Acid and Base Review Worksheet

Naming Acids: Nonmetal Anion "ide" → hydro_____ ic acid
Polyatomic Anion "ate" → _____ ic acid
Polyatomic Anion "ite" → _____ ous acid
Bases: cation (metal or polyatomic) and hydroxide **OR** memorize bases…Like ammonia

Properties of Acids and Bases

Measuring
Acids pH < 7 and pOH > 7 pH = -log [H+] $[H+] = 10^{x}$ -pH
Bases pH > 7 and pOH < 7 pOH = -log [OH-] $[OH-] = 10^{x}$ -pOH
pH + pOH = 14 $[H+][OH-]=1.0x10^{-14}M$

Theories -
Arrhenius: Acid (H+) + Base (OH-) → salt + water (H_2O)
Bronsted-Lowry: dissociation/ionization Reactions
Acid donates a H+ ion to the Base which accepts the H+ ion
Acid + Water (Base) → Conjugate Base + Conjugate Acid (H_3O+)
Base + Water (Acid) → Conjugate Acid + Conjugate Base (OH-)

Neutralization Reactions:
Strong Acid + Strong Base → Neutral Salt Water
Strong Acid + Weak Base → Acidic Salt Water
Weak Acid + Strong Base → Basic Salt Water

Strong Acids and Bases – completely dissociate in water – weak bonds
Weak Acids and Bases – not all of the sample dissociates in water – strong bonds

Don't Forget
Molarity M = mol/liter 1L = 1000ml H_2O = H+ + OH-
(+)(-) = 0 zero, neutral compound and Balancing Chemical Reactions
Converting form grams to moles using the periodic table
Polyatomic Ions

1. What are the chemical formulas for the following acids and Bases:
   a. Perchloric Acid Aluminum Hydroxide
   b. Sulfurous Acid Nitric Acid
   c. Calcium Hydroxide Phosphoric Acid
   d. Ammonia Hydrobromic Acid
2. What are three properties of an acid?
3. Write a balanced chemical reaction for calcium metal in hydrofluoric acid.
4. What are three properties of a base?
5. Write a dissociation equation for the reaction of perchloric acid in water. Label the acid, base, conjugate acid, and conjugate base.
6. Define what it means to be a strong acid or strong base.
7. Fill in the table:

Acid or Base	pH	pOH	[H+]	[OH-]
	4.5			
		3.8		
			$2.4x10^{-12}M$	
				$8.9x10^{-5}M$

8. Define what it means to be a weak acid or weak base.
9. Write a balanced chemical reaction for the neutralization of hydrophosphoric acid and beryllium hydroxide.
10. Define an amphoteric substance. Give an example.