

Acids and Bases
Acid Equilibrium Constant, K_a

1. Calculate the equilibrium concentrations of a 0.2 mol/L HF solution. $K_a = 7.1 \times 10^{-4}$
2. Calculate the concentration of H_3O^+ ions in a 2.0 mol/L solution of nitrous acid, HNO_2 .
 $K_a = 4.5 \times 10^{-4}$
3. What is the concentration of fluoride ions in a 0.62 mol/L solution of hydrofluoric acid, HF?
 $K_a = 6.8 \times 10^{-4}$
4. What is the pH of a 0.075 mol/L solution of the strong acid hydroiodic acid, HI?
5. What is the pH of a 0.020 mol/L solution of the weak acid hydrocyanic acid, HCN?
 $K_a = 4.9 \times 10^{-10}$
6. Carbonic acid, H_2CO_3 , is a weak acid with a $K_a = 4.3 \times 10^{-7}$. What is the pH of a 0.25 mol/L solution of H_2CO_3 ?
7. The pH of a 0.10 mol/L solution of formic acid is 2.38. Calculate the K_a constant for formic acid, HCOOH.
8. For each pair of acids, indicate the strongest one.
 - a. HCl HBr
 - b. HCl H_2S
 - c. H_2SO_3 H_2SO_4
 - d. CH_4 H_2O
 - e. H_3PO_4 H_3AsO_4