Name: _____

Acids and Bases

1) What is an acid?

2) What is a hydrogen ion made of? _____

3) Write the formula below showing carbonic acid producing H ions:

4) What is a base?

5) Identify the following substances as either acids or bases:

   a. NaOH: _____

   b. HCl: _____

   c. $Ca(OH)_2$: _____

   d. H_2SO_4: _____

6) In the space below, draw the pH scale as it appears in your text. Include all labels.

7) What pH level would the solution have to be, in order to be perfectly neutral? _____

8) What level of the pH scale is the most basic? _____

9) What level of the pH scale is the most acidic? _____

10) Identify the following pHs as *neutral, weakly acidic, strongly acidic, weakly basic,* or *strongly basic*:

a. pH 1: _____

b. pH 9: _____

c. pH 6: _____

d. pH 13: _____

e. pH 7: _____

11) If you wanted to neutralize a strong acid, what would you add to it? _____

12) What substance would be produced by this reaction? _____

13) Write the basic formula of this process of neutralization below:

14) Common table salt (NaCl) is produced by an acid-base neutralization reaction as shown below:

$$\mathbf{NaOH + HCl \rightarrow NaCl + H_2O}$$

In the formula above, label the following: *acid, base, salt,* and *water.*

15) Most acid-base neutralizations are very similar to the one above. They usually produce water and a salt. (A ***salt*** is a compound formed by replacing the hydrogen in an acid with a metal. NaCl is just one example of many kinds of salt.) Based on this information, predict what the missing substance is in each of the formula below (don't worry about balancing the equation):

a. $NaOH + HBr \rightarrow$ _____ $+ H_2O$

b. $KOH +$ _____ $\rightarrow KCl + H_2O$

c. $Ca(OH)_2 + HCl \rightarrow CaCl_2 +$ _____

d. _____ $+ HF \rightarrow KF + H_2O$