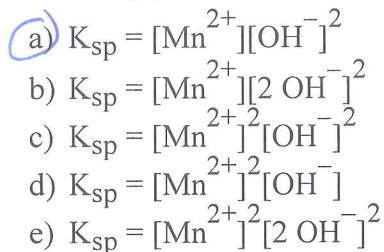
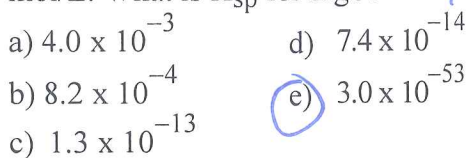


16 • Precipitation Reactions**PRACTICE**

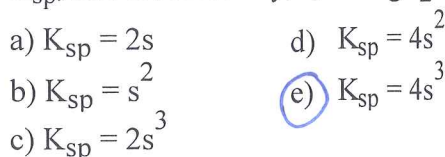
1. Which one of the following is the solubility product constant for $\text{Mn}(\text{OH})_2$?



2. The solubility of HgS is 5.5×10^{-27} mol/L. What is K_{sp} for HgS ?

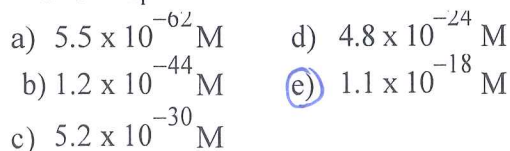


3. Which expression best describes the relationship between solubility product, K_{sp} , and the solubility, s , of MgF_2 ?



$$(s)(2s)^2 = 4s^3$$

4. Calculate the molar solubility of Fe_2S_3 . $K_{\text{sp}} = 1.4 \times 10^{-88}$



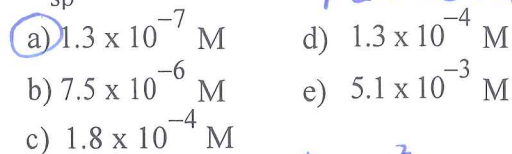
$$K_{\text{sp}} = (2s)^2 (3s)^3$$

$$1.4 \times 10^{-88} = 108s^5$$

$$s = \boxed{1.05 \times 10^{-18} \text{ M}}$$

5. What is the concentration of CrO_4^{2-} in a saturated solution of PbCrO_4 ?

$$K_{\text{sp}} = 1.8 \times 10^{-14} \quad K_{\text{sp}} = [\text{Pb}^{2+}][\text{CrO}_4^{2-}]$$

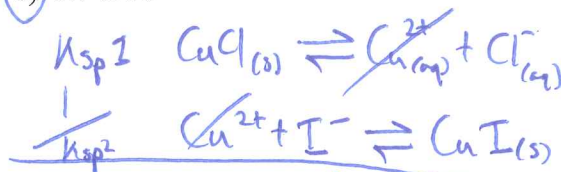
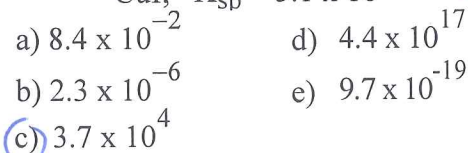
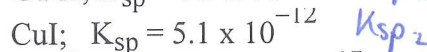
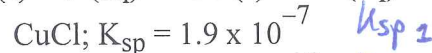
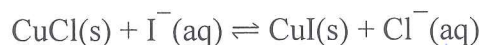


$$K_{\text{sp}} = s^2$$

$$1.8 \times 10^{-14} = s^2$$

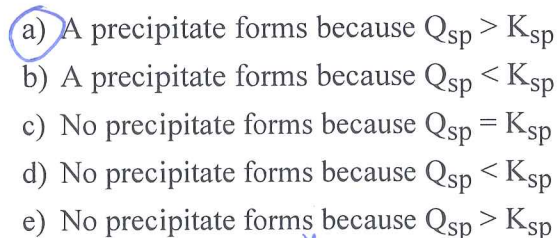
$$s = \boxed{1.3 \times 10^{-7} \text{ M}}$$

6. Calculate the equilibrium constant for the reaction:



$$K_{\text{eq}} = K_{\text{sp}1} \cdot \frac{1}{K_{\text{sp}2} \quad 10^{-10}} = \boxed{3.7 \times 10^4}$$

7. For BaSO_4 , $K_{\text{sp}} = 1.1 \times 10^{-10}$. If you mix 200. mL of 1.0×10^{-4} M $\text{Ba}(\text{NO}_3)_2$ and 500. mL of 8.0×10^{-2} M H_2SO_4 , what will be observed?



$$[\text{Ba}^{2+}] = \frac{0.200 \text{ L} \cdot 1.0 \times 10^{-4} \text{ M}}{0.700 \text{ L}} = 2.9 \times 10^{-5}$$

$$[\text{SO}_4^{2-}] = \frac{0.500 \text{ L} \cdot 8.0 \times 10^{-2} \text{ M}}{0.700 \text{ L}} = 5.7 \times 10^{-2}$$

$$Q = (2.9 \times 10^{-5})(5.7 \times 10^{-2}) = 1.7 \times 10^{-6}$$

8. A saturated solution of $\text{Ca}(\text{OH})_2$, has a pH of 12.40. What is the K_{sp} for $\text{Ca}(\text{OH})_2$?
- a) 2.5×10^{-2} d) 2.0×10^{-6}
 b) 1.3×10^{-2} e) 4.0×10^{-13}
 c) 8.0×10^{-6}

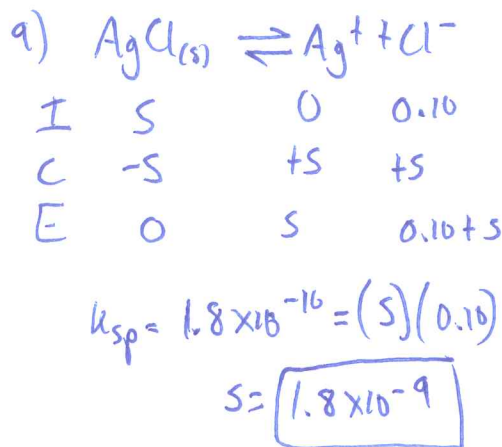
Answers: (Please use CAPITAL letters) **V1**

1.		6.	
2.		7.	
3.		8.	
4.		9.	
5.		10.	

9. Calculate the molar solubility of AgCl in a 0.10 M solution of NaCl .
 K_{sp} of AgCl is 1.8×10^{-10}
- a) 1.3×10^{-5} M d) 4.2×10^{-5} M
 b) 5.5×10^{-8} M e) 4.8×10^{-4} M
 c) 1.8×10^{-9} M

8) $\text{pH} = 12.40$
 $\text{pOH} = 1.6$
 $[\text{OH}^-] = 2.5 \times 10^{-2}$
 $[\text{Ca}^{2+}] = \frac{2.5 \times 10^{-2}}{2} = 1.25 \times 10^{-2}$
 $K_{sp} = (1.25 \times 10^{-2})(2.5 \times 10^{-2})^2$
 $K_{sp} = 7.8 \times 10^{-6}$

10. The solubility of salts can be affected by other equilibria. Addition of all of the following will affect the solubility of FeCO_3 EXCEPT:
- a) NaHCO_3 d) Na_2CO_3
 b) NaCl e) HCl
 c) H_2CO_3



a, c, d common ion
 e acid

Go VIKINGS!!