What is a 1 Molar Solution: Answer Key

Prelab Questions

1. What is a mole? \(6.02 \times 10^{23}\) items

2. What is the mass of a mole of oxygen atoms? 16.0 grams

3. What is the mass of a mole of water molecules? 18.0 grams

4. A 1 molar solution is one in which one mole of any substance is dissolved in enough water to make up a total of one liter of solution.

5. Molarity is defined as “a unit of concentration used in chemistry to indicate how strong or weak a solution is”. Its symbol is \(M\) and its units are moles solute/liters solution.

Results/Observations

<table>
<thead>
<tr>
<th># of</th>
<th>2000 mL beaker</th>
<th>1000 mL beaker</th>
<th>500 mL beaker</th>
<th>250 mL beaker</th>
<th>100 mL beaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.5 M</td>
<td>1M</td>
<td>2M</td>
<td>4M</td>
<td>10M</td>
</tr>
<tr>
<td>2</td>
<td>1M</td>
<td>2M</td>
<td>4M</td>
<td>8M</td>
<td>20M</td>
</tr>
<tr>
<td>3</td>
<td>1.5M</td>
<td>3M</td>
<td>6M</td>
<td>12M</td>
<td>30M</td>
</tr>
<tr>
<td>1/2</td>
<td>.25M</td>
<td>.5M</td>
<td>1M</td>
<td>2M</td>
<td>5M</td>
</tr>
</tbody>
</table>

Analysis

1. Circle the correct answer within the ( ) for each statement below.

   The higher the molarity, the (more concentrated .. less concentrated) the solution.

   The lower the molarity, the (fewer .. greater) the number of particles the solution.

2. Describe two ways to make a 0.5 molar solution.

   1. Make 1 Liter of solution with 0.5 moles of solute
   2. Make 2 Liters of solution with 1.0 mole of solute
   3. Any other method that produces 0.5 molar solution