

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Solubility Equilibrium Practice Test

- Write the dissociation equation for calcium hydroxide and calcium chloride.
  - What is different about these two substances?
  - If you dissolved as much of each of these substances as possible in one litre of water, how would the two solutions be different?
- What is a saturated solution? What happens to the solute in a saturated solution?
- Identify each compound as soluble or low solubility, then write the dissociation equation.
  - $\text{Cu}(\text{OH})_2$
  - $\text{Sn}(\text{NO}_3)_2$
  - $\text{NaCl}$
  - $\text{Ag}_2\text{CO}_3$
- Write the molecular, total and net ionic equations for each pair of solutions.
  - copper(I) nitrate + hydrochloric acid (HCl)
  - ammonium carbonate + magnesium bromide
- For barium sulfate, barium phosphate and barium hydroxide:
  - List the compounds in order from most to least soluble.
  - What is the concentration of a saturated solution of barium hydroxide?
  - What is the concentration of barium ions in a saturated solution of barium phosphate?
  - What is the maximum mass of barium sulfate can be dissolved in 250.0 mL of water?
- Calculate the  $K_{\text{sp}}$  of  $\text{Zn}(\text{CN})_2$  if its solubility is  $1.26 \times 10^{-4}$  mol/L.
- Will a precipitate form if 500.0 mL of 0.000185 mol/L lead(II) acetate solution is mixed with 125.0 mL of 0.00760 mol/L sodium sulfate solution?
- Will a precipitate form if equal volumes of 0.00500 mol/L silver nitrate and 0.00135 mol/L sodium phosphate are mixed?
- Silver sulfate has a  $K_{\text{sp}}$  of  $1.2 \times 10^{-5}$ . In an experiment, 0.55 mol/L silver nitrate is mixed with 0.050 mol/L sodium sulfate.
  - The experimenter notices that solid appears when 25 mL of silver nitrate, 100 mL of water and 188 mL of sodium sulfate are mixed. What is the experimental value of  $K_{\text{sp}}$ ?
  - Why would the  $K_{\text{sp}}$  calculated in the experiment be different from the theoretical value?