1. How do intermolecular forces affect solvation?

2. If a seed crystal was added to a supersaturated solution (disturbing the stability of the solution), how would you characterize the resulting solution?

3. In order to maintain a sodium chloride concentration similar to ocean water, an aquarium must contain 3.6 g NaCl per 100.0 g of water. What is the percent by mass of NaCl in the solution?

4. You have 1500.0 g of a bleach solution. The percent by mass of the solute sodium hypochlorite is 3.62%. How many grams of sodium hypochlorite are in the solution?

5. In question #4, how many grams of solvent are in the solution?

6. If you have 100.0 mL of a 30.0% aqueous solution of ethanol (C₂H₅OH), what volumes of ethanol and water are in the solution?

7. Calculate the molarity of 1600 mL of a solution containing 1.55 g of dissolved potassium bromide.

8. A liter of 2M sodium hydroxide solution contains how many grams of sodium hydroxide?

9. How many grams of calcium chloride are in 250 mL of a 3.0 M calcium chloride solution?

10. If 0.85 g of a gas at 4.0 atm of pressure dissolves in 1.0 L of water at 25°C, how much will dissolve in 1.0 L of water at 1.0 atm of pressure with constant temperature? Hint: Henry’s Law states \( \frac{S_1}{P_1} = \frac{S_2}{P_2} \) where \( S \) is the solubility in g/L and \( P \) is pressure.

11. A gas has a solubility of 0.66 g/L at 10.0 atm of pressure. What is the pressure on a 1.0 L sample that contains 1.5 g of gas?

12. Why are gases less soluble at higher temperatures?

13. Sodium sulfate (Na₂SO₄) is a strong electrolyte. What species are present in Na₂SO₄(aq)?

14. The aqueous solutions of three compounds are shown in the diagram. Identify each compound as a nonelectrolyte, a weak electrolyte, and a strong electrolyte.
15. Which of the following diagrams best represents the hydration of NaCl when dissolved in water, and why? The Cl\(^-\) ion is larger in size than the Na\(^+\) ion.

(a) ![Diagram](image-a)
(b) ![Diagram](image-b)
(c) ![Diagram](image-c)

16. Identify each of the following substances as a strong electrolyte (S), weak electrolyte (W), or nonelectrolyte (N):

   a. _____ H\(_2\)O
   b. _____ KCl
   c. _____ HNO\(_3\) *(Strong acid)*
   d. _____ CH\(_3\)COOH
   e. _____ C\(_{12}\)H\(_{22}\)O\(_{11}\)
   f. _____ Ba(NO\(_3\))\(_2\)
   g. _____ Ne
   h. _____ NH\(_3\)
   i. _____ NaOH *(Strong Base)*