Name: _____

Block: _____

Solutions & Intermolecular Forces Review

1. For each of the following molecules:

   - Draw the Lewis structure.
   - Draw polarity arrows to show the polarity of any polar bonds.
   - If the molecule is polar, draw a polarity arrow (in a contrasting color) for the entire molecule. If the molecule is non-polar, state the reason (*i.e.,* either "No Polar Bonds" or "All Dipole Moments Cancel").

   (a) NH_3

   (b) CO_2

   (c) CH_3Cl

   (d) C_2H_6

   (e) H_2O

   (f) CH_2O

2. Rank the following compounds in order from weakest to strongest intermolecular force (IMF), and list the type of IMF (ion-ion, dipole-dipole, dispersion, *etc.*) and best type of solvent (*i.e.,* polar or non-polar) for each one:

   - HBr
   - NaCl
   - C_2H_4
   - BaI_2
   - C_6H_{14}
   - PCl_3

3. 71.0 g of Na_2SO_4 is dissolved in 150. g of water. What is the concentration (in $\frac{\text{mol}}{\ell}$) of the resulting solution? (Assume the volume does not change when the Na_2SO_4 is added.) What are the concentrations of Na^+ and SO_4^{2-} ions?

4. If the solution from question 3 is heated to 80°C, how many grams of precipitate would form?

5. If 50.0 mℓ of a 1.00 M solution of NaCl is added to the solution from question 3, what is the concentration of Na^+ ions in the resulting solution?