Student Review Packet

1. Label each of the following substances as either acid or base.

a. NaOH	_____	f. HCl	_____
b. H_2SO_4	_____	g. LiOH	_____
c. H_3PO_3	_____	h. NaClO	_____
d. KOH	_____	i. HNO_3	_____
e. NH_3	_____	j. $HC_2H_3O_2$	_____

2. Describe the observable properties of acids and bases:

acids: _____

_____

_____

_____

bases: _____

_____

_____

_____

3. Indicators use different colors to show what pH range an acid or base falls in. Using the following table of indicators, answer the following questions.

INDICATORS

Indicator	pH range
Thymol Blue	1 – 2.5
Methyl Red	4 – 6
Bromothymol Blue	6 – 7.5
Phenolphthalein	8 – 10

a. Which indicator would you use to measure the pH of hydrochloric acid, which is a strong acid?

_____

b. Could you use methyl red to indicate the pH of bleach, which has a pH of 11? Why or why not?

_____

_____

4. Find the pH of the following concentrations.

a. $[H^+] = .01$ M

b. $[H^+] = 1 \times 10^{-8}$ M

c. $[H^+] = 3.8 \times 10^{-4}$ M

d. $[H^+] = 7.8 \times 10^{-12}$ M

e. $[OH^-] = .0001$ M

f. $[OH^-] = 1 \times 10^{-13}$ M

g. $[OH^-] = 6.9 \times 10^{-2}$ M

h. $[OH^-] = 2.4 \times 10^{-8}$ M

5. Find the pOH of the following concentrations.

a. $[OH^-] = .001$ M

b. $[OH^-] = 1 \times 10^{-3}$ M

c. $[OH^-] = 4.7 \times 10^{-6}$ M

d. $[OH^-] = 6.9 \times 10^{-10}$ M

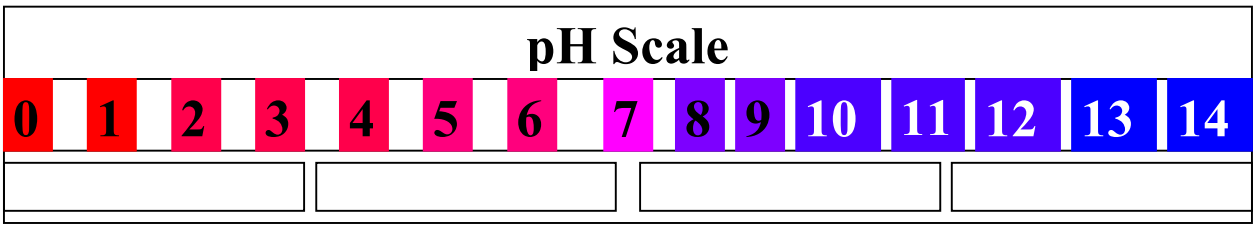
e. $[H^+] = .1$ M

f. $[H^+] = 1 \times 10^{-1}$ M

g. $[H^+] = 3.4 \times 10^{-3}$ M

h. $[H^+] = 5.1 \times 10^{-11}$ M

6. Label the boxes under the pH scale as "slightly basic," "slightly acidic," "very basic," and "very acidic."



7. Complete and balance the equations for the following neutralization reactions.

a. $HCl + NaOH \rightarrow$ _____ + _____

b. $H_2SO_4 + Ca(OH)_2 \rightarrow$ _____ + _____

c. $HC_2H_3O_2 + KOH \rightarrow$ _____ + _____

d. $HNO_3 + Ba(OH)_2 \rightarrow$ _____ + _____

e. $H_3PO_4 + LiOH \rightarrow$ _____ + _____

8. Calculate the molarity of the following solutions:

a. 25.8 g of NaOH in 2.0 L of solution

b. 139.0 g of HCl in 13.9 L of solution

c. 2.7 g of KOH in 25.5 L of solution

9. Carry out the following neutralization calculations:

a. How much 3.00 M HF is needed to neutralize 0.750 L of 0.5 M NaOH?

b. How much 6.00 M NH_3 is needed to neutralize 2.25 L of 3.00 M H_2SO_4?

c. How much 0.500 M HCl is needed to neutralize 1.00 L of 2.50 M KOH?

d. How much 2.50 M HBr is needed to neutralize 175 mL of 0.750 M NaOH?

e. How much 10.0 M HCl is needed to neutralize 333 mL of 0.500 M NH_3?

f. How much 3.00 M LiOH is needed to neutralize 625 mL of 3.75 M HI?

g. How much 2.00 M NaOH is needed to neutralize 15.5 mL of 4.62 M HF?

h. How much 9.00 M H_2SO_4 is needed to neutralize 985 mL of 2.85 M $Ca(OH)_2$?