Agenda:
Water
Solubility / Molarity
Calculating pH

1. What kind of bonds hold water together?
   (HINT: there are two types!)

2. Is H_2O hydrophobic or hydrophilic? Based on this properly, what types of molecules does it dissolve in solution?

3. Why are the intermolecular attractions in $H_2O(g)$ much weaker than the attractions in $H_2O(l)$ or $H_2O(s)$?

   more energy, less hydrogen bonding because the molecules are moving
   faster

4. List three reasons why water is biochemically important

   1. good solvent
   2. high heat specificity
   3. useful in reactions

5. Is water considered a weak acid/base or strong acid/base?

   weak because

   Use the following diagram to answer the questions below:
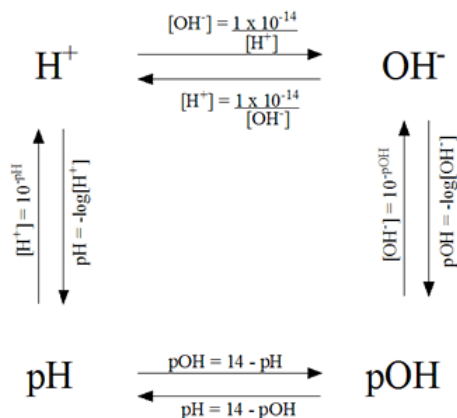
6. Calculate the concentration of [H+] vs [OH-] given the pH
   a. pH of 7

   $$[H+]=10\text{^-}7M$$
   $$[OH-]=10\text{^-}7M$$

   b. pH of 3

   $$pH=-log10([H+])$$
   $$10\text{^-}pH=[H+]$$

   $$[H+]= 10\text{^-}3 \ M$$
   $$[OH-]=10\text{^-}11 \ M$$

   c. pH of 9

   $$[H+]=10\text{^-}9 \ M$$
   $$[OH-]=10\text{^-}5 \ M$$

7. If we have 10^{-10} M of NaOH, what is the pH of the solution?

   pH=4

8. If we have 10^{-4} M of HCl, what is the pH of the solution?

   pH=4

9. What is the $[H^+]$ of a solution whose $[OH^-]$ is 9.31 x 10^{-2} M?

10. BONUS (this is optional!):
    What is the pOH of a solution whose $[H^+]$ is 2.75 x 10^{-4} M?