Review   Name_____*Key*_____ hr_____

> $pH = - \log [H_3O^+]$
> $[H_3O^+] = 10^{-pH}$
> $pOH = - \log [OH^-]$
> $pH + pOH = 14$
> $[H_3O^+] [OH^-] = 1 \times 10^{-14}$

1. Write the dissociation equation of water

$$2H_2O \rightleftharpoons OH^- + H_3O^+$$

2. What is the name of H_3O^+ ? __hydronium ion__

3. What is the name of OH^-? __hydroxide ion__

4. In a solution with pH = 4, how does the $[H_3O^+]$ compare to the $[OH^-]$?
   Which do you have more of? __$[H_3O^+]$__

5. What is the factor between each pH unit (pH = 10 and pH = 11)? __10 x's__

6. What is the factor between 3 pH units (pH = 4 and pH = 7)? __1000,s__

7. What is the pH of a solution of 0.03 M HBr? __1.52__

$$pH = -\log 0.03 = 1.52$$

8. What is the pH of a solution with 6.5×10^{-5} M H_3O^+? __4.2__

$$pH = -\log 6.5 \times 10^{-5} = 4.18$$

9. What is the pH of a solution with 0.05 moles of HBr in 330 Liter of water? __3.8__

$$M = \frac{0.05 \, mol}{330 L} = 0.00015 \qquad pH = -\log 1.5 \times 10^{-4} = 3.82$$

10. If a solution has a pH = 5.6, then $[H_3O^+] =$ __2.5×10^{-6}__ (acidic) or basic?

$$10^{-5.6}$$

11. If a solution has a pH = 10.1, then $[H_3O^+] =$ __7.9×10^{-11}__ acidic or (basic)?

$$10^{-10.1}$$

12. If a solution has a pOH = 9.6, then $[OH^-] =$ __2.5×10^{-10}__ (acidic) or basic?

$$10^{-9.6}$$

13. If a solution has a pOH = 2.1, then $[OH^-] =$ __0.0079__ acidic or (basic)?

$$10^{-2.1} \qquad 7.9 \times 10^{-3}$$

14. If a solution has a $[OH^-] = 5.5 \times 10^{-4}$, then $[H_3O^+] =$ __1.81×10^{-11}__ acidic or (basic)?

$$H_3O^+ = \frac{1 \times 10^{-14}}{5.5 \times 10^{-4}}$$

15. If a solution has a $[H_3O^+] = 2.7 \times 10^{-8}$, then $[OH^-] =$ __3.7×10^{-7}__ acidic or (basic)?

$$[H_3O^+] = \frac{1 \times 10^{-14}}{2.7 \times 10^{-8}}$$

16. If a solution has a pH = 1.5, then pOH = __12.5__ acidic or (basic?)

$$14 - 1.5 = 12.5$$

17. If a solution has a pOH = 7.8, then pH = __6.2__ (acidic) or basic?

$$14 - 7.8 = 6.2$$