

## Success 24/7 Chemistry: 3 Theories of Acids and Bases

### 3 Theories (Definitions) of Acids and Bases

#### Arrhenius

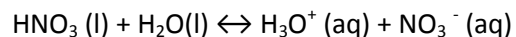
- **Acid:** compound containing hydrogen that ionizes to yield hydrogen ions in solution
- **Base:** compound that ionizes to yield hydroxide ions in solution

Using the Arrhenius definition of acids and bases, label each of the following as either an acid or a base:

Ca(OH)<sub>2</sub> \_\_\_\_\_      HNO<sub>3</sub> \_\_\_\_\_      HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> \_\_\_\_\_      KOH \_\_\_\_\_

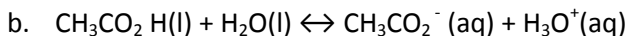
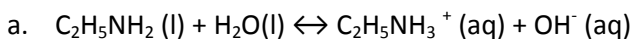
#### Brønsted-Lowry

- **Acid:** hydrogen-ion donor (proton donor)
- **Base:** hydrogen-ion acceptor (proton acceptor)
- **conjugate acid** - particle formed when a base gains a hydrogen ion
- **conjugate base** - particle formed when an acid loses a hydrogen ion

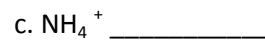
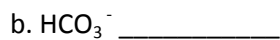
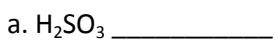


#### Practice:

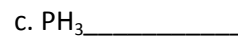
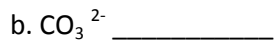
Label the acid, base, conjugate acid, and conjugate base:



Write the formulas for the conjugate base of each of the following acids.



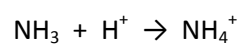
Write the formulas for the conjugate acid of each of the following bases.



- **amphoteric**- substance that can act as both an acid and a base.  
Ex.  $\text{H}_2\text{O}$ ,  $\text{ZnO}$ ,  $\text{Al}(\text{OH})_3$ ,  $\text{Be}(\text{OH})_2$ ...

### Lewis Acids and Bases

- **Acid:** electron pair acceptor
- **Base:** electron pair donor



Theory Name	Definition of Acid	Definition of Base
Arrhenius		
Brønsted-Lowry		
Lewis		