

THE PALINDROME ORDER OF A NUMBER

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*A palindromic number
is any number which has the same value when read from either direction.*

- Try this:
- Write down any 3 digit number
 - Under it write down the number you get by reversing the digits in your original number.
 - Add the two numbers.
 - If the number is a palindrome, stop. If the number is not a palindrome, under it write down the number you get by reversing its digits.
 - Add these two numbers.
 - Repeat this process until you get a palindrome.
 - Count the number of times that you had to add in order to reach the palindrome. That number is the "palindrome order" of the number you started with.

Some examples:

$$\begin{array}{r} 423 \\ + 324 \\ \hline 747 \end{array}$$

So 423 has a *palindrome order* of 1.

$$\begin{array}{r} 4782 \\ + 2874 \\ \hline 7656 \end{array}$$

$$\begin{array}{r} + 6567 \\ \hline 14223 \end{array}$$

$$\begin{array}{r} + 32241 \\ \hline 46464 \end{array}$$

So 4782 has a *palindrome order* of 3.

See how many 3-digit numbers of *palindrome order* 1 you can find.

See how many 4-digit numbers of *palindrome order* 1 you can find.

What has to be true about any number with *palindrome order* 1?

What is the largest three digit number with a *palindrome order* of 1?

See how many numbers of *palindrome order* 3 you can find.

What would it mean for a number to have a *palindrome order* of 0?

Find a number with a *palindrome order* of 10 or more. 🐱