pH and pOH Worksheet Name _____

Date _____ Period _____

1. Give the pH of solutions with the following hydronium ion (H_3O^+) concentrations

A. $1x10^{-1}$ _____ B. $1x10^{-5}$ _____ C. $1x10^{-13}$ _____

D. $2x10^{-3}$ _____ E. $7x10^{-9}$ _____F. 5×10^{-11} _____

2. For the following pH solutions, what is the H_3O^+ ion concentration?

A. 7 _____ B. 3 _____ C. 9 _____

D. 3.5 _____ E. 7.8 _____

3. Give the pOH for the solutions with the following hydroxide ion (OH^-) concentrations.

A. 1×10^{-10} _____ B. 1×10^{-2} _____

C. 3.6×10^{-4} _____

4. For the following pOH solutions, what is the OH^- ion concentration?

A. 8 _____ B. 14 _____ C. 3 _____

D. 9.7 _____ E. 4.3 _____

5. Use the given information to fill in the missing information.

H_3O^+ Concentration	pH	OH^- Concentration	pOH
1×10^{-6}	_____	_____	_____
_____	9.0	_____	_____
_____	_____	_____	2.0
_____	_____	_____	_____1×10^{-12}

9. At the neutralization point, the number of moles of acid and the number of moles of base are _____ .

In the Molarity Equation, Molarity = $\frac{\text{moles}}{\text{Liters}}$

and if we rearrange, **moles =** **(Molarity) x (Volume)**

so if **moles of acid = moles of base at the** **neutralization point**

then **(Molarity $_{acid}$) x (Volume $_{acid}$) = (Molarity $_{base}$) x (Volume $_{base}$)**

6. How much 2.0 M HCl will it take to neutralize 500 mL of 1.0 M NaOH?

7. How much 2.0 M H_2SO_4 will it take to neutralize 150 mL of 1.0 NaOH?

8. 35.7 mL of 0.1 NaOH is necessary to neutralize a 50.0 mL sample of acetic acid ($HC_2H_3O_2$). What is the concentration of acetic acid?

10. Exactly one mole of sulfuric acid is poured into a large tub of water and stirred around. How much 0.5 M NaOH will have to be added in order to turn phenolphthalein indicator to a pink color (this will happen at pH 7)?