Acid/ Base worksheet

1. Complete the equation for the reaction of each of the following with water. Indicate whether the ion or molecule is an acid or base, and whether each reaction is explained by Arrhenius, Bronsted-Lowry, or both.
   1. HI(aq) + H2O(l)
   2. HF(aq) + H2O(l)
   3. C2H3O2–(aq) + H2O(l)
   4. CO32–(aq) + H2O(l)
   5. O2–(aq) + H2O(l)
2. Give the conjugate base for each of the following Brønstead-Lowry acids:

a) HNO3 b) H3O+ c) H2PO4- d) NH3

1. Give the conjugate acid for each of the following Brønstead-Lowry bases:

a) HCO3- b) SO42- c) NH3 d) H2O

1. List the strong acids: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. List the strong bases: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Formula | Name the following acids | Acid Name | Write the formulas of the following acids. |
| HNO3 |  | sulfuric acid |  |
| HCl |  | nitric acid |  |
| H2SO4 |  | hydrochloric acid |  |
| H2SO3 |  | acetic acid |  |
| HC2H3O2 |  | hydrofluoric acid |  |
| HBr |  | phosphorus acid |  |
| HNO2 |  | carbonic acid |  |
| H3PO4 |  | nitrous acid |  |
| H2S |  | phosphoric acid |  |
| H2CO3 |  | hydrosulfuric acid |  |

Acid/ Base worksheet Key

1. Complete the equation for the reaction of each of the following with water. Indicate whether the ion or molecule is an acid or base, and whether each reaction is explained by Arrhenius, Bronsted-Lowry, or both.
2. HI(aq) + H2O(l) ⇄ I–(aq) + H3O+(aq)  
   Bronsted-Lowry and Arrhenius acid
3. HF(aq) + H2O(l) ⇄ F–(aq) + H3O+(aq)  
   Bronsted-Lowry and Arrhenius acid
4. C2H3O2–(aq) + H2O(l) ⇄ HC2H3O2(aq) + OH–(aq)  
   Bronsted-Lowry base only
5. CO32–(aq) + H2O(l) ⇄ HCO3–(aq) + OH–(aq)  
   Bronsted-Lowry base only
6. O2–(aq) + H2O(l) ⇄ 2OH–(aq)   
   Bronsted-Lowry base only
7. Give the conjugate base for each of the following Brønstead-Lowry acids:

a) HNO3 b) H3O+ c) H2PO4- d) NH3

NO3- H2O HPO42- NH2-

1. Give the conjugate acid for each of the following Brønstead-Lowry bases:

a) HCO3- b) SO42- c) NH3 d) H2O

H2CO3 HSO4- NH4+ H3O+

1. List the strong acids: \_\_**HCl, HBr, HI, HNO3, H2SO4, HClO4, HClO3**\_\_\_
2. List the strong bases: \_\_**LiOH, NaOH, KOH, Ca(OH)2, Sr(OH)2, Ba(OH)2**\_\_\_

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| --- | --- | --- | --- |
| Formula | Name the following acids | Acid Name | Write the formulas of the following acids. |
| HNO3 | nitric acid | sulfuric acid | H2SO4 |
| HCl | hydrochloric acid | nitric acid | HNO3 |
| H2SO4 | sulfuric acid | hydrochloric acid | HCl |
| H2SO3 | sulfurous acid | acetic acid | HC2H3O2 |
| HC2H3O2 | acetic acid | hydrofluoric acid | HF |
| HBr | hydrobromic acid | phosphorus acid | H3PO3 |
| HNO2 | nitrous acid | carbonic acid | H2CO3 |
| H3PO4 | phosphoric acid | nitrous acid | HNO2 |
| H2S | hydrosulfuric acid | phosphoric acid | H3PO4 |
| H2CO3 | carbonic acid | hydrosulfuric acid | H2S |