Name: _____ Class: _____

Scenario:
You find yourself stranded in the woods after getting lost on a hike. Having hiked over 10 miles you are super thirsty. Luckily, you see an abandoned cabin. You enter the cabin and see several jars of liquids.

1. First, observe each jar of liquid your group has been given and record any observations you noticed that would give you clues about whether the water was safe or unsafe to drink. Be thorough in your description, including as many adjectives as you can think of to describe the sample. Use good lab safety techniques with each sample.

	Sight	Smell	Would you drink this? Why or why not?
Sample A			
Sample B			
Sample C			
Sample D			
Sample E			
Sample F			
Sample G			

2. Use the provided testing equipment to gather additional data about each sample.

	pH	Dissolved Oxygen (ppm)	Total Alkalinity (ppm)	Nitrate (ppm)	Phosphate (ppm)	Chromium (ppm)	Ammonia (ppm)
Sample A							
Sample B							
Sample C							
Sample D							
Sample E							
Sample F							
Sample G							

3. Water quality is regulated by the Environmental Protection Agency. Laws have been passed (Clean Water Act, Safe Drinking Water Act) to protect citizens. The FDA regulates bottled drinking water. The CDC provides information about drinking water from several sources.

   According to an expert at the Missouri American Water Company, the below document illustrates the recommended levels for drinking water.
   Drinking Water Reference Sheet
   Please compare these values with the values tested above. Highlight any level that is too high in pink. Highlight any level that is too low in yellow. Highlight any level that meets the recommended standard in green.

	pH	Dissolved Oxygen (ppm)	Total Alkalinity (ppm)	Nitrate (ppm)	Phosphate (ppm)	Chromium (ppm)	Ammonia (ppm)
Sample A							
Sample B							
Sample C							
Sample D							
Sample E							
Sample F							
Sample G							

4. The EPA considers total coliforms a useful indicator of other pathogens for drinking water. To determine safe drinking water, a bacterial test needs to be conducted. Use the provided bacterial test kit and reference guide to record the presence of coliform bacteria.

Sample	Color	Presence of bubbles?	Gel location	Presence of coliform bacteria
Sample A				
Sample B				
Sample C				
Sample D				
Sample E				
Sample F				
Sample G				

5. **Evaluation time!** Now that you have collected qualitative and quantitative data on all samples, please rank the samples in order of “safest” to “most dangerous” to drink.

Ranking	Sample	Evidence or Reasoning
1 (safest)		
2		
3		
4		
5		
6		
7 (most dangerous)		