Applying Mathematical Thinking
Sample Questions

Calculate:

1. \( \left( \frac{2}{3} - 1 \frac{2}{5} \right) \div \left( 2 \frac{1}{2} + \frac{8}{15} \right) \)

2. \( 8 - 2 \{ (8 \div 4 \cdot 2)^2 + (1 + 5)^3 \} - 4\sqrt{81} \)

Wisconsin Geography and Climate

3. Forty-three percent of Wisconsin’s 72 counties have more than 100 lakes. How many counties have more than 100 lakes?

4. “Wisconsin has 15,057 lakes.” Six thousand, forty of these lakes are named. What percent of the total number of lakes are named?

5. Two of the “high points” in Wisconsin elevation are Timms Hill with an elevation of 1,952 ft. and Holy Hill with an elevation of 1,332 ft. What is the percent decrease in elevation from Timms Hill to Holy Hill?

6. The ratio of the surface area of Wisconsin lakes to the total land area of the state is \( \frac{3}{100} \). If the surface area of the lakes is 982,000 acres, what is the approximate land area of WI?
7. Comparing the surface area of Lake Winnebago, the state’s largest lake to Green Lake, the state’s deepest lake, is 6 acres to 1 acre. If Lake Winnebago is about 138,000 acres, approximately how many acres is Green Lake?

8. Based on land area, the largest county in Wisconsin is Marathon with 988,744 acres; the smallest county is Ozaukee with 148,448. How many times greater than Ozaukee County is Marathon County?

9. Vilas County has the largest number of lakes with 1,318. With an average size of 71.24 acres per lake, what is the total number of acres for all of the lakes in Vilas County?

The table below provides information on “High Points” in Wisconsin. Use the information to answer questions # 10, 11, and 12.

<table>
<thead>
<tr>
<th>Site</th>
<th>County</th>
<th>Elevation in Feet</th>
<th>Change in elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rib Mountain</td>
<td>Marathon</td>
<td>1,924</td>
<td>XXXXXXXXXXXXXXXXX</td>
</tr>
<tr>
<td>Holy Hill</td>
<td>Washington</td>
<td>1,332</td>
<td></td>
</tr>
<tr>
<td>Mount Telemark</td>
<td>Bayfield</td>
<td>1,700</td>
<td></td>
</tr>
<tr>
<td>Kettle Moraine</td>
<td>Jefferson</td>
<td>1,020</td>
<td></td>
</tr>
<tr>
<td>Lapham Peak</td>
<td>Waukesha</td>
<td>1,230</td>
<td></td>
</tr>
</tbody>
</table>

10. Complete the change in elevation (table) from one high point to another. Use a positive or a negative sign to indicate a rise or fall in the elevation from one hill to another.

11. What is the difference in the elevation change for Holy Hill and Kettle Moraine?

12. What is the average elevation change for these Wisconsin High Points?