



3. Can you fill in the expression  $1 \_ 2 \_ 3 \_ 4 = 0$  with  $+$  or  $-$  signs to make it true?  
What about the expression  $1 \_ 2 \_ 3 \_ 4 \_ 5 \_ 6 \_ 7 \_ 8 \_ 9 \_ 10 = 0$ ?

4. A domino is a  $1 \times 2$  rectangle where, on each square, there are between 0 and 6 dots, and a set of dominoes is a collection of dominoes where there is one representative from each of the the possible pairs of dots.

(a) Can a set of dominoes be arranged in a row, where the number of dots on touching ends matches?

(b) Now, you remove all the dominoes that have at least one square with no dots from your set. Can the dominoes that are left be arranged in a row, where the number of dots on touching ends matches?



5. The product of 22 integers is equal to 1. Can their sum be zero?

6. A 17 digit number is chosen and its digits are reversed, forming a new number. Show that the sum of these two numbers contains at least 1 even digit.

7. The numbers  $1, 2, 3, \dots, 2017$  are written on a chalkboard. We erase any two numbers, and replace these two numbers with their positive difference (so if we erased 13 and 137, we would write 124 on the board). After doing this many times, we are left with one number on the board. Could this number be zero?