Worksheet: Writing Equations

Write equations for the following reactions:

1) The reaction of ammonia with iodine to form nitrogen triiodide (NI_3) and hydrogen gas.

2) The combustion of propane (C_3H_8).

3) The incomplete combustion of propane to form CO and water.

4) The reaction of nitric acid with potassium hydroxide.

5) The reaction of copper (II) oxide with hydrogen to form copper metal and water.

6) The reaction of iron metal with oxygen to form iron (III) oxide.

7) The complete combustion of 2,2-dimethylpropane (C_4H_{10}) in oxygen.

8) The reaction of $AlBr_3$ with $Mg(OH)_2$

9) The decomposition of hydrogen peroxide to form water and oxygen.

10) The reaction of ammonia with sulfuric acid.

In the following problems, write some equation in which the following product might be formed:

11) carbon dioxide

12) ammonium hydroxide

13) copper (I) acetate

14) vanadium (V) fluoride

15) silver carbonate

16) carbonic acid (H_2CO_3)

17) acetic acid

18) antimony (III) chloride

19) calcium hydroxide

20) calcium phosphate

Worksheet: Writing Equations

Write equations for the following reactions:

1) The reaction of ammonia with iodine to form nitrogen triiodide (NI_3) and hydrogen gas.

$3\ NH_3 + 3\ I_2 \rightarrow 2\ NI_3 + 3\ H_2$

2) The combustion of propane (C_3H_8).

$C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$

3) The incomplete combustion of propane to form CO and water.

$2\ C_3H_8 + 7\ O_2 \rightarrow 6\ CO + 8\ H_2O$

4) The reaction of nitric acid with potassium hydroxide.

$HNO_3 + KOH \rightarrow KNO_3 + H_2O$

5) The reaction of copper (II) oxide with hydrogen to form copper metal and water.

$CuO + H_2 \rightarrow Cu + H_2O$

6) The reaction of iron metal with oxygen to form iron (III) oxide.

$4\ Fe + 3\ O_2 \rightarrow 2\ Fe_2O_3$

7) The complete combustion of 2,2-dimethylpropane (C_4H_{10}) in oxygen.

$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 10\ H_2O$

8) The reaction of $AlBr_3$ with $Mg(OH)_2$

$2\ AlBr_3 + 3\ Mg(OH)_2 \rightarrow 2\ Al(OH)_3 + 3\ MgBr_2$

9) The decomposition of hydrogen peroxide to form water and oxygen.

$2\ H_2O_2 \rightarrow 2\ H_2O + O_2$

10) The reaction of ammonia with sulfuric acid.

$2\ NH_3 + H_2SO_4 \rightarrow (NH_4)_2SO_4$

In the following problems, write some equation in which the following product might be formed:

Note: There are many reactions that will make the desired products. Do not use this solution key as being the final word in how to make these transformations, because there are literally hundreds of ways ini which each of these may be made, all of which are correct.

11) carbon dioxide – **Any combustion reaction will make CO_2**

12) ammonium hydroxide – **The reaction of NH_3 with any acid**

13) copper (I) acetate – **The reaction of copper with acetic acid**

14) vanadium (V) fluoride – **The reaction of vanadium with HF**

15) silver carbonate – **The double displacement of AgCl with Na_2CO_3**

16) carbonic acid (H_2CO_3) – **The reaction of water with carbon dioxide**

17) acetic acid – **The reaction of nitric acid with sodium acetate**

18) antimony (III) chloride – **The reaction of antimony (III) hydroxide with HCl**

19) calcium hydroxide – **The reaction of calcium metal with water**

20) calcium phosphate – **The reaction of calcium hydroxide with H_3PO_4**