

## HOUSEHOLD ACIDS AND BASES

1. What are the concentrations of  $H^+$  and  $OH^-$  in pure water?
2. Calculate the pH of the following solutions and indicate whether the solution is acidic or basic.
  - a)  $[H^+] = 1 \times 10^{-2} \text{ mol/L}$
  - b)  $[OH^-] = 1 \times 10^{-2} \text{ mol/L}$
  - c)  $[OH^-] = 1 \times 10^{-8} \text{ mol/L}$
  - d)  $[H^+] = 1 \times 10^{-6} \text{ mol/L}$
3. What are the hydroxide ion concentrations for solutions that have the following pH values?
  - a) pH = 4
  - b) pH = 8
  - c) pH = 12
4. Calculate the pH or  $[H^+]$  for each solution.
  - a)  $[H^+] = 2.4 \times 10^{-6} \text{ mol/L}$
  - b)  $[H^+] = 9.1 \times 10^{-9} \text{ mol/L}$
  - c) pH = 13.2
  - d) pH = 6.7
5. Calculate the pH or  $[OH^-]$  for each solution.
  - a)  $[OH^-] = 1.8 \times 10^{-2} \text{ mol/L}$
  - b)  $[OH^-] = 7.3 \times 10^{-9} \text{ mol/L}$
  - c) pH = 4.6
  - d) pH = 9.3
6. Classify each of these as an Arrhenius acid or Arrhenius base.
  - a)  $Ca(OH)_2$
  - b)  $HNO_3$
  - c)  $KOH$
  - d)  $C_2H_5COOH$
  - e)  $HBr$
  - f)  $H_2SO_4$