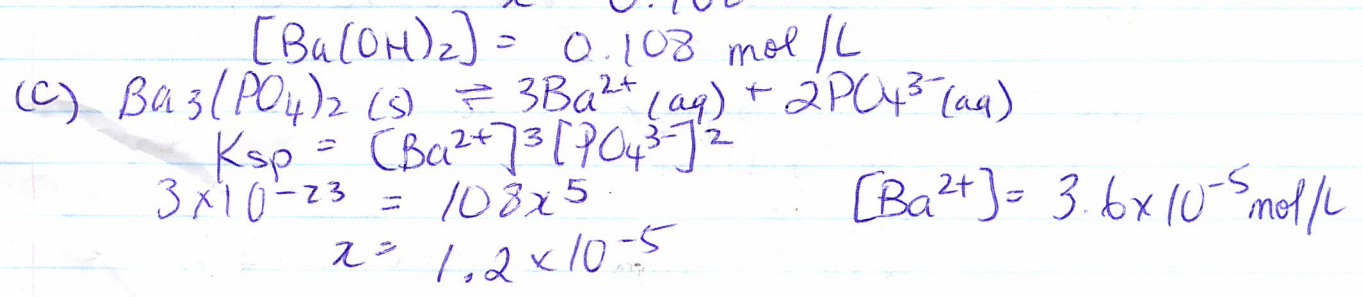
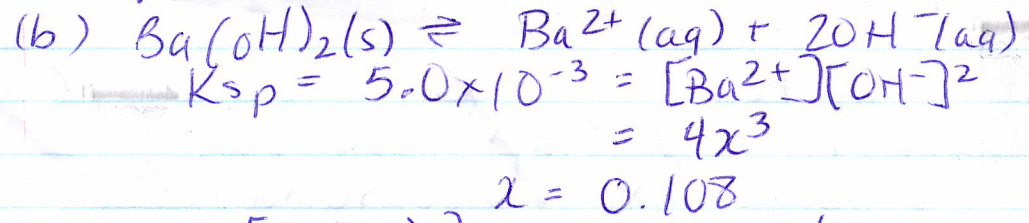
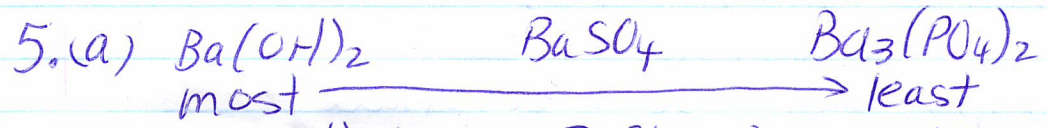
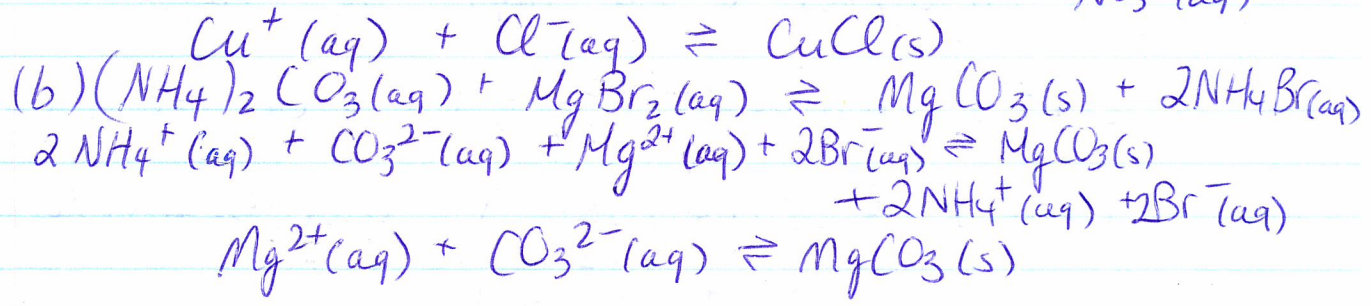
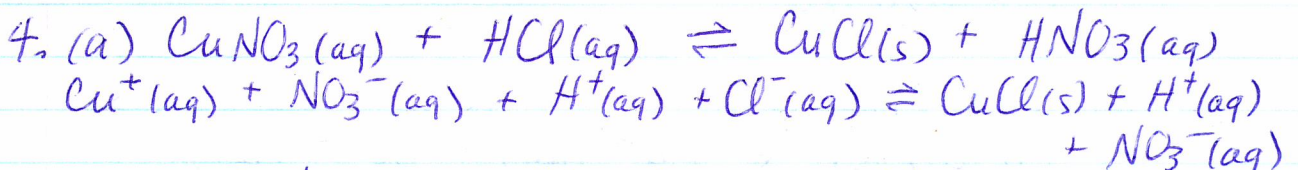
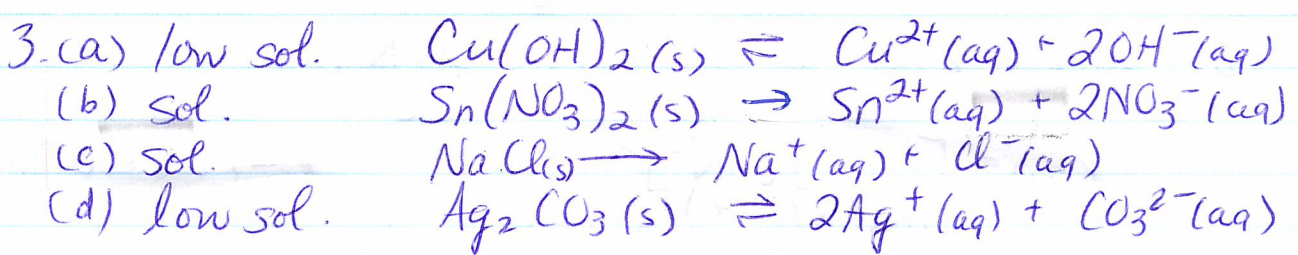
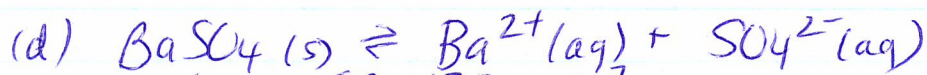


Solubility Equilibrium Practice Test

- (a) calcium hydroxide has low solubility, (\rightleftharpoons)
 calcium chloride is more soluble (\rightarrow)
 (b) calcium hydroxide will have a lower concentration
- saturated has the max amount of solute dissolved in it; solid is in equilibrium with its ions





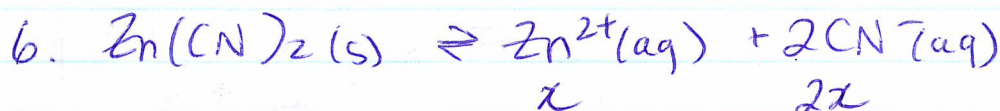
$$K_{sp} = [\text{Ba}^{2+}][\text{SO}_4^{2-}]$$

$$1.1 \times 10^{-10} = x^2$$

$$x = 1.0 \times 10^{-5} = [\text{BaSO}_4]$$

$$m = MCV = \frac{233.40 \text{ g}}{\text{mol}} \times \frac{1.0 \times 10^{-5} \text{ mol}}{\text{L}} \times 0.2500 \text{ L}$$

$$= 5.8 \times 10^{-4} \text{ g}$$

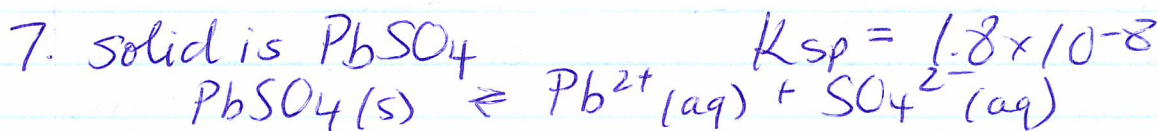


$$K_{sp} = [\text{Zn}^{2+}][\text{CN}^-]^2$$

$$= (1.26 \times 10^{-4})(2 \cdot 1.26 \times 10^{-4})^2$$

$$= 8.0 \times 10^{-12}$$

$x = 1.26 \times 10^{-4} \text{ mol/L}$



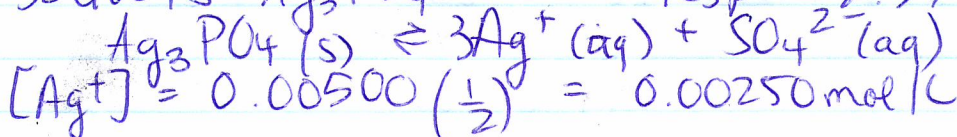
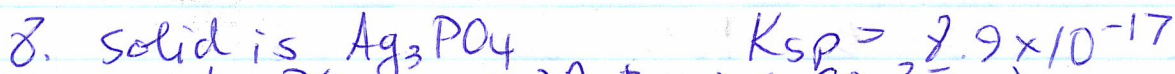
$$[\text{Pb}^{2+}] = 0.000185 \left(\frac{500.0}{625.0} \right) = 0.000148 \text{ mol/L}$$

$$[\text{SO}_4^{2-}] = 0.00760 \left(\frac{125.0}{625.0} \right) = 0.00152 \text{ mol/L}$$

$$Q_{sp} = [\text{Pb}^{2+}][\text{SO}_4^{2-}]$$

$$= 2.24 \times 10^{-7}$$

$Q_{sp} > K_{sp}$, so precipitate!

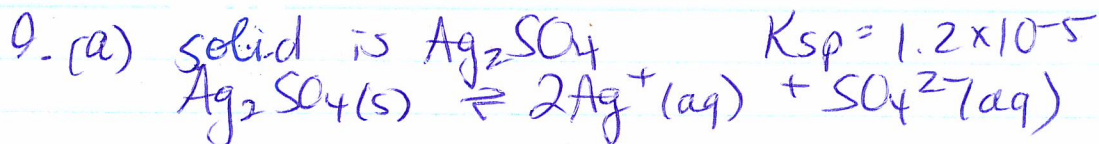


$$[\text{PO}_4^{3-}] = 0.00135 \left(\frac{1}{2} \right) = 0.000675 \text{ mol/L}$$

$$Q_{sp} = [\text{Ag}^+]^3[\text{PO}_4^{3-}]$$

$$= 1.05 \times 10^{-11}$$

$Q_{sp} > K_{sp}$, so precipitate!



$$[\text{Ag}^+] = 0.55 \left(\frac{25}{313} \right) = 0.044 \text{ mol/L}$$

$$[\text{SO}_4^{2-}] = 0.050 \left(\frac{188}{313} \right) = 0.0300 \text{ mol/L}$$

$$\begin{aligned} K_{sp} &= [\text{Ag}^+]^2 [\text{SO}_4^{2-}] \\ &= (0.044)^2 (0.0300) \\ &= 5.8 \times 10^{-5} \end{aligned}$$

(b) have to add more solution to be able to detect the solid with your weak human eyes