

NAME:



## Investigating Palindromes

The Mathematics Team at Catmose are looking forward to meeting you in the new term. However, to stop you getting bored over the long break we have made a small investigation to keep your brain ticking!

Please watch the short video clip at the address below to find out what you need to do.

Try to complete as much of this as you can. There will be house points up for grabs for any students that manage to complete the 100 square completely.

<https://youtu.be/OQKMqAfelak>



Task: Colour in each number in the 100 square below to show how many additions are required to make it a palindrome.

Be careful, some of these end up in very large additions!

|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
| 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  |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40  |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50  |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60  |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70  |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

## Key

One addition

Two additions

Three additions

\_\_\_\_\_ additions

\_\_\_\_\_ additions

\_\_\_\_\_ additions

# Working grids

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## Extending

- 1) Mr Ward is working out how many iterations it takes to make a palindrome for a three-digit number.

He performs one addition of his three-digit number and gets the following answer.

What could have been his original number? How many solutions are there?

$$\begin{array}{|c|c|c|} \hline & & \\ \hline & & \\ \hline 5 & 6 & 5 \\ \hline \end{array}$$

- 2) Mrs Callaghan is working out how many iterations it takes to make a palindrome for a different three-digit number.

She performs one addition of her three-digit number and gets the following answer.

What could have been her original number? How many solutions are there?

$$\begin{array}{|c|c|c|c|} \hline & & & \\ \hline & & & \\ \hline 1 & 2 & 3 & 1 \\ \hline \end{array}$$