

Diagonal hundreds

Children use trial and error to place numbers in a grid to give a pair of diagonals whose sum is equal to 100.

Skills practised:

- Adding 2 two-digit numbers

Conjecture: *We can arrange 4 two-digit numbers on a grid in such a way as to ensure that the sum of both diagonals is 100.*

What to do:

Children work in pairs.

One digit is less than 5	One digit is more than 5
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

1. Use this grid.
2. Write a two-digit number in each space. Each number should be less than 40.
3. In the left column, the ones digit must be less than 5.
4. In the right column, the ones digit must be more than 5.
5. Add the numbers in the top left and bottom right corners (the diagonal).
6. Add the numbers in the bottom left and top right corners (the other diagonal).
7. Add your two answers.
YOU ARE TRYING TO GET A TOTAL OF EXACTLY 100!
8. Start again, and try another pair of numbers in the first column and another pair in the second column.
9. How close to 100 is your total now?

Discuss how you can bring your total closer to 100.

10. Try with different start numbers in your square. Can you get a total of 100?
Can you get a total of 100 in more than one way?

HINT: Think about what the ones digits must add up to along each diagonal.
What pairs of ones digits must you use?

Aims:

- To recognise unit patterns in addition
- To use trial and error effectively to improve a score

Minimum number of calculations expected
12-20

Diagonal hundreds

1. Copy this grid.

Ones digit is less than 5	Ones digit is more than 5

- Write a two-digit number in each space. Each number should be less than 40.
- In the left column, the ones digit must be less than 5.
- In the right column, the ones digit must be more than 5.
- Add the numbers in the top left and bottom right corners (the diagonal).
- Add the numbers in the bottom left and top right corners (the other diagonal).
- Add your two answers.
YOU ARE TRYING TO GET A TOTAL OF EXACTLY 100!
- Start again, and try another pair of numbers in the first column and another pair in the second column.
- How close to 100 is your total now?

Ones digit is less than 5	Ones digit is more than 5
32	28
21	18

Discuss how you can bring your total closer to 100.

- Try with different start numbers in your square.
Can you get a total of 100?
Can you get a total of 100 in more than one way?