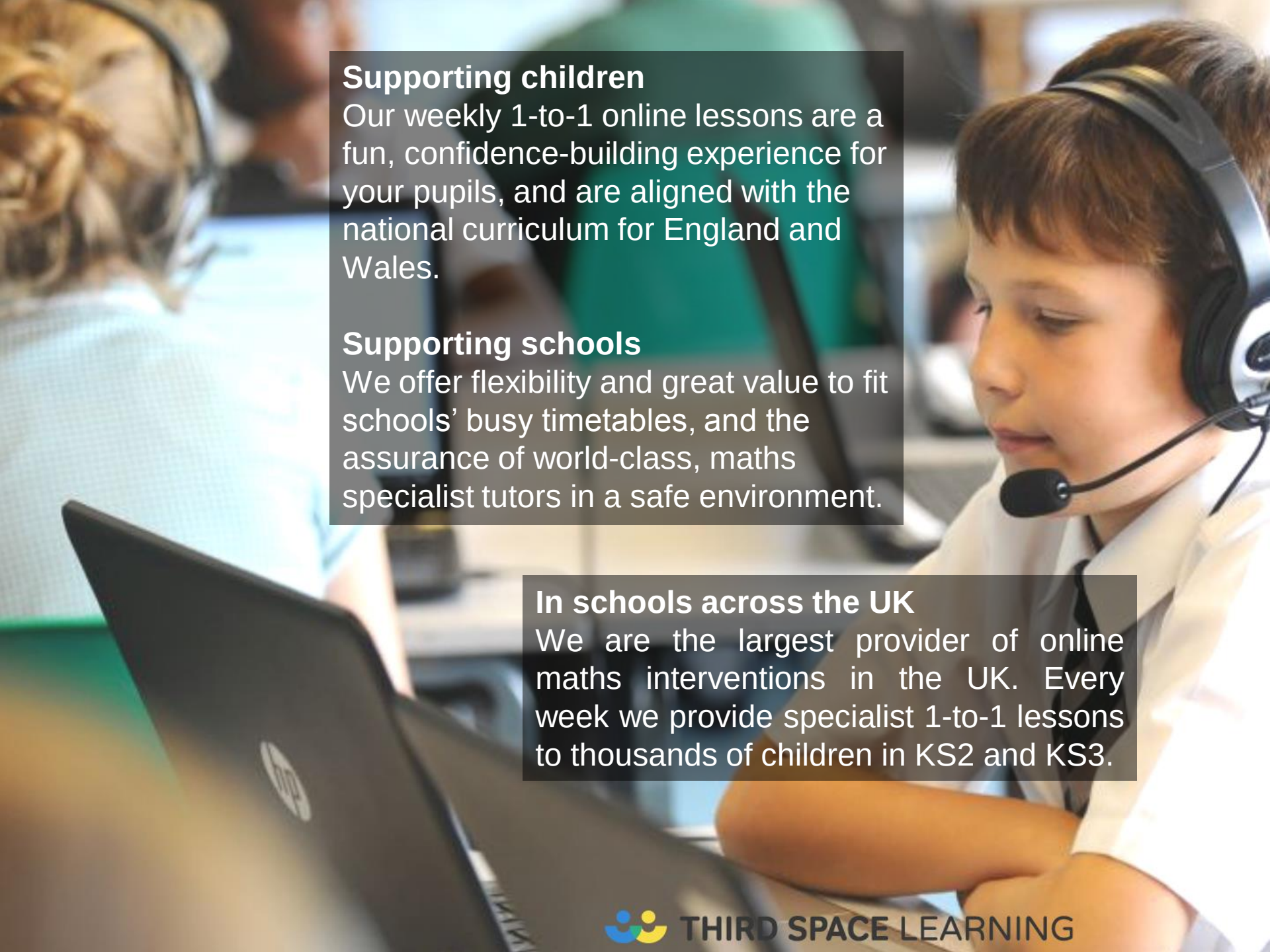

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THIRD SPACE LEARNING

To be able to add two 4-digit numbers

STARTER:

How many different ways can you represent 2,326 + 1,013?

Success Criteria:

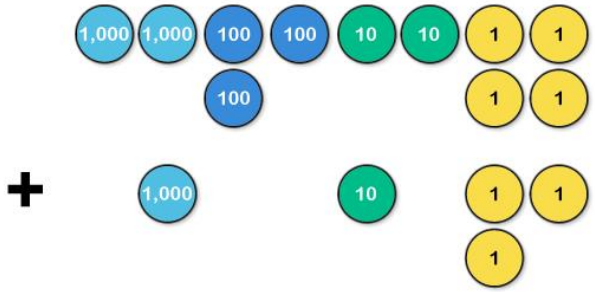
Mastery:
I can add two 4-digit numbers **where I need to exchange once**.

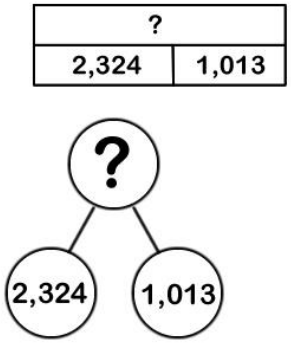
Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

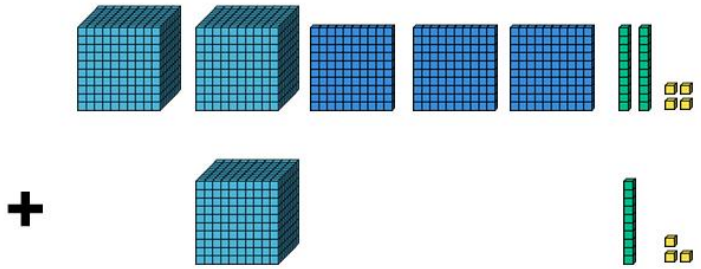
To be able to add two 4-digit numbers

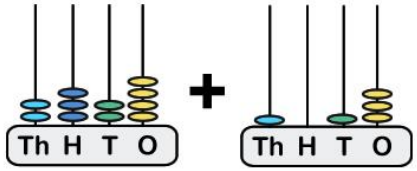
STARTER:

How many different ways can you represent 2,326 + 1,013?









Can you think of any other representations?

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

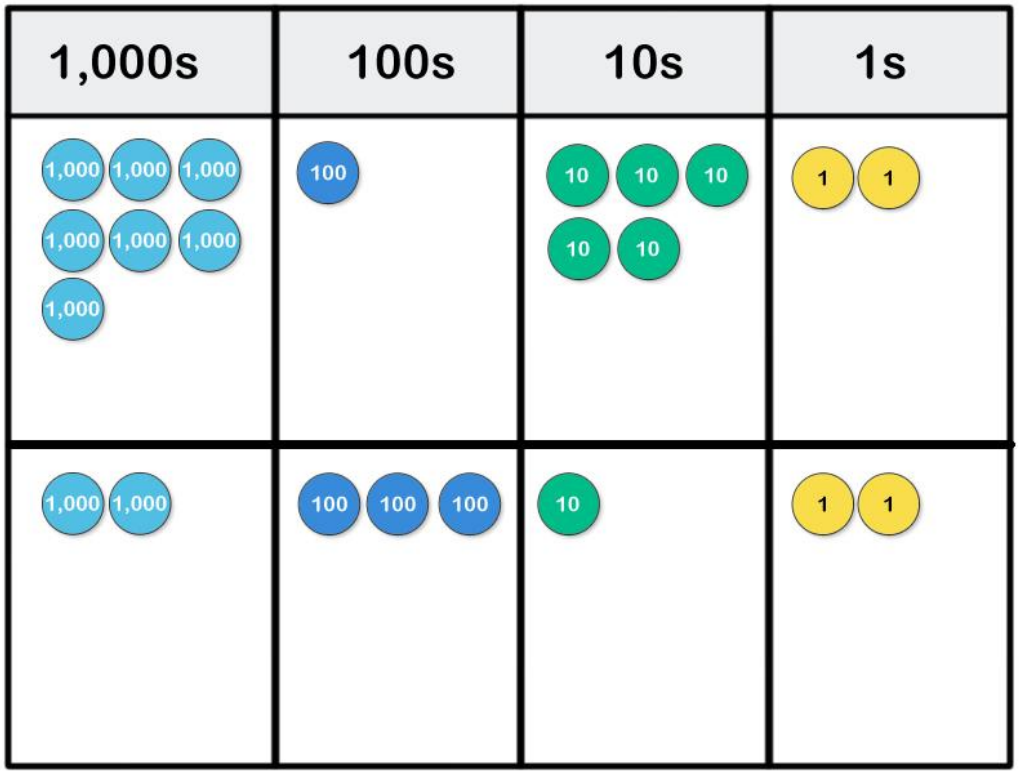
Extension:
You're the teacher!
Which representation would you use if you wanted to help your students work out the answer?

Which would you use if you wanted to show the relationship between the numbers?

To be able to add two 4-digit numbers

TALKING TIME:

Use your knowledge of adding 4-digit numbers to find the total of 7,152 and 2,312.



Success Criteria:

Mastery:
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Greater Depth:
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To be able to add two 4-digit numbers

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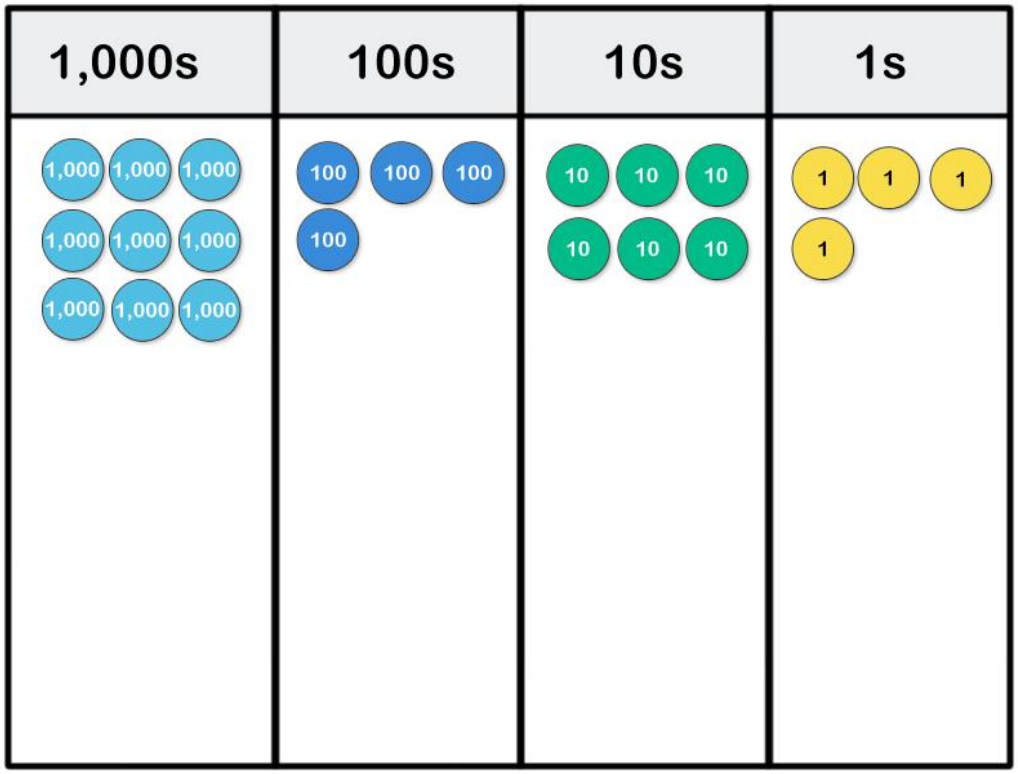


Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

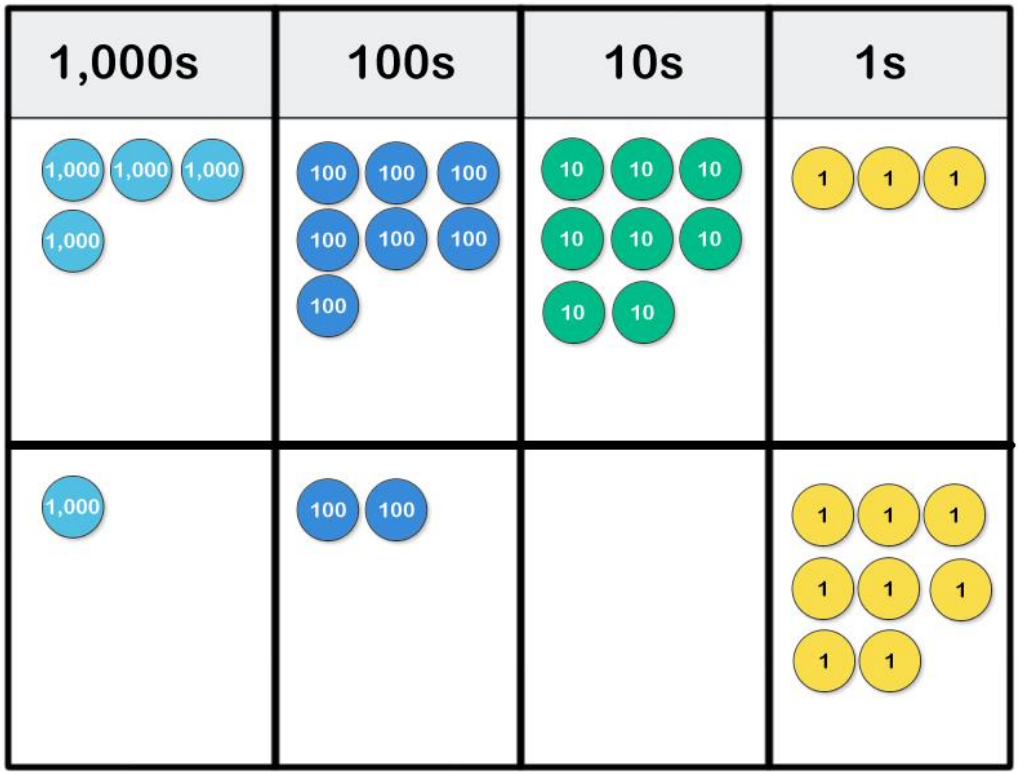
7,152 + 2,312 = 9,464

Extension:
Name two possible mistakes you might make when adding these numbers.

To be able to add two 4-digit numbers

TALKING TIME:

Use place-value counters to combine 4,783 and 1,208.



Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

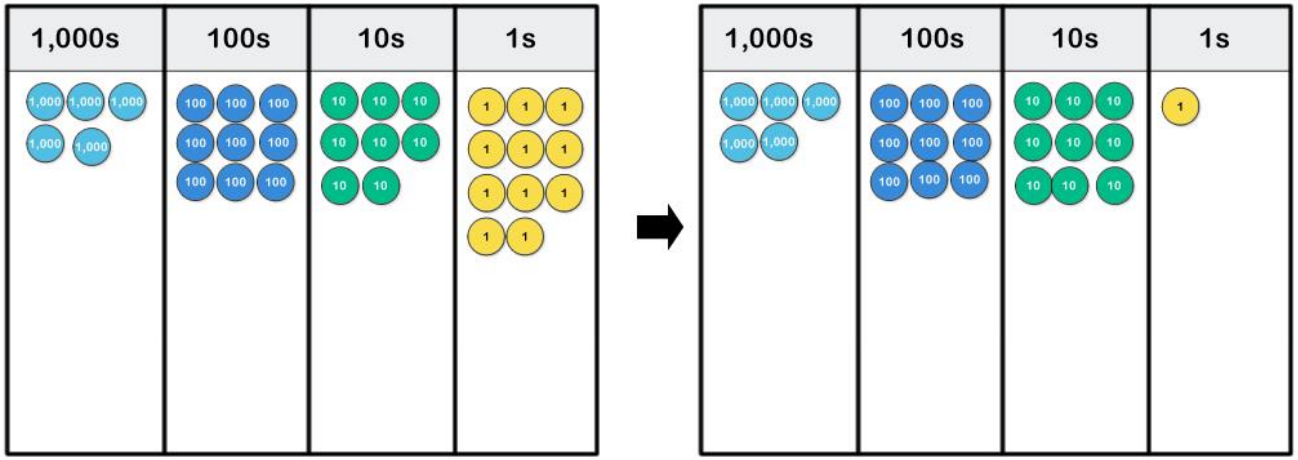
What do you notice about the total of the 1s column?

What can we do about it?

To be able to add two 4-digit numbers

TALKING TIME:

Use place-value counters to combine 4,783 and 1,208.



Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

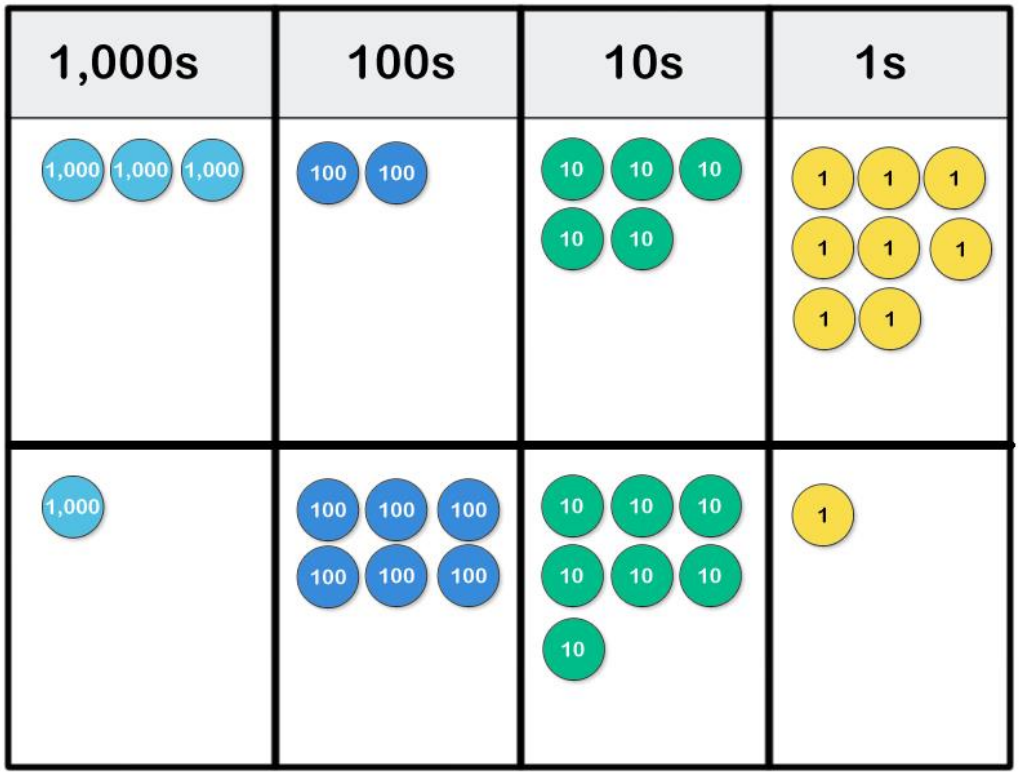
What is happening here?
Why can't we represent the answer using the first place-value grid?
Could we have predicted that we needed to do this when we first saw the question?

4,783 + 1,208 = 5,991

To be able to add two 4-digit numbers

TALKING TIME:

Use place-value counters to find the sum of 3,258 and 1,671.



Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

What is the maximum number of counters that a column can contain?

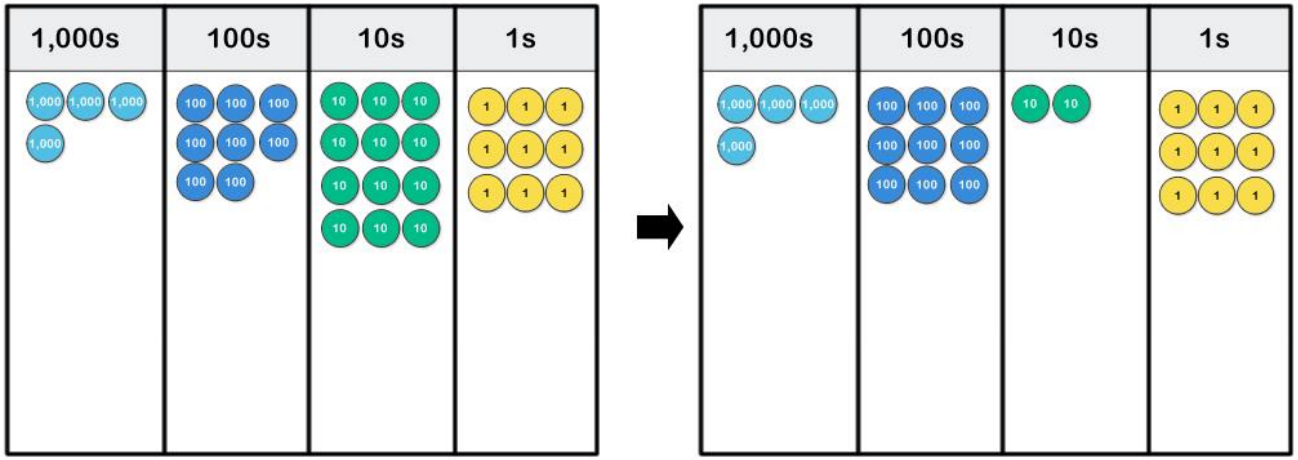
What if a total makes more than this amount?

Will this happen anywhere in this addition?

To be able to add two 4-digit numbers

TALKING TIME:

Use place-value counters to find the sum of 3,258 and 1,671.



Where is the exchange in this calculation?
What happens when we exchange?

3,258 + 1,671 = 4,929

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

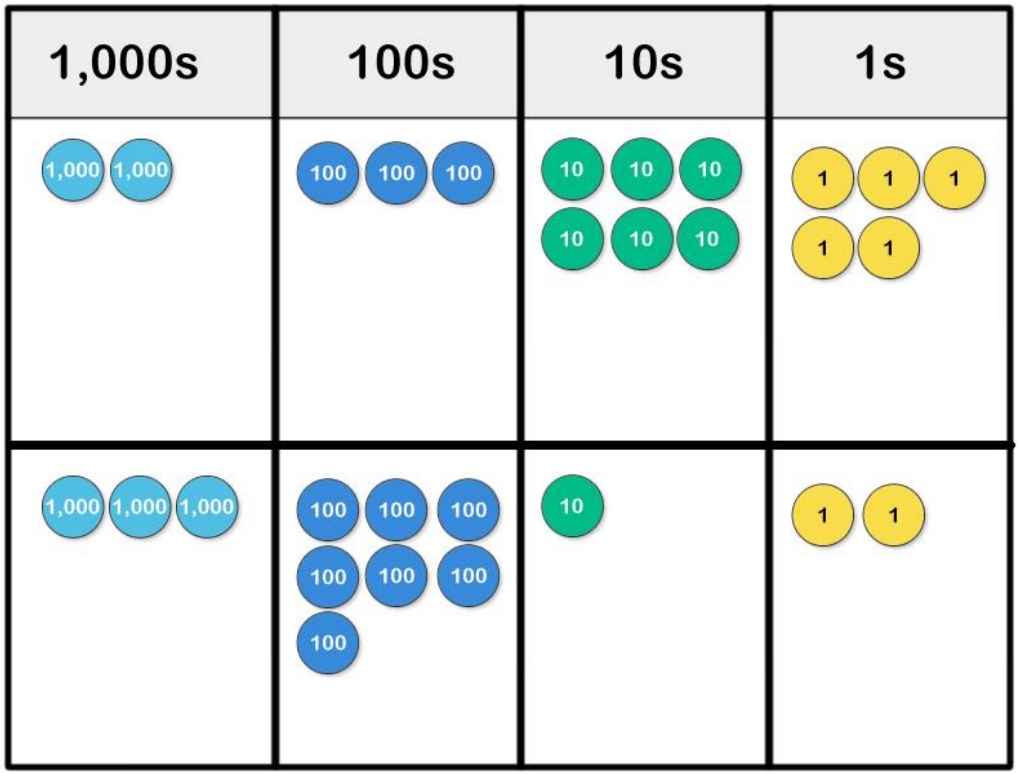
Extension:
Jordan says exchanging in the 1s column is different from exchanging in the 10s column or the 100s column. Ffion says that it is the same thing.

Who do you agree with and why?

To be able to add two 4-digit numbers

ACTIVITY 1:

What is 2,365 plus 3,712? Use place-value counters.



Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

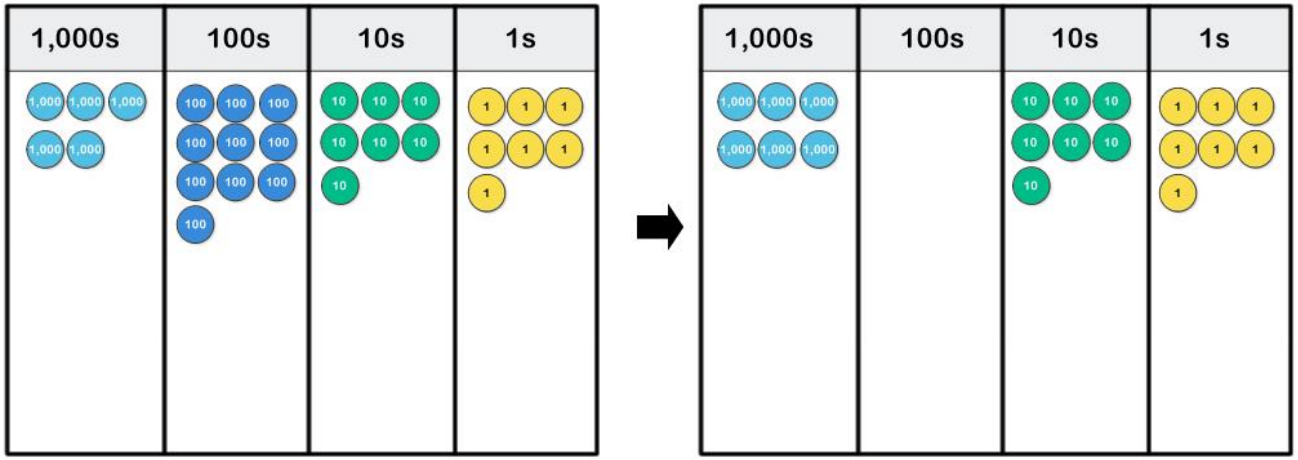
Will we need to exchange in this calculation?

Where?

To be able to add two 4-digit numbers

ACTIVITY 1:

What is 2,365 plus 3,712? Use place-value counters.



2,365 + 3,712 = 6,077

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

Extension:
Ellie says that an addition containing lots of hundreds should give an answer with a large hundreds digit.

Can you explain why she is wrong?

Invent a calculation to prove your reasoning.

To be able to add two 4-digit numbers

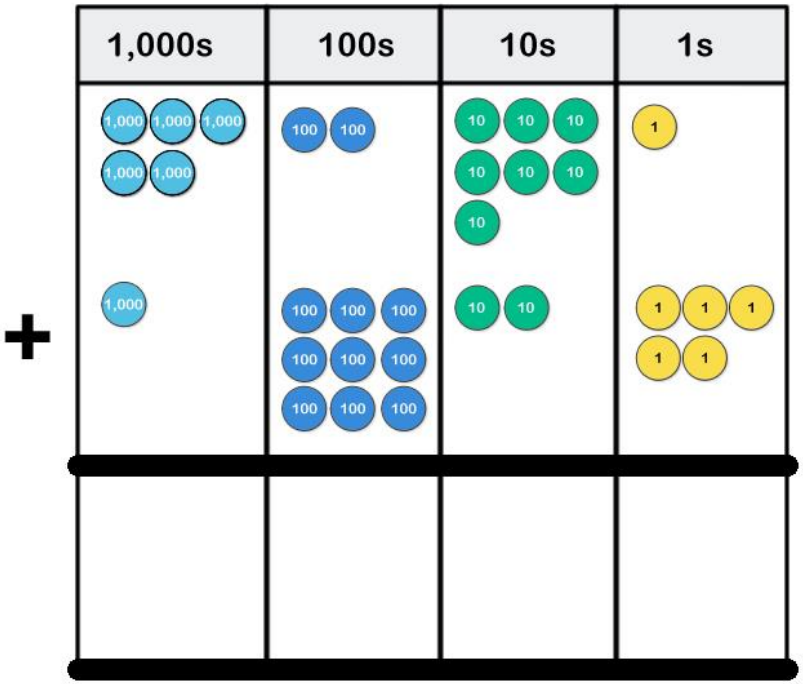
TALKING TIME:

Add 5,271 and 1,925 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 once**.

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.



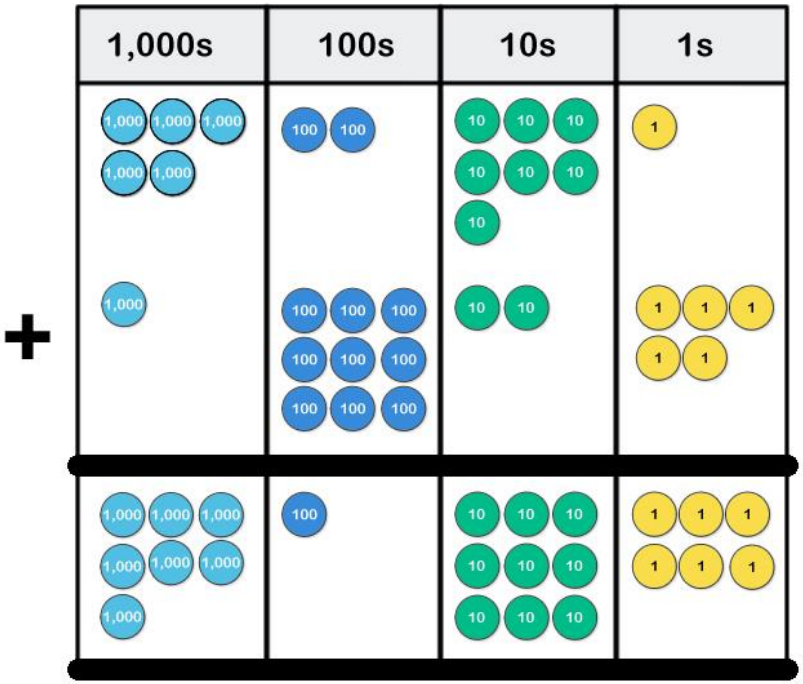
	5	2	7	1
+	1	9	2	5

Will we need to exchange in this calculation? Where?

To be able to add two 4-digit numbers

TALKING TIME:

Add 5,271 and 1,925 using the column method.
Use a place-value grid and counters to model each step.



	5	2	7	1
+	1	9	2	5
	7	1	9	6

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

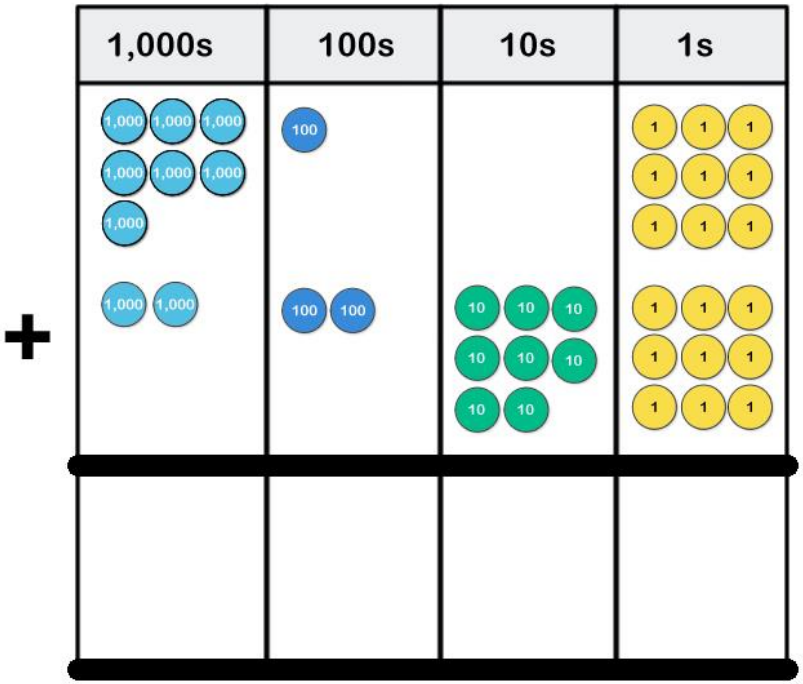
TALKING TIME:

Add 7,109 and 2,289 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 once**.

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.



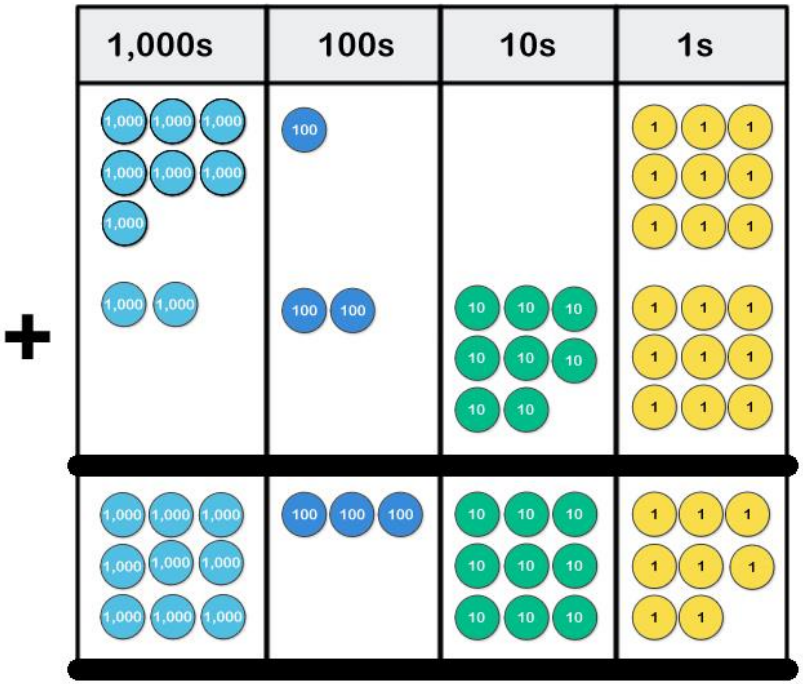
	7	1	0	9
+	2	2	8	9

Explain how you know where you need to exchange in this addition.

To be able to add two 4-digit numbers

TALKING TIME:

Add 7,109 and 2,289 using the column method.
Use a place-value grid and counters to model each step.



	7	1	0	9
+	2	2	8	9
	9	3	9	8

Success Criteria:

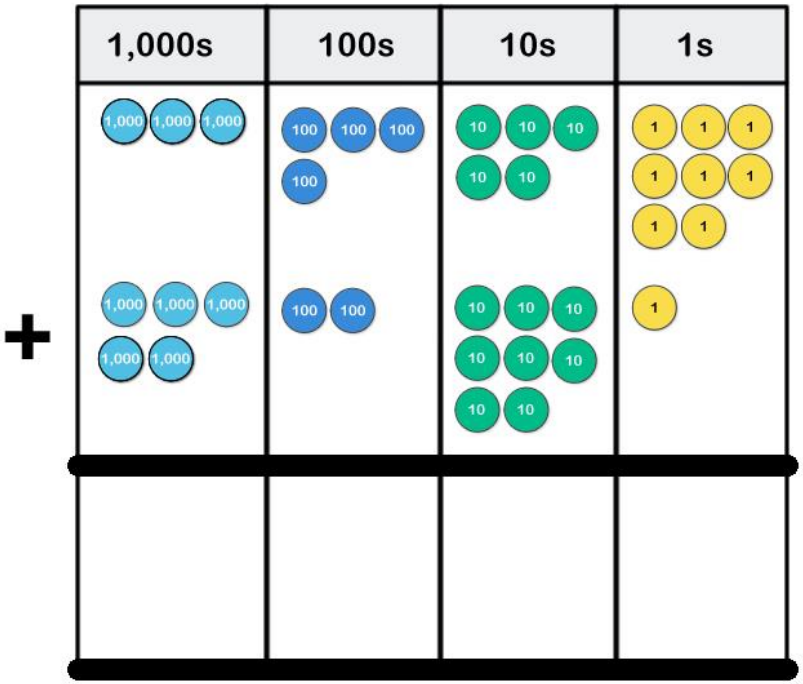
Mastery:
I can add two 4-digit numbers **where I need to exchange once**.

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

TALKING TIME:

Find the sum of 3,458 and 5,281.



	3	4	5	8
+	5	2	8	1

Success Criteria:

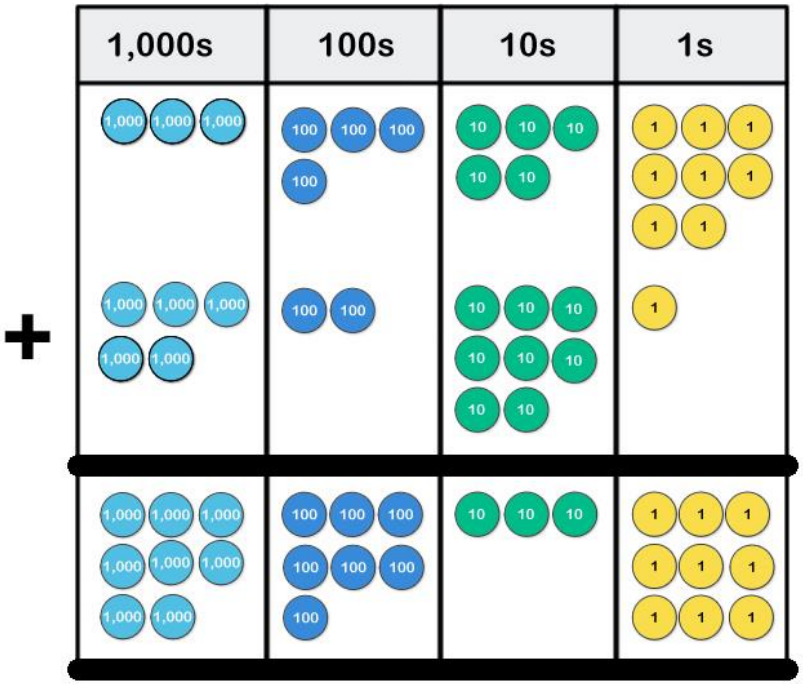
Mastery:
I can add two 4-digit numbers **where I need to exchange once**.

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 2:

Find the sum of 3,458 and 5,281.



	3	4	5	8
+	5	2	8	1
	8	7	3	9

Success Criteria:

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

Greater Depth:
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To be able to add two 4-digit numbers

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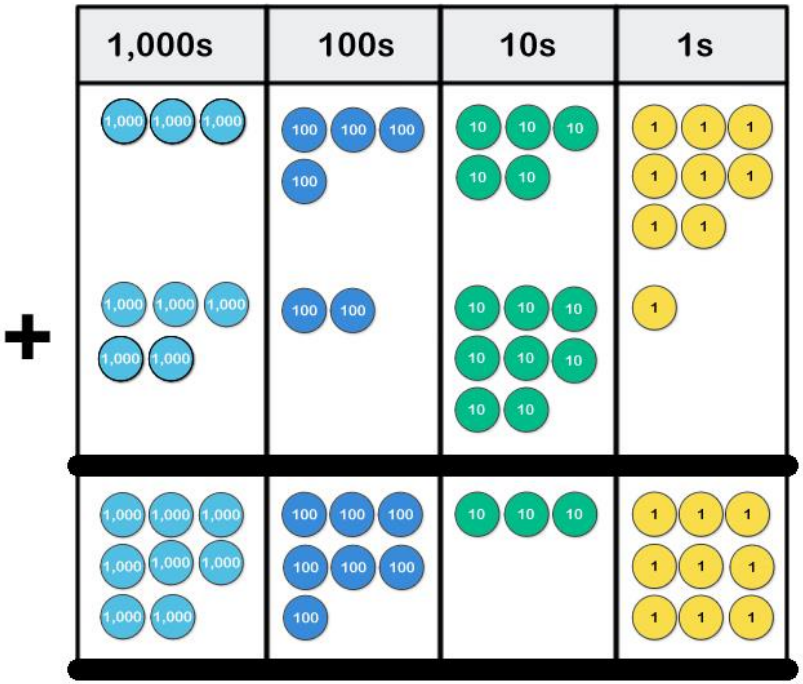


	3	4	5	8
+	5	2	8	1
	8	7	3	9

Success Criteria:

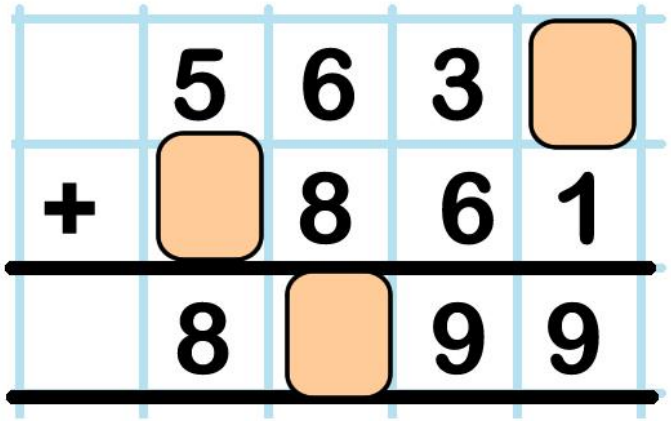
Mastery:
I can add two 4-digit numbers **where I need to exchange once**.

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

TALKING TIME:

What are the missing digits?
Explain your answer to a friend.



Success Criteria:

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Greater Depth:
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To be able to add two 4-digit numbers

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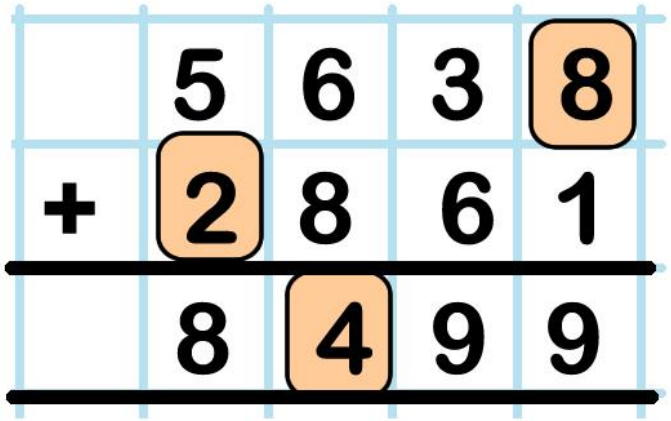

Success Criteria:

Mastery:
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Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 3:

Only solve the addition problem.

a) What is the product of 7,245 and 1,942?

b) What is the sum of 6,525 and 1,393?

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 3:

Only solve the addition problem.

a) What is the product of 7,245 and 1,942?

b) What is the sum of 6,525 and 1,393?

$$\begin{array}{r} 6525 \\ +\ 1393 \\ \hline 7918 \\ \hline \end{array}$$

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

Extension:
It is actually possible to create an addition problem using the phrase 'difference between'. You just need to think carefully about how to word it.

Can you invent such a problem?

To be able to add two 4-digit numbers

ACTIVITY 4:

Where is the mistake?

$$\begin{array}{r} 5\,6\,2\,5 \\ +\,4\,2\,4\,9 \\ \hline 9\,8\,6\,4 \\ \hline \end{array}$$

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 4:

Where is the mistake?

$$\begin{array}{r} 5\,6\,2\,5 \\ +\,4\,2\,4\,9 \\ \hline 9\,8\,6\,4 \end{array}$$

Success Criteria:

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

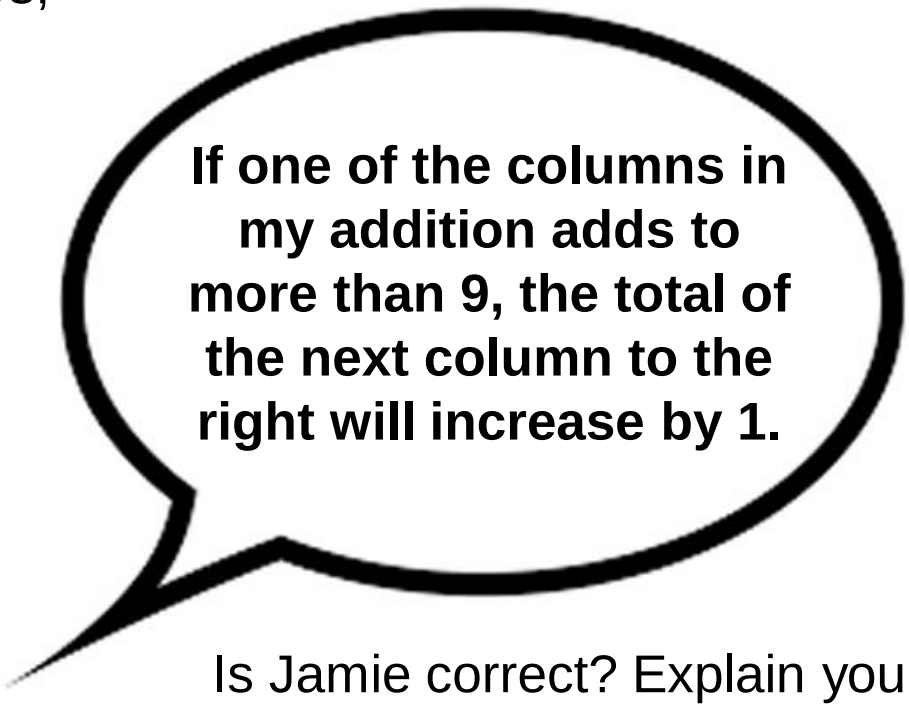
Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

The mistake is in the tens column.
5 ones plus 9 ones equals 14 ones and so 10 ones need to be exchanged for 1 ten. The tens digit should be 7, not 6.

To be able to add two 4-digit numbers

ACTIVITY 5:

Jamie says,



Is Jamie correct? Explain your answer.

Success Criteria:

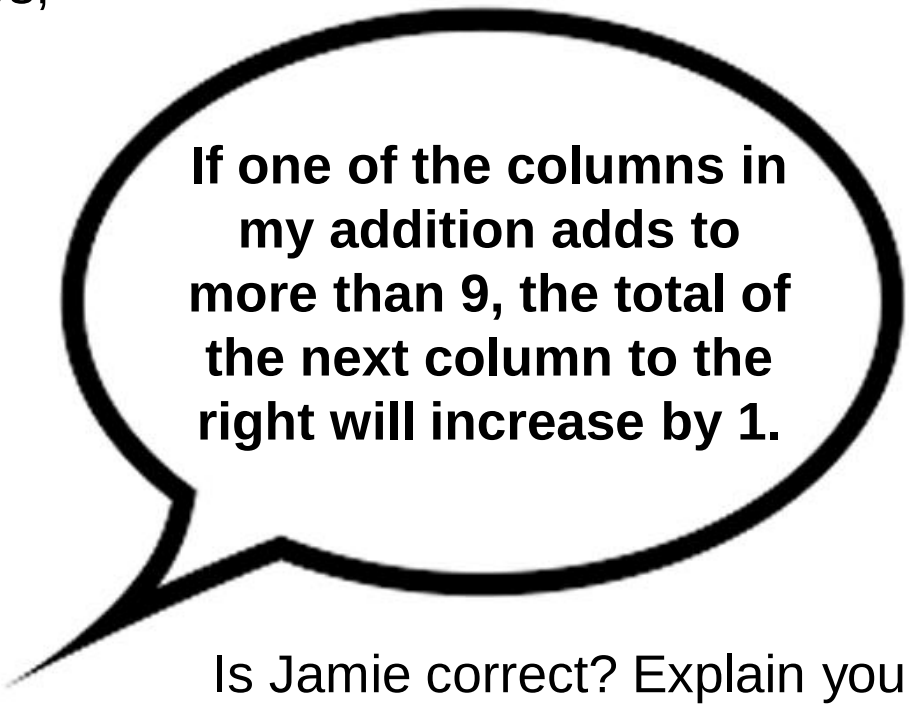
Mastery:
I can add two 4-digit numbers **where I need to exchange once**.

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 5:

Jamie says,



Is Jamie correct? Explain your answer.

No. Jamie is not correct.
The next column to the left will increase by 1, not the one to the right!

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 6:

Alicia, Jamina and Beth are working out the answer to 7,426 + 2,492. They each use a different strategy:

ALICIA'S STRATEGY:

$$\begin{array}{r} 7\,4\,2\,6 \\ +\,2\,4\,9\,2 \\ \hline 9\,8\,1\,8 \end{array}$$

JAMINA'S STRATEGY:

$$\begin{array}{r} 7\,4\,2\,6 \\ +\,2\,4\,9\,2 \\ \hline 8 \\ 1\,1 \\ 8\,0\,0 \\ 9\,0\,0\,0 \\ \hline 9\,8\,1\,9 \end{array}$$

BETH'S STRATEGY:

7,000 + 2,000 = 9,000
400 + 400 = 800
20 + 90 = 110
6 + 2 = 8
9,000 + 800 + 110 + 8 = 9,918

Who is correct?

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 6:

Alicia, Jamina and Beth are working out the answer to 7,426 + 2,492. They each use a different strategy:

ALICIA'S STRATEGY:

$$\begin{array}{r} 7\ 4\ 2\ 6 \\ +\ 2\ 4\ 9\ 2 \\ \hline 9\ 8\ 1\ 8 \end{array}$$

JAMINA'S STRATEGY:

$$\begin{array}{r} 7\ 4\ 2\ 6 \\ +\ 2\ 4\ 9\ 2 \\ \hline 8 \\ 1\ 1 \\ 8\ 0\ 0 \\ 9\ 0\ 0\ 0 \\ \hline 9\ 8\ 1\ 9 \end{array}$$

BETH'S STRATEGY:

7,000 + 2,000 = 9,000
400 + 400 = 800
20 + 90 = 110
6 + 2 = 8
9,000 + 800 + 110 + 8 = 9,918

Who is correct?

Beth is correct.
Alicia and Jamina have both made mistakes.

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

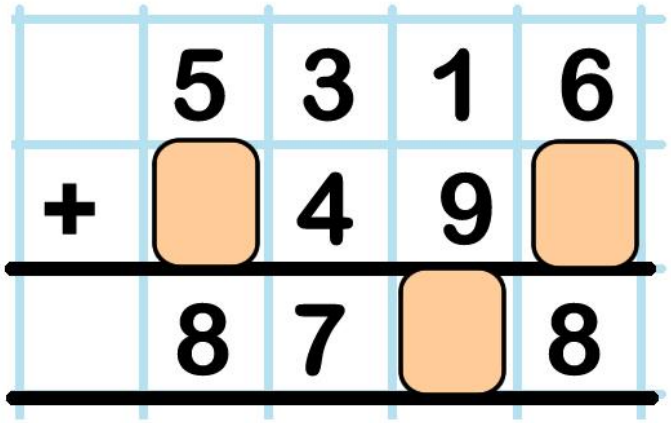
Extension:
What mistakes did Alicia and Jamina make?

Invent your own similar problem involving these three strategies.

To be able to add two 4-digit numbers

ACTIVITY 7:

William writes out an addition and covers up some of the digits.
Unfortunately he made a mistake when he added the numbers together.
What are the digits and what is his mistake?



Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

ACTIVITY 7:

William writes out an addition and covers up some of the digits.
Unfortunately he made a mistake when he added the numbers together.
What are the digits and what is his mistake?

	5	3	1	6
+	3	4	9	2
	8	7	0	8

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

William's mistake is in the hundreds column. 1 ten + 9 tens equals 10 tens, so he needs to exchange this for one extra hundred. The digit in the hundreds column should be 8, not 7 and the answer should be 8,808.

To be able to add two 4-digit numbers

EVALUATION:

Always, Sometimes or Never?

a) If two 4-digit numbers are being added together and one contains a 9 in the ones column, we will _____ need to exchange 10 ones for 1 ten in the answer.

b) When adding two 4-digit numbers together, we _____ need to use exchanging.

c) When a total of a column equals a two-digit number, we _____ need to exchange.

d) When using the column method, we _____ work from right to left, just like when we read.

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

To be able to add two 4-digit numbers

Success Criteria:

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

Greater Depth:
I can apply my knowledge of adding 4-digit numbers to identify mistakes and use reasoning to explain them.

EVALUATION:

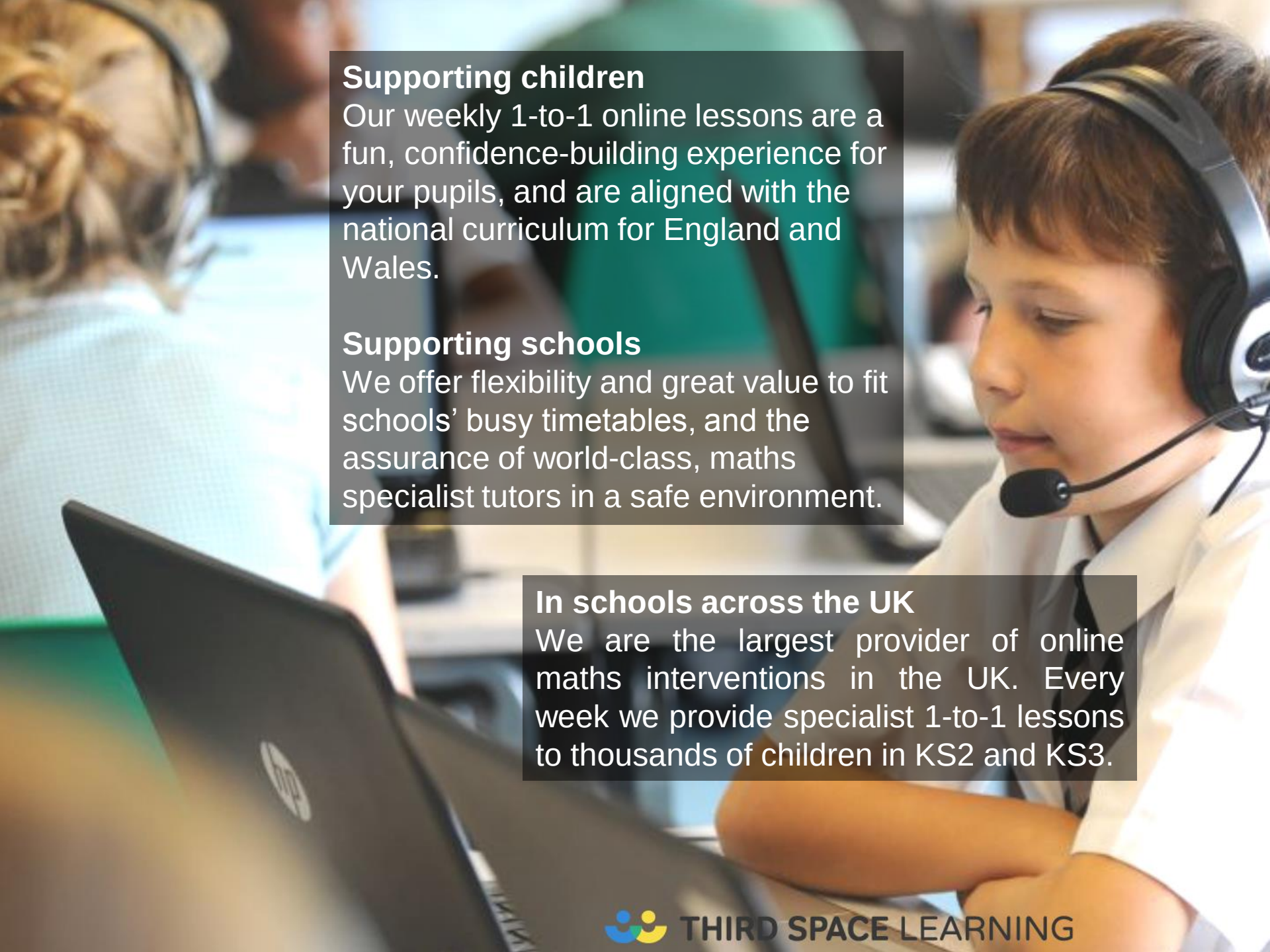
Always, Sometimes or Never?

a) If two 4-digit numbers are being added together and one contains a 9 in the ones column, we will **SOMETIMES** need to exchange 10 ones for 1 ten in the answer.

b) When adding two 4-digit numbers together, we **SOMETIMES** need to use exchanging.

c) When a total of a column equals a two-digit number, we **ALWAYS** need to exchange.

d) When using the column method, we **NEVER** work from right to left, just like when we read.



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