

Writing and Balancing Chemical Equations Worksheet #1

For each of the following word equations, write the complete balanced chemical equation, including the appropriate state symbols (solid - s, liquid - l, gas - g, aqueous - aq).

Worksheet Questions:

1. Sodium (solid) reacts with chlorine gas to produce sodium chloride (solid).
2. Calcium (solid) reacts with nitrogen gas to form calcium nitride (solid).
3. Iron(III) chloride (aqueous) reacts with sodium hydroxide (aqueous) to produce iron(III) hydroxide (solid) and sodium chloride (aqueous).
4. Copper (solid) reacts with sulfur (solid) to produce copper(II) sulfide (solid).
5. Aluminum metal (solid) reacts with bromine gas to produce aluminum bromide (solid).
6. Potassium (solid) reacts with water (liquid) to produce potassium hydroxide (aqueous) and hydrogen gas.

The logo consists of the letters 'TWF' in a bold, stylized font. The 'T' and 'F' are dark green, while the 'W' is a lighter shade of green. The letters are thick and blocky.

20. Cobalt(II) nitrate (aqueous) reacts with sodium hydroxide (aqueous) to produce cobalt(II) hydroxide (solid) and sodium nitrate (aqueous).

Answers:

1. $2 \text{Na(s)} + \text{Cl}_2\text{(g)} \rightarrow 2 \text{NaCl(s)}$
2. $3 \text{Ca(s)} + \text{N}_2\text{(g)} \rightarrow \text{Ca}_3\text{N}_2\text{(s)}$
3. $\text{FeCl}_3\text{(aq)} + 3 \text{NaOH(aq)} \rightarrow \text{Fe(OH)}_3\text{(s)} + 3 \text{NaCl(aq)}$
4. $\text{Cu(s)} + \text{S(s)} \rightarrow \text{CuS(s)}$



Writing and Balancing Chemical Equations Worksheet #2

For each of the following word equations, write the complete balanced chemical equation, including the appropriate state symbols (solid - s, liquid - l, gas - g, aqueous - aq).

Worksheet Questions:

1. Barium reacts with water to produce barium hydroxide and hydrogen gas.
2. Carbon dioxide reacts with sodium hydroxide to produce sodium carbonate and water.
3. Hydrochloric acid reacts with iron(III) oxide to produce iron(III) chloride and water.
4. Potassium reacts with sulfur to produce potassium sulfide.

The logo consists of the letters 'TWF' in a bold, stylized font. The 'T' and 'F' are dark green, while the 'W' is a lighter shade of green. The letters are slightly slanted and have a modern, geometric feel.

Answers:

1. $\text{Ba(s)} + 2 \text{H}_2\text{O(l)} \rightarrow \text{Ba(OH)}_2\text{(aq)} + \text{H}_2\text{(g)}$
2. $\text{CO}_2\text{(g)} + 2 \text{NaOH(aq)} \rightarrow \text{Na}_2\text{CO}_3\text{(aq)} + \text{H}_2\text{O(l)}$
3. $6 \text{HCl(aq)} + \text{Fe}_2\text{O}_3\text{(s)} \rightarrow 2 \text{FeCl}_3\text{(aq)} + 3 \text{H}_2\text{O(l)}$
4. $2 \text{K(s)} + \text{S(s)} \rightarrow \text{K}_2\text{S(s)}$



Writing and Balancing Chemical Equations Worksheet #3

For each of the following word equations, write the complete balanced chemical equation, including the appropriate state symbols (solid - s, liquid - l, gas - g, aqueous - aq).

Worksheet Questions:

1. Hydrogen sulfide gas burns in oxygen to produce water and sulfur dioxide.
2. Calcium oxide reacts with water to produce calcium hydroxide.
3. Aluminum reacts with hydrochloric acid to produce aluminum chloride and hydrogen gas.
4. Copper(II) sulfate reacts with sodium hydroxide to produce copper(II) hydroxide and sodium sulfate.

The logo consists of the letters 'TWF' in a bold, stylized font. The 'T' and 'F' are dark green, while the 'W' is a lighter shade of green. The letters are thick and blocky, with a slight shadow effect.

Answers:

1. $2 \text{H}_2\text{S}(\text{g}) + 3 \text{O}_2(\text{g}) \rightarrow 2 \text{H}_2\text{O}(\text{l}) + 2 \text{SO}_2(\text{g})$
2. $\text{CaO}(\text{s}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{Ca}(\text{OH})_2(\text{s})$
3. $2 \text{Al}(\text{s}) + 6 \text{HCl}(\text{aq}) \rightarrow 2 \text{AlCl}_3(\text{aq}) + 3 \text{H}_2(\text{g})$
4. $\text{CuSO}_4(\text{aq}) + 2 \text{NaOH}(\text{aq}) \rightarrow \text{Cu}(\text{OH})_2(\text{s}) + \text{Na}_2\text{SO}_4(\text{aq})$

