

# MathFLIX CHALLENGE

## *A Trick for Adding Consecutive Counting Numbers*

How long do you think it would take for you to add all the numbers from 1 to 100? \_\_\_\_\_.

Might you make a few errors along the way?

Do you think anyone could do it in 30 seconds? \_\_\_\_\_

Carl Friedrich Gauss (1777- 1855) is sometimes called the prince of mathematicians. Carl was a child prodigy. There is a popular story that as a class punishment, Carl's teacher once gave the class an assignment to add the numbers from 1-100. Carl did it in under 30 seconds, and with 100% accuracy. Here is how he did it. Let's begin with a smaller version first. Add the numbers from 1-10. Connect pair of numbers.

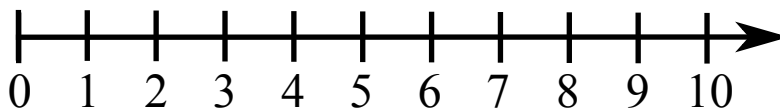
1 to 10

2 to 9

3 to 8

4 to 7

5 to 6    You now have 5 pairs of 11:  $5 \times 11 =$  \_\_\_\_\_



To add 1 – 100, think of connecting pairs of numbers:

1 to 100

2 to 99

3 to 98...

You would have 50 pairs of 101:  $50 \times 101 =$  \_\_\_\_\_

To add 1 – 200, think of connecting pairs of numbers:

1 to 200

2 to 199

3 to 198...

You would have 100 pairs of 201:  $100 \times 201 =$  \_\_\_\_\_

*Complete this table.*

<b>Addition Problem</b>	<b>Sum of pairs (n + 1)</b>	<b># of Pairs <math>\frac{n}{2}</math></b>	<b>Multiplication Problem <math>(n + 1)\frac{n}{2}</math></b>	<b>Sum</b>
Add 1-400	401		$401 \times 200$	
Add 1- 1,000				
Add 1-2,000				
Add 1-10,000				
Add 1 to 1 million				
Add 1 to 1 billion				