Mary is investigating trapezoidal numbers. Each number can be shown as a pattern of dots arranged in the shape of a trapezoid. Each diagram starts with 2 dots in the top row. The first three trapezoidal numbers are shown below.

1st
● ●

2nd
● ● ●

3rd
● ● ● ●

4th
● ● ● ● ●

(a) Draw the 4th trapezoidal number next to the 3rd trapezoidal number shown above.

(b) Mary begins to make a table to show the number of dots needed for each trapezoidal number. Fill in the missing numbers of dots in the table.

<table>
<thead>
<tr>
<th>Trapezoidal number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of dots</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(c) In the 19th trapezoidal number, there are 209 dots. Without drawing any diagrams, find the number of dots in the 20th trapezoidal number. Answer: ____________________________

Explain how you found your answer.

(d) Mary says, “The number of dots, D, in the nth trapezoidal figure is D = 3n – 1.” Is she right? Explain your reasoning.

Please continue on the reverse side

Developed by the Milwaukee Mathematics Partnership (MMP) with support by the National Science Foundation under Grant No. 0314898.
About 3 months ago, we asked if you felt there were any differences between 8th and 9th grade mathematics, and how you felt the differences affected your ability to adapt to high school mathematics. We would like to know if anything has changed since then. Please answer how you truly feel. There are no right or wrong answers.

1. Please circle a number below which shows how much you liked 8th grade math

<table>
<thead>
<tr>
<th>Dislike It A Lot</th>
<th>Dislike</th>
<th>Just O.K.</th>
<th>Like</th>
<th>Like It A Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>8th Grade Math:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

2. Please circle a number below which shows how much you like 9th grade math

<table>
<thead>
<tr>
<th>Dislike It A Lot</th>
<th>Dislike</th>
<th>Just O.K.</th>
<th>Like</th>
<th>Like It A Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th Grade Math:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

3. Compare your math book this year with your 8th grade math book. Which one do you like better? (Mark the one you like better)
   - I liked my middle school math book better
   - I like my high school math book better

4. When you compare your math experience in middle school with your high school experience thus far, would you say they are:
   - Not different at all
   - A little different
   - Very different
   (Choose one of the above three)

5. Does the difference bother you?
   - Not at all
   - A little
   - Very much so

6. Compared to middle school, is the math class you have now like what you expected?
   - Definitely YES
   - Sort of
   - Definitely No

7. What school did you attend for 8th grade? ____________________________________________

8. If your 7th grade school was different, what school was it? _____________________________
   (Write “Same” if it was not different)

9. If your 6th grade school was different, what school was it? _____________________________
   (Write “Same” if it was not different)