

## Writing Complete Equations Practice - Key

For each of the following problems, write complete chemical equations to describe the chemical process taking place. Important note: There are a few physical processes on this sheet – remember, you can't write an equation for a physical process!

- 1) When lithium hydroxide pellets are added to a solution of sulfuric acid, lithium sulfate and water are formed.



- 2) When dirty water is boiled for purification purposes, the temperature is brought up to 100° C for 15 minutes.

**No equation is needed, as boiling is a physical process.**

- 3) If a copper coil is placed into a solution of silver nitrate, silver crystals form on the surface of the copper. Additionally, highly soluble copper (I) nitrate is generated.



- 4) When crystalline C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> is burned in oxygen, carbon dioxide and water vapor are formed.



- 5) When a chunk of palladium metal is ground into a very fine powder and heated to drive off any atmospheric moisture, the resulting powder is an excellent catalyst for chemical reactions.

**Both grinding and heating are physical processes. Even if the atmospheric moisture is mentioned, boiling is still a physical process. No equation is needed.**

## Word Equations – Answer Key

- 1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.



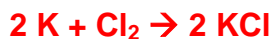
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- 2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.



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- 3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.



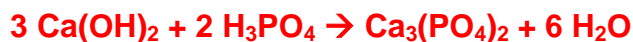
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- 4) Potassium metal and chlorine gas combine to form potassium chloride.



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- 5) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.



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- 6) Calcium hydroxide and phosphoric acid react to form calcium phosphate and water.



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- 7) Copper and sulfuric acid react to form copper (II) sulfate and water and sulfur dioxide.



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- 8) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.



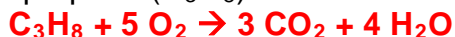
## Worksheet: Writing Equations

Write equations for the following reactions:

- 1) The reaction of ammonia with iodine to form nitrogen triiodide (NI<sub>3</sub>) and hydrogen gas.



- 2) The combustion of propane (C<sub>3</sub>H<sub>8</sub>).



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



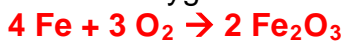
- 4) The reaction of nitric acid with potassium hydroxide.



- 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<sub>4</sub>H<sub>10</sub>) in oxygen.



- 8) The reaction of AlBr<sub>3</sub> with Mg(OH)<sub>2</sub>



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

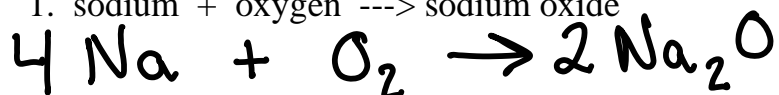


- 10) The reaction of ammonia with sulfuric acid.

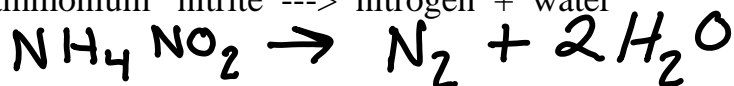


Write the proper formulas for the equations below and balance them by placing the correct whole number coefficients in front of each formula.

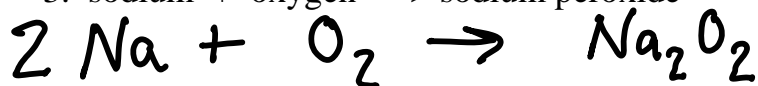
1. sodium + oxygen  $\rightarrow$  sodium oxide



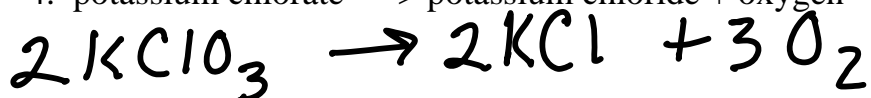
2. ammonium nitrite  $\rightarrow$  nitrogen + water



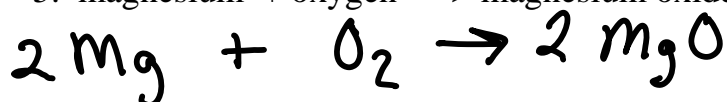
3. sodium + oxygen  $\rightarrow$  sodium peroxide



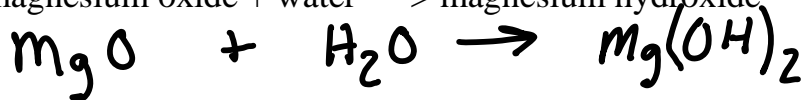
4. potassium chlorate  $\rightarrow$  potassium chloride + oxygen



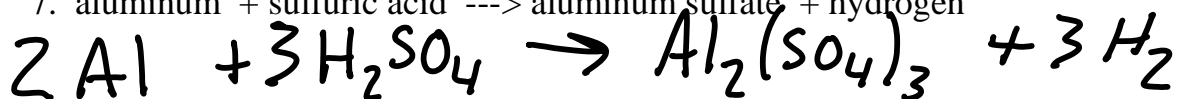
5. magnesium + oxygen  $\rightarrow$  magnesium oxide



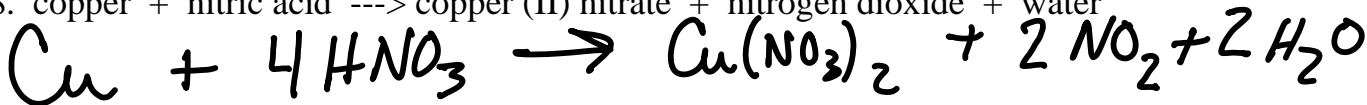
6. magnesium oxide + water  $\rightarrow$  magnesium hydroxide



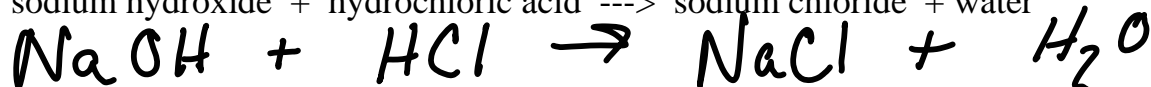
7. aluminum + sulfuric acid  $\rightarrow$  aluminum sulfate + hydrogen



8. copper + nitric acid  $\rightarrow$  copper (II) nitrate + nitrogen dioxide + water



9. sodium hydroxide + hydrochloric acid  $\rightarrow$  sodium chloride + water



10. chlorine + carbon tetrahydride  $\rightarrow$  hydrogen chloride + carbon tetrachloride

