

Name: _____ Date: _____

Acid Equilibrium Practice Test

1. Concentrated means there are lots of particles dissolved in the solution. For strong and concentrated, all of the particles are ions. For dilute and concentrated, all of the particles are ions. For concentrated and weak, there are lots of particles, and more than half of them are molecules (the rest are ions). Dilute and weak means there are not a lot of particles dissolved, and almost none of them are ions.
2. A reaction occurs according to the following equation:
$$\text{HCO}_3^- + \text{HCN} \rightleftharpoons \text{H}_2\text{CO}_3 + \text{CN}^-$$
 - a. HCO_3^- (base) + HCN (acid) \rightleftharpoons H_2CO_3 (conjugate acid) + CN^- (conjugate base)
 - b. Bronsted-Lowry, because it does not contain hydroxide (definition of an Arrhenius base)
 - c. HCO_3^-
3. Write the products for this reaction, then identify the acid, base, conjugate acid and conjugate base.
$$\text{HSO}_4^- \text{ (acid)} + \text{CH}_3\text{NH}_2 \text{ (base)} \rightleftharpoons \text{SO}_4^{2-} \text{ (conjugate base)} + \text{CH}_3\text{NH}_3^+ \text{ (conjugate acid)}$$
4. 10.78
5. Consider two solutions: 0.035 mol/L solution of HNO_3 and a 0.035 mol/L solution of HF .
 - a. 1.46 and 2.31
 - b. Nitric acid is strong and hydrofluoric is weak, so nitric acid produces more hydrogen ions for the same acid concentration. This mean the pH will be lower.
6. pH = 11.29
7. 0.3368 mol/L
8. pH = 1.87