*If you wanted to make this question a 'closed' question (with only one possible answer), what would you need to do?*

# To be able to add two 4-digit numbers

**ACTIVITY 6:**

This missing digit problem has more than one answer.
What are some possible answers?




*The missing ones digit must be 6.*
*The missing tens digits could be several answers.*
*The missing hundreds digit could be 3 or 4, depending on the tens digits chosen.*
*The missing thousands digit is 3.*

**Some possible answers are:**

**4,466 + 3,919 = 8,385**

**4,366 + 3,959 = 8,325**

**4,366 + 3,999 = 8,365**

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

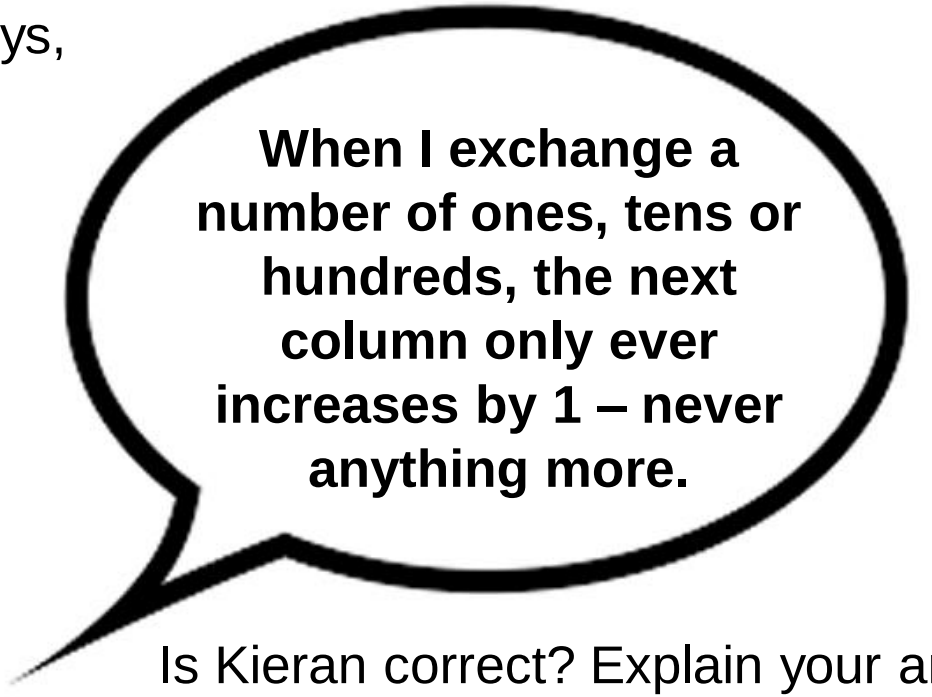
**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

**Extension:**
Invent your own missing digit problem.
How can you turn it into an open-ended problem?
(Don't make it too tricky!)

# To be able to add two 4-digit numbers

**ACTIVITY 7:**

Kieran says,




Is Kieran correct? Explain your answer.

**Success Criteria:**

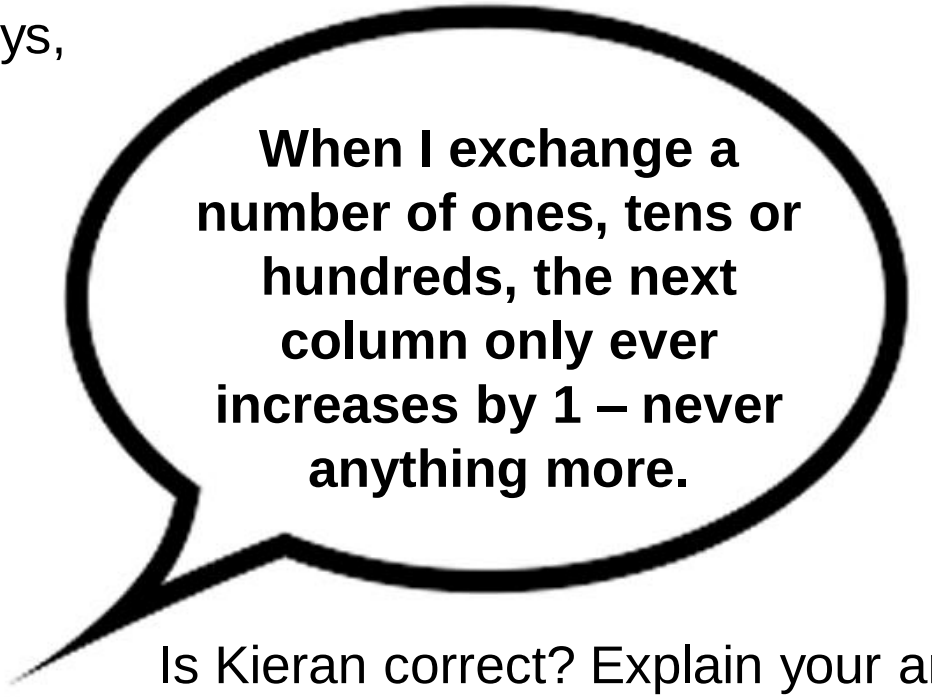
**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**ACTIVITY 7:**

Kieran says,




Is Kieran correct? Explain your answer.

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

**Yes, Kieran is correct, but only if he is adding two numbers together.**
**The largest digit possible in a column is 9 and so two 9s will equal 18 (so an exchange of 10 of something for 1 of something else is the only exchange ever needed).**
**This may be different if Kieran decides to add several numbers together because then his column total may run into the 20s or even 30s! It depends how many numbers he adds!**

# To be able to add two 4-digit numbers

**EVALUATION:**

Match each calculation with a statement (one calculation with one statement).

5,647 + 2,589

**In this addition, you will need to exchange 10 ones for 1 ten.**

6,415 + 3,277

**This is probably the easiest addition on the page.**

7,464 + 2,532

**In this addition, you will need to exchange three times.**

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.

# To be able to add two 4-digit numbers

**EVALUATION:**

Match each calculation with a statement (one calculation with one statement).

5,647 + 2,589

6,415 + 3,277

7,464 + 2,532

**In this addition, you will need to exchange 10 ones for 1 ten.**

**This is probably the easiest addition on the page.**

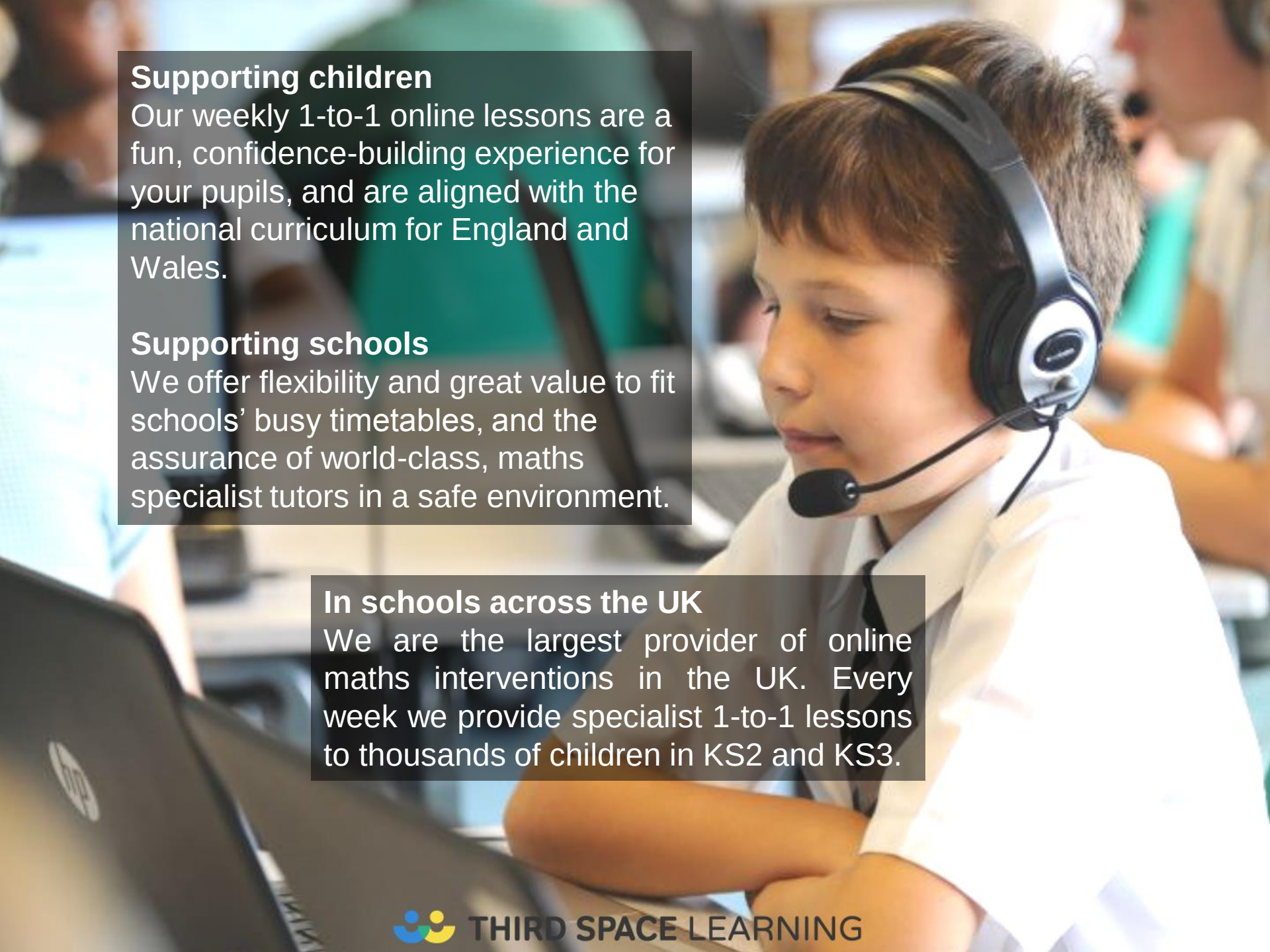
**In this addition, you will need to exchange three times.**

*Explain this answer in particular. What made you answer the way you did?*

**Success Criteria:**

**Mastery:**
I can add two 4-digit numbers **where I need to exchange more than once.**

**Greater Depth:**
I can apply my knowledge of adding 4-digit numbers when investigating open-ended problems.



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THIRD SPACE LEARNING