Lewis Acid	% Ionization	Strong Acid	Anion	Carboxylic Acid
Lewis Base	Weak Base	Buffer	Hydrated Cation	"Common Ion Effect"
pH	Weak Acid	Hydrolysis	Binary Acid	
pOH	Strong Base	Cation	Oxyacid	

1. An acid that consists of an H, O, and one other element, which is a nonmetal, is an:
   oxyacid
2. A base that dissociates completely in a solution is a:
   strong base
3. An acid that consists of an H and one other element is a:
   Binary Acid
4. An electron pair donor:
   Lewis Base
5. The quantity of weak acid that ionizes in a solution, expressed as a percentage:
   % Ionization
6. An acid that only partially dissociates in solution:
   weak Acid
7. A negatively charged ion:
   anion
8. When the water attached to a metal is more acidic than free water molecules, the ion becomes a:
   hydrated cation
9. An acid that dissociates completely in solution:
   strong acid
10. An electron pair acceptor:
    lewis acid
11. A positively charged ion:
    cation
12. A base that only partially dissociates in solution:
    weak base
13. An organic acid that contains the -COOH group
    carboxylic acid
14. Represents the hydrogen ion concentration:
    pH
15. If we have a solution containing several types of ions and equilibrium is achieved, when we add another species containing the same ion, to the existing solution, reduction in the degree of dissociation of the first species is observed.
    common ion effect
16. A solution of a weak conjugate acid-base pair that resists drastic changes in pH:
    buffer

17. The chemical breakdown of a compound due to its reaction with water:
hydrolysis

18. Represents the hydronium ion concentration:
pOH

1. What is the pH of a solution of 0.11M $NaC_2H_3O_2$ and 0.090M $HC_2H_3O_2$?
$K_a = 1.8 \times 10^{-5}$

R	$HC_2H_3O_2$	$C_2H_3O_2^-$	H^+
I	0.090	0.11	0
C	-x	+x	+x
E	0.090-x	0.11+x	x

$K_a = \frac{0.11\ x}{0.090}$

$x = 1.47 \times 10^{-5}$

$-\log(1.47 \times 10^{-5})$

$pH = 4.83$

2. What is the pH of a buffer that is 0.14M HF ($pK_a = 3.15$) and 0.071M KF?
$K_a = 7.0 \times 10^{-4}$

R	HF	H_2O	F^-	H_3O^+
I	0.14	—	0.071	0
C	-x	—	+x	x
E	0.14-x	—	0.071 +x	x

$K_a = \frac{[F^-][H_3O^+]}{[HF]}$

$K_a = \frac{(0.071\ x)}{0.14}$

$K_a = 7.0 \times 10^{-4}$

$x = 1.4 \times 10^{-3}$

$pH = -\log[H_3O^+]$

$pH = 2.85$

3. What is the pH of a solution that has an H^+ concentration of 0.7M? Is this solution acidic or basic?

$pH = -\log[H^+]$

$pH = -\log(0.7)$

4. In a 0.100M solution of HA where 1.23% is ionized, what is the K_a?

	$HA + H_2O \rightleftharpoons A^-$		H_3O^+
I	0.100	—	0
C	$-x$	—	$+x$
E	$0.100-x$	—	x

1.23% of 0.100 = 0.00123M = x

$K_a = \frac{x^2}{0.100-x}$ $\frac{(0.00123)^2}{0.100-0.00123}$

$K_a = 1.53 \times 10^{-5}$

5. Calculate the pH of 2.00M nitrous acid, HNO_2. ($K_a = 4.0 \times 10^{-4}$)

$HNO_2 +$

$K_c = \frac{[NO_2^-][H_3O^+]}{[HNO_2]}$

	$H_2O \rightleftharpoons NO_2^- + H_3O^+$			
I	2.00	—	0	0
C	$-x$	—	$+x$	$+x$
E	$2.00-x$	—	x	x

$4.0 \times 10^{-4} = \frac{x^2}{2.00}$

$[H^+] = x = 0.028M$

6. What is the pH of a buffer that has 0.700M HOAc and 0.600M OAc^- ?

	$HOAc + H_2O \rightleftharpoons OAc^- + H_3O^+$			
I	0.700	—	0.600	0
C	$-x$	—	$+x$	$+x$
E	$0.700-x$	—	$0.600+x$	x

$K_a = 1.8 \times 10^{-5}$

$K_a = 1.8 \times 10^{-5} = \frac{0.600x}{0.700}$

$[H_3O^+] = 2.1 \times 10^{-5}$

$pH = 4.68$