Name: Key
Date: _____ Block: _____

Textbook p.24-32 (New)
p.20-29 (old)

pH

1. What is the pH of the following substances?
   a. Sea water 8
   b. Blood 7.4
   c. Urine 6
   d. Black coffee 5
   e. Stomach acid 2
   f. Stomach antacid 9

2. Define the following terms:
   a. Acid - molecule which releases H^+ in H_2O
   b. Base - molecule which releases OH^- in H_2O
   c. Salt - ionic compound [metal + non-metal)

3. Which solution has the highest concentration of H^+ ions, one with a pH of 6, 2 or 11? Explain why.
   2 highest $[H^+]$ released in H_2O

4. Why is pH so important to living things?
   pH of blood is 7.4. Severe health consequences result if altered

5. How do living things prevent rapid and drastic changes in pH?
   Buffers keep pH within normal limits/range

6. For the following statement, fill in the blanks with the words *high* or *low*.

   An acid has a high concentration of H^+ and low concentration of OH^-, whereas a base has low H^+ and high OH^-.

7. What does a pH of 7 mean?
   Neutral Same concentration $[H^+]$ and $[OH^-]$

8. Draw the pH scale indicating the values for acid and base.

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Acid and Base

1. Define an acid.
Proton donor; molecule releases H^+ in water

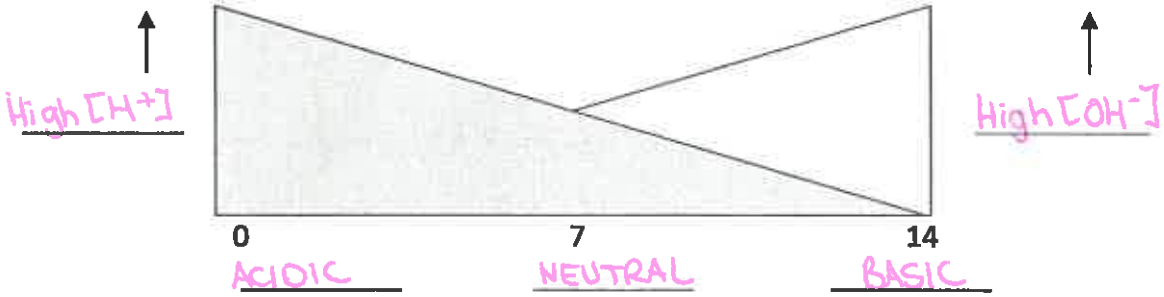
2. Define a base.
Proton acceptor, molecule releases OH^- in water

3. Acids are molecules that dissociate in water, releasing ___H+___ ions. ___Bases___ are molecules that either take up hydrogen ions or release ___hydroxide (OH-)___ ions.

4. pH is defined as the negative logarithm of the ___hydrogen___ ion concentration. As we move down the pH scale, each unit ___10___ times the acidity of the previous unit. A pH of ___7___ has an equal concentration of hydrogen ions and hydroxide ions.

5. The pH scale ranges from 0 to ___14___. ___Buffers___ are chemicals or combinations of chemicals that take up excess hydrogen ions or hydroxide ions and help keep the pH within normal limits.

6. Label the following diagram of the pH curve with these terms: basic, acidic, neutral, hydrogen ion concentration, and hydroxide ion concentration.



7. Complete the following table to help understand the relationship between the hydrogen ion concentration and pH.

$[H^+]$	pH	Acid/Base/Neutral
Example: 1×10^{-6}	*6*	*acid*
1×10^{-5}	5	acid
1×10^{-10}	10	base
1×10^{-7}	7	neutral

8. As the pH of a solution changes from 8.6 to 9.6, it becomes more _____ *(acidic/basic)*. At a pH of 7, the number of hydrogen ions ___equals___ the number of hydroxide ions. A pH of 6 has ___100___ times as much hydrogen ions as a pH of 8. The pH curve starts at ___0___ and goes to ___14___. As the pH of a solution increase, the number of hydrogen ions _____ *(increases/decreases)*. As the pH of a solution increases, the number of hydroxide ions _____ *(increases/decreases)*. ___Buffers___ help to prevent any change in blood pH.