CHEMISTRY MATTERS
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Unit 7I Practice Problems 1
pH calculations

Name:

Date:

The letters "pH" represent the French words "*pouvoir hydrogene*" which means "hydrogen power". pH is equal to the negative log (logarithm) of the hydrogen ion concentration of a solution. The logarithm of a number is the power to which 10 must be raised in order to equal that number. For example, the logarithm of 1000 is 3.

The logarithm of 0.001 is -3.

The formula for pH calculation is: $pH = -\log[H^+]$

A pH value of less than 7 indicates an acidic solution. A pH value of 7 indicates a neutral solution. A pH value of more than 7 indicates a basic (alkaline) solution.

Work each of the following problems. Show all work and circle your final answer.

1. Determine the pH of a 0.010 M HNO_3 solution.

2. What is the pH of a 2.5×10^{-6} M solution of HCl.

3. Calculate the pH of a solution of 0.0025M H_2SO_4?

84. Calculate the pH of a 0.0010 M NaOH solution

questions continued on next page

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Work each of the following problems. Show all work and circle your final answer.

5. What is the pH of a 0.020M $Sr(OH)_2$ solution?

6. a) What is the hydrogen ion concentration of an aqueous HCl solution that has a pH of 3.0?

   b) What is the hydroxide ion concentration of this same solution?

   c) Which ion, H^+ or OH^-, is in greater concentration?

   d) Is this solution acidic or basic? _____

7. a) Find the $[H^+]$ and the $[OH^-]$ of a solution with a pH of 3.494.

   b) Is this solution acidic or basic? _____