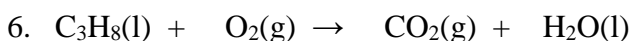
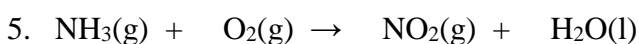
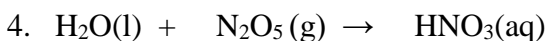
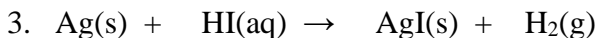
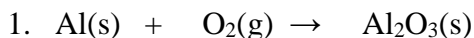


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## Workshop 6 – Writing and Balancing Equations

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Balance the following reactions. If given words, write the formulas and balance reactions in the space below the words. Remember which elements are diatomic. Include phases.



7. Aqueous sodium hydroxide and sulfuric acid react to form aqueous sodium sulfate and liquid water

8. Methane gas ( $\text{CH}_4$ ) and oxygen gas react to form carbon dioxide gas and water.

9. Solid calcium oxide and water create aqueous calcium hydroxide.

10. Solid sodium bicarbonate decomposes when heated to form solid sodium carbonate, carbon dioxide gas and liquid water.

11. Aqueous potassium sulfide and lead(II) nitrate react to produce solid lead(II) sulfide and aqueous potassium nitrate.

12. Aqueous acetic acid and potassium sulfite react to form aqueous potassium acetate, water and sulfur dioxide gas.

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Predict products and Balance the following reactions. If no reaction takes place, write NR for no reaction. Include phases.

13. Combustion reactions: *nonmetals* +  $O_2 \rightarrow$  *nonmetal oxides* ( $CO_2$ ,  $H_2O$ )

- a)  $C_7H_{16}(s) + O_2(g) \rightarrow$
- b)  $C_6H_6(l) + O_2(g) \rightarrow$
- c)  $C_4H_{10}O(l) + O_2(g) \rightarrow$
- d)  $C_7H_6O_2(s) + O_2(g) \rightarrow$

14. Double displacement reactions:  $AB + CD \rightarrow AD + CB$

- a)  $AlCl_3(aq) + Pb(NO_3)_2(aq) \rightarrow$
- b)  $HC_2H_3O_2(aq) + Ba(OH)_2(aq) \rightarrow$
- c)  $K_2CrO_4(aq) + SnF_4(aq) \rightarrow$
- d)  $Ca(HCO_3)_2(aq) + HBr(aq) \rightarrow$

15. Mixed reactions: Classify, Predict products, and Balance. Write the formulas and balance reactions in the space below the words. Identify all types of reactions for each in the margin.

- a)  $HCl(aq) + Sr(OH)_2(aq) \rightarrow$
- b)  $AlCl_3(aq) + NaNO_3(aq) \rightarrow$
- c)  $C_2H_4(g) + O_2(g) \rightarrow$
- d)  $HNO_3(aq) + Li_2SO_3(aq) \rightarrow$

16. Word reactions: Write formulas and balance the reactions.

- a) Crude gunpowders often contain a mixture of potassium nitrate ( $KNO_3$ ) and charcoal (solid carbon). When heated until a reaction occurs, a solid residue of potassium carbonate ( $K_2CO_3$ ) is produced. The explosive force of the gunpowder comes from the fact that two gases are also produced, carbon monoxide and nitrogen, which increase in volume with great force and speed.
  
- b) A method of preparing pure iron involves heating iron(III) oxide and carbon monoxide together; they react to produce solid iron and carbon dioxide gas.
  
- c) The following reaction takes place in termites as they digest wood. Solid glucose,  $C_6H_{12}O_6$ , and liquid water react to produce aqueous acetic acid ( $HC_2H_3O_2$ ), carbon dioxide, and hydrogen gas. Write a balanced chemical equation for the reaction including phases. (There are several correct answers possible, try to come up with more than one.)