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 x 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 x 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 x 201 = ______

Complete this table.

<table>
<thead>
<tr>
<th>Addition Problem</th>
<th>Sum of pairs ((n + 1))</th>
<th># of Pairs (\frac{n}{2})</th>
<th>Multiplication Problem ((n + 1) \frac{n}{2})</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add 1-400</td>
<td>401</td>
<td></td>
<td>401 x 200</td>
<td></td>
</tr>
<tr>
<td>Add 1-1,000</td>
<td></td>
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<tr>
<td>Add 1-2,000</td>
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<tr>
<td>Add 1-10,000</td>
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<tr>
<td>Add 1 to 1 million</td>
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<tr>
<td>Add 1 to 1 billion</td>
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</tbody>
</table>