

## +WS 4.7 - Writing Chemical Reactions

Write-out and **balance** the following written reactions. Use appropriate symbols (see symbol chart)

1. Sulfur dioxide gas (from coal) combines with oxygen (from air) to form sulfur trioxide gas.
2. Sulfur trioxide gas (from previous reaction) reacts with water in the air to form sulfuric acid (acid rain!)
3. Carbon dioxide and water combine in plants using chlorophyll as a catalyst to form glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>) and oxygen.
4. The *Haber process* uses 200 atm of pressure and iron as a catalyst to combine nitrogen and hydrogen to make ammonia (NH<sub>3</sub>) gas
5. Phosphoric acid (in soda) combines with potassium hydroxide to form potassium phosphate & water.
6. In a double-replacement reaction, barium chloride reacts with ammonium sulfate to form aqueous ammonium chloride and insoluble barium sulfate (a precipitate used for GI tract scans)
7. Steam reacts with carbon at high temperatures to produce carbon monoxide and hydrogen.
8. Baking soda (sodium bicarbonate) reacts with vinegar (acetic acid) to form aqueous sodium acetate, carbon dioxide, and water.
9. Aluminum metal and elemental sulfur (S<sub>8</sub>) react at high temperatures to form aluminum sulfide.
10. Ethyl alcohol (C<sub>2</sub>H<sub>6</sub>O) (obtained from corn) burns in our car engines (combustion reaction).
11. Potassium iodide reacts with lead (II) nitrate to form aqueous potassium nitrate and lead (II) iodide precipitate.
12. Solid iron (II) sulfide reacts with hydrochloric acid to form hydrogen sulfide (H<sub>2</sub>S) gas and aqueous iron (II) chloride.
13. A piece of copper wire placed in a aqueous silver nitrate solution will produce blue copper(II) nitrate solution (aq) and pure silver.
14. In an unusual reaction, solid barium hydroxide octahydrate reacts with solid ammonium nitrate to form ammonia gas (NH<sub>3</sub>), aqueous barium nitrate, and water. (hint: use coefficient 10 in front of the water)