**Worksheet: Acids, Bases, and Salts** **Name:** _____

**What are Acids, Bases, and Salts?**

The Swedish chemist, Svante Arrhenius introduced the theory of ionization and used this theory to explain much about the behavior of acids and bases.

- An Arrhenius acid is defined as any compound that dissociates in aqueous solution to form _____ ions.
  $HNO_3(aq) \rightarrow H_3O^+ + NO_3^-(aq)$

  $HCl(aq) \rightarrow$ _____

- An Arrhenius base is defined as any compound that dissociates in aqueous solution to form _____ ions.
  $KOH(aq) \rightarrow K^+(aq) + OH^-(aq)$

  $NaOH(aq) \rightarrow$ _____

- Salts are compounds that dissociate in aqueous solution releasing neither _____ ions nor _____ ions.
  $KCl(aq) \rightarrow K^+(aq) + Cl^-(aq)$

Using the **Arrhenius definition**, classify the following examples as acids, bases, or salts:

| | | | |
|---|---|---|---|
| HBr | _____ | KCl | _____ |
| $Mg(OH)_2$ | _____ | $H_3PO_4$ | _____ |
| HCl | _____ | HClO | _____ |
| $KNO_2$ | _____ | $Al(OH)_3$ | _____ |
| $HFO_4$ | _____ | $KC_2H_3O_2$ | _____ |
| $Ba(OH)_2$ | _____ | NaCl | _____ |

Acids and bases can also be identified using an operational definition. Operational definitions are simply a list of properties.

**ACIDS:**

- A _____ taste is a characteristic property of all acids in aqueous solution.
- Acids react with some metals to produce _____ gas.
- Because aqueous acid solutions conduct electricity, they are identified as _____.
- Acids react with bases to produce a _____ and water.
- Acids turn _____ different colors.

**BASES:**

- Bases tend to taste _____ and feel _____.
- Like acids, aqueous basic solutions conduct _____, and are identified as _____.
- Bases react with _____ to produce a salt and _____.
- Bases turn _____ different colors.

**Naming Acids, Bases, and Salts**

Since bases and salts are _____ compounds, they are named in the usual way:

| | |
|---|---|
| $KNO_3$ _____ | $NH_4OH$ _____ |
| $KNO_2$ _____ | $Al(OH)_3$ _____ |

- **Binary acids** consist of _____ element, the first being _____.

Binary acids are named using the format:

**Hydro**_(root word of second element) __ **ic** acid

- **Ternary acids** consist of _____ elements. Do **NOT** use a prefix. Simply change the ending of the polyatomic ion's name and add the word "acid":

**-ate becomes** _____ and **–ite becomes** _____

Name the following acids:

| | |
|---|---|
| $H_3PO_3$ _____ | $HC_2H_3O_2$ _____ |
| $H_2CO3$_____ | HClO _____ |
| HF _____ | $H_2SO_3$ _____ |

**Acids & Bases Properties**

1. What are five general properties of acids?

   a. _____ b. _____
   c. _____ d. _____
   e. _____

2. Name 4 common substances that have one or more of these properties.
   a. _____ b. _____
   c. _____ d. _____

3. Name the following acids:

   a. HBrO _____

   b. $HBrO_3$ _____