

## Answers to problems page 522

$$17. \text{ a. } K_{eq} = \frac{[\text{N}_2\text{O}_4]}{[\text{NO}_2]^2}$$

$$\text{ b. } K_{eq} = \frac{[\text{COCl}_2]}{[\text{CO}][\text{Cl}_2]}$$

$$\text{ c. } K_{sp} = [\text{Ag}^+][\text{Cl}^-]$$

$$\text{ d. } K_{eq} = \frac{[\text{H}_3\text{O}^+][\text{CH}_3\text{COO}^-]}{[\text{CH}_3\text{COOH}]}$$

$$18. \text{ a. } \frac{[\text{NH}_4^+][\text{OH}^-]}{[\text{NH}_3]} = 1.8 \times 10^{-5}$$

$$\text{ b. } 5.6 \times 10^4$$

$$19. [\text{Ag}^+][\text{I}^-], [\text{Sr}^{2+}][\text{SO}_4^{2-}], \\ [\text{Ag}^+]^2[\text{CO}_3^{2-}], [\text{Ag}^+]^2[\text{S}^{2-}], \\ [\text{Pb}^{2+}][\text{I}^-]^2, [\text{Ag}^+][\text{IO}_3^-], \\ [\text{Mg}^{2+}]^3[\text{PO}_4^{3-}]^2, [\text{Hg}_2^{2+}][\text{Cl}^-]^2$$