Student Worksheet Solutions LSM 16.1D

Solutions for *K*w, pH, and pOH Calculations,

Extra Exercises

1. Calculate the [OH−(aq)] in limes which have a [H3O+(aq)] of 1.3 × 10-2 mol/L.



2. Calculate the [H3O+(aq)] in lemons which have a [OH-(aq)] of 2.0 × 10-12 mol/L.



3. A sodium hydroxide solution is prepared by dissolving 2.50 g to make 2.00 L of solution. Calculate the hydroxide and hydronium ion concentrations.









4. A 0.728 g sample of hydrogen chloride gas is dissolved in 200 mL of solution. Calculate the hydronium and hydroxide ion concentrations.









5. Vinegar has a hydronium ion concentration of 1.5 × 10-3 mol/L. Calculate the pH.



6. An ammonia solution has a pOH of 2.92. What is the concentration of hydroxide ions in the solution?



LSM 16.1D (cont’d)

7. Calculate the pOH and pH of a solution made by dissolving 7.50 g of strontium hydroxide to make 500 mL of solution.



8. Complete the following table.

**Table 1** pH of Common Substances

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Substance | [H3O+(aq)]  (mol/L) | pH | [OH-(aq)]  (mol/L) | pOH | Acidic, basic, or neutral |
| milk | **3.1 × 10-7** | **6.51** | 3.2 × 10-4 | **7.49** | **acidic** |
| pure water | **1 × 10-7** | 7.0 | **1 × 10-7** | **7.0** | **neutral** |
| blood | 4.0 × 10-8 | **7.40** | **2.5 × 10-7** | **6.60** | **basic** |
| cleaner | **1.6 × 10-11** | **10.80** | 6.3 × 10-4 | 3.20 | **basic** |