

Year 3 Counting Backwards Place Value Maths Mastery Challenge Cards **Answers**

1. Fatima has a number square with the top line blank.
She says the square above 4 will be -4.
Explain why she is incorrect.

| -9 | -8 | -7 | -6 | -5 | -4 | -3 | -2 | -1 | 0 |
|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

**Completing the top line backwards from 0 shows that the square above 4 will be -6.
Counting back 10 from 4 is -6.**

2. Alfie has a number square with a blank line at the top.

| -9 | -8 | -7 | -6 | -5 | -4 | -3 | -2 | -1 | 0 |
|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 16 | 17 | 18 | 19 | 20 | 26 | 27 | 28 | 29 | 30 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

He says, "If I complete the top line of the number square, only 2 columns will end in the same digit."

Is he correct? Which columns, if any, keep the same digit in the ones column?

3. Laura says, "When I find the difference between a negative and positive number, I can add the value of the numbers ignoring the minus sign on the negative number."

Explain why Laura is correct.

Laura is correct because a positive number and negative number have 0 between them. The difference is therefore the difference between each number and 0, added together.

4. Fatima says that when she counts back eight from 3, she gets to -6. 2, 1, -1, -2, -3, -4, -5, -6.
Can you spot her mistake?

Was there another way that Fatima's mistake could have been identified?

Fatima has missed out 0 when counting back. She should have counted from 3: 2, 1, 0, -1, -2, -3, -4, -5.

Fatima's mistake could have also been seen because if you count back in even steps from an odd number, the numbers in the sequence will always be odd.

5. Alfie counts backwards in twos from 9.
When he says the number -8, Laura says that there must be a mistake.
What mistake might Laura have spotted?
Starting at 9, counting in twos means that all of the numbers in the sequence should be odd, so -8 should not be counted.

Work with a partner and give each other a starting number to count back from in twos.

6. Fatima counts backwards in fives. She says, "No matter which number I start with, the sequence will always only have numbers with 2 different ones digits."
Write three sequences that show this idea is not always correct.

Accept any 3 sequences where the starting numbers will mean that the ones digit will change after 0: 17, 12, 7, 2, -3, -8, -13, -18, -23.

Fatima is only correct when the start number ends in 0 or 5: 15, 10, 5, 0, -5, -10, -15, -20.

7. Laura counts backwards in tens from a multiple of ten.

50, 40, 30, 20, -10, 0, -10, -20

All of the answers end in 0.

Will the ones digit always be the same when counting back in tens from any other number?

No, except from a number ending in 5. For example, counting back in tens from 12: 12, 2, -8, -18

Counting back in tens from 15: 15, 5, -5, -15