Y5 worked for a long time on this problem! Below are their thoughts and workings in the order they had them.

We realised that the number in bottom right square would appear twice in the units column and that the number in the top left would appear twice in the tens.

|  |  |
| --- | --- |
| Twice in 10s column |  |
|  | Twice in units column |

We realised that the top left would be a Ten and a unit and the bottom left would also be a Ten and a unit.

|  |  |
| --- | --- |
| Twice in 10s column | Ten and a Unit |
| Ten and a unit | Twice in units column |

We knew that the numbers in the squares which made up the units would have to add to a multiple of 10.

We tried making the units add up to 10 but we realised that we would need to use the small digits in the units column to make it add to 10 which meant that we would be left with larger digits in the squares which would make up the tens digits. This would make our total larger than 100.

So, we realised that the units would have to make 20.

We decided to make the bottom right square quite a large number as it would appear twice in the units.

We began with 9 in the bottom right but realised that when it was used twice it would make 18. This would mean that the other unit squares would have to add up to 2. This could only be done with 2 lots of 1 (not allowed as the numbers have to be different) or 2 and 0 (also not allowed as 0 is not one of the digits 1-9)

We decided to try 8. As this would appear twice (to make a running total of 16) we knew that the other unit squares would have to add to 4.

|  |  |
| --- | --- |
| Twice in 10s column | Ten and a Unit |
| Ten and a unit | 8 |

To make 4 you can use 2 + 2 (not allowed) or 3 + 1 so we tried out 3 and 1.

|  |  |
| --- | --- |
| Twice in 10s column | 1 |
| 3 | 8 |

Through trial and error we worked out that the top left would be 2

|  |  |
| --- | --- |
| 2 | 1 |
| 3 | 8 |

 21 + 38 + 23 + 18 = 100

We soon realised that by switching the top right and bottom left numbers we would have the same 4 2 digit numbers in our boxes, giving the same answer.

|  |  |
| --- | --- |
| 2 | 3 |
| 1 | 8 |

Using the same method and thought processes, we tried 7 in the bottom right hand corner.

|  |  |
| --- | --- |
| Twice in 10s column | Ten and a Unit |
| Ten and a unit | 7 |

2 lots of 7 are 14 so the other digits in the units column needed to add to 6. It couldn’t be 3 + 3 as you can’t use the same digit twice. We tried 4 and 2.

|  |  |
| --- | --- |
| Twice in 10s column | 2 |
| 4 | 7 |

We then used trial and error to work out what would be in the final square, realising it had to be low to keep the tens low so they would add to 100.

|  |  |
| --- | --- |
| 1 | 2 |
| 4 | 7 |

12 + 47 + 14 + 27 = 100

Then we swapped the top right and bottom left again.

|  |  |
| --- | --- |
| 1 | 4 |
| 2 | 7 |

14 + 27 + 12 + 47 = 100

We continued trying numbers in the bottom right. We tried 6 but it didn’t work as 6 x 2 is 12 and that meant the other digits had to add up to 8 which meant that the tens digits were too large and tipped the total over 100.