

October 17th

Write down any 4 digit number and add it to the number with the same digits in reversed order.

Explain why the sum is always divisible by 11.



For example:

$$3416 + 6143 = 9559 (=11 \times 869)$$

“abcd” + “dcba” =

$$1000a + 100b + 10c + d + 1000d + 100c + 10b + a =$$

$$1001a + 110b + 110c + 1001d =$$

$$11(91a + 10b + 10c + 91d)$$

Which is clearly divisible by 11 for all integer a,b,c and d