

Section 4C Review

Name: _____

1) Compare and contrast the taste and the feel of an acid and a base.

2) Identify the following as an acid or a base, and name the acid or base:

a) LiOH

b) H_2SO_3

c) H_3P

d) $\text{Cu}(\text{OH})_2$

e) $\text{H}_2\text{Cr}_2\text{O}_7$

f) HIO_3

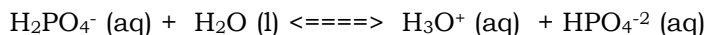
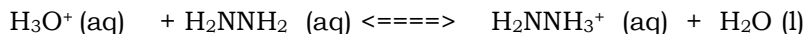
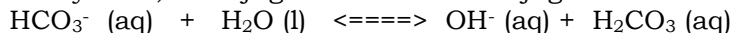
g) NH_3

h) $\text{HC}_6\text{H}_5\text{COO}$

3) How is acid rain formed from pollution?

4) If the concentration of H_3O^+ ions is $7 \times 10^{-5} \text{ M}$, what is the concentration of OH^- ions? Is the solution acidic or basic? Show your work!

5) In the following reactions, identify which substance act as a Bronsted-Lowry acid, a Bronsted-Lowry base, a conjugate acid and a conjugate base.



6) Draw a pH scale below and identify the maximum and minimum values, and the location of the various acidic, basic and neutral solutions. Then, on the same scale label the pOH values.

7) Write the neutralization reaction for the following acids/base combinations:

a) Carbonic acid and sodium hydroxide

b) Ammonium hydroxide and hydrosulfuric acid

c) Magnesium hydroxide and arsenic acid

8) Calculate the pH of the following substances. Tell whether the substance is an acid or a base.

a) saliva - $[\text{OH}^-] = 1.5 \times 10^{-9} \text{ M}$

b) borax cleaner - $[\text{OH}^-] = 2.2 \times 10^{-6} \text{ M}$

c) bleach - $[\text{H}_3\text{O}^+] = 8.3 \times 10^{-13} \text{ M}$

d) bananas - $[\text{H}_3\text{O}^+] = 7.7 \times 10^{-4} \text{ M}$

9) In a titration of 35 ml of an acetic acid solution, the end point is reached when 45 ml of 0.100 M barium hydroxide is added. Calculate the concentration of acetic acid.

10) What is a substance called when it gives off a certain color if immersed in hydronium ions and gives off a different color in the presence of hydroxide ions?

11) Explain what a buffer is and how it works.

12) Calculate the molarity of a solution in which 60 g of CaCl_2 is dissolved in 250 ml of water.

13a) How many mL of 0.90 M HCl solution need to be measured out in order for the solution to contain 1.5 g of HCl?

b) What would be the pH of the solution in (a) if the solution was diluted to a volume of 2.0 L by adding water?

14) Calculate the pH of a solution that has an $[\text{OH}^-]$ concentration of $2.5 \times 10^{-11} \text{ M}$.

Answers to selected problems:

4a) $2 \times 10^{-9} \text{ M}$

8a) 5.2

8b) 8.3

8c) 12.1

8d) 3.1

9) 0.13 M

12) 2.16 M

13a) 45.6 mL

13b) 1.7

14) 3.4