

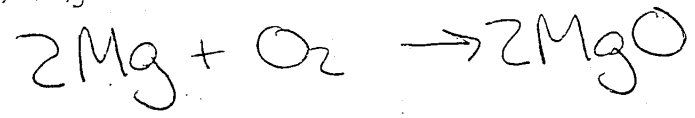
needs edits for FB \* i) & k)

Key SpB

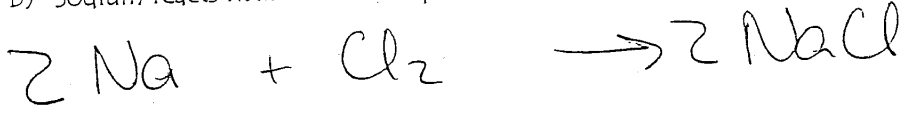
Nomenclature and Balancing Reactions Supplemental Homework includes a guest appearance by "The Mole"

1. Write and balance the following reactions.

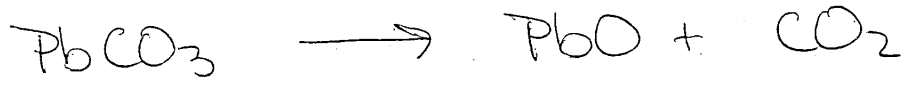
a) Magnesium reacts with oxygen to produce magnesium oxide.



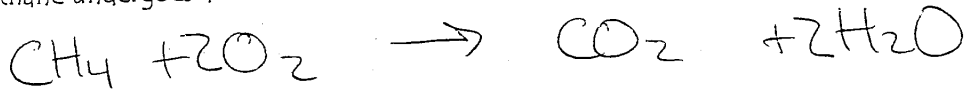
b) Sodium reacts with chlorine to produce sodium chloride.



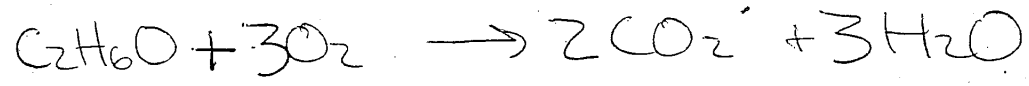
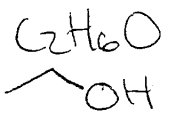
c) Lead(II) carbonate decomposes to produce lead(II) oxide and carbon dioxide.



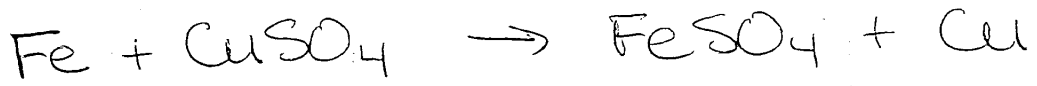
d) Methane undergoes a combustion reaction.



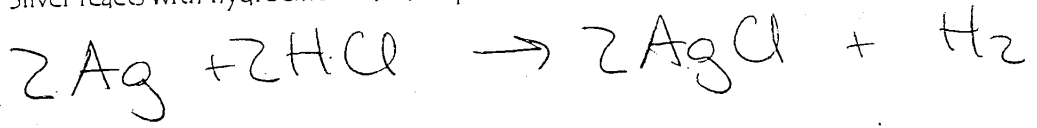
e) Ethanol undergoes a combustion reaction.



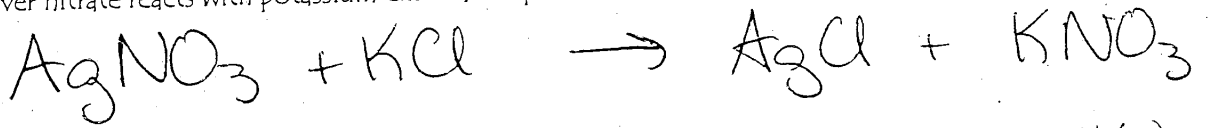
f) Iron reacts with copper(II) sulfate to produce iron(II) sulfate and copper.



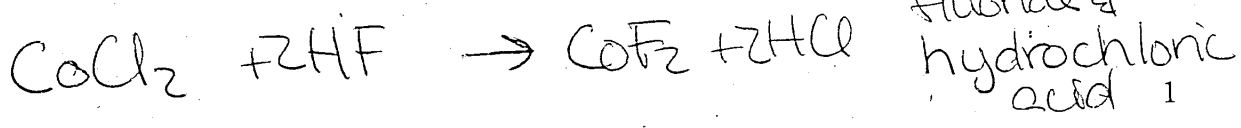
g) Silver reacts with hydrochloric acid to produce silver chloride and hydrogen.



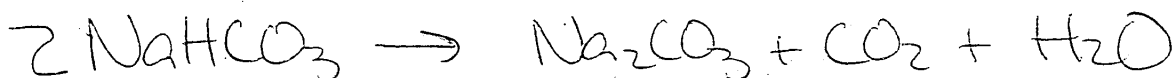
h) Silver nitrate reacts with potassium chloride to produce silver chloride and potassium nitrate.



\* i) Cobalt(II) Chloride reacts with gaseous hydrogen monofluoride to produce Cobalt(II) fluoride & hydrochloric acid



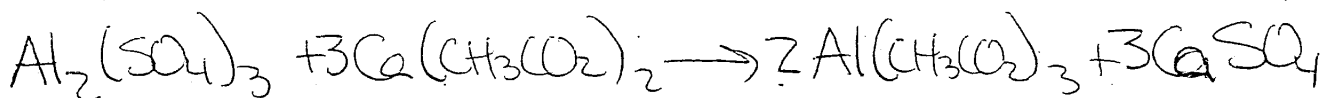
j) Solid sodium bicarbonate decomposes into solid sodium carbonate, carbon dioxide and water.



k) Lead (II) acetate reacts with potassium chloride to produce lead(II) chloride and potassium acetate.



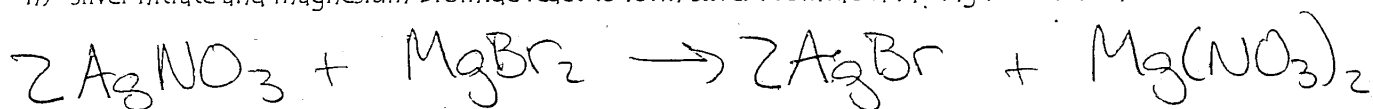
l) aluminum sulfate reacts with calcium acetate to produce aluminum acetate and calcium sulfate.



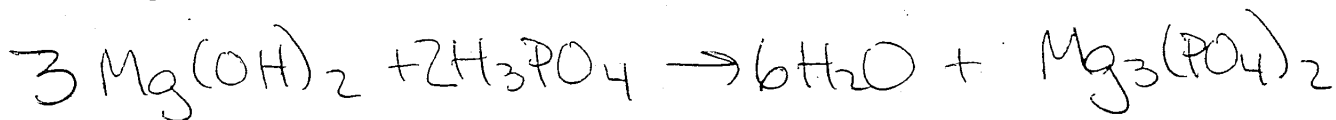
m) sodium reacts with water to produce sodium hydroxide and hydrogen.



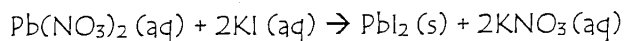
n) silver nitrate and magnesium bromide react to form silver bromide and magnesium nitrate.



o) magnesium hydroxide reacts with phosphoric acid to produce water and magnesium phosphate.



2. Write the following reaction as a complete sentence:



Lead(II) nitrate reacts with potassium iodide to produce lead(II) iodide and potassium nitrate.

\*FB edits

3. How many molecules are in 2 moles?

$$2 \times (6.02 \times 10^{23}) = 1.20 \times 10^{24} \text{ molecules}$$

4. Calculate the number of moles in 2.5 grams of potassium chloride. KCl 74.55 g/mole

$$\frac{2.5 \text{ g KCl}}{74.55 \text{ g}} \times \frac{1 \text{ mole}}{1} = 0.034 \text{ moles KCl}$$

5. How many moles of sodium <sup>are</sup> in 2 moles of sodium sulfate? Na<sub>2</sub>SO<sub>4</sub> 142.04 g/mole

$$\frac{2 \text{ mol Na}_2\text{SO}_4}{1 \text{ mol Na}_2\text{SO}_4} \times \frac{2 \text{ mole}}{1} = 4 \text{ moles Na}$$

6. Calculate the number of atoms in 2.90 grams of silver, Ag 107.87 g/mole

$$\frac{2.9 \text{ g Ag}}{107.87 \text{ g}} \times \frac{1 \text{ mole Ag}}{1} \times \frac{6.02 \times 10^{23} \text{ atoms}}{1 \text{ mol Ag}} = 1.62 \times 10^{22} \text{ Ag atoms}$$

7. How many oxygen atoms in 55.0 grams of water? H<sub>2</sub>O 18.02 g/mole

$$\frac{55.0 \text{ g H}_2\text{O}}{18.02 \text{ g}} \times \frac{1 \text{ mol H}_2\text{O}}{1} \times \frac{6.02 \times 10^{23} \text{ O atoms}}{1 \text{ mol H}_2\text{O}} = 1.84 \times 10^{24} \text{ O atoms}$$

8. How many moles of carbon are in 25 g of butane? C<sub>4</sub>H<sub>10</sub> 58.14 g/mole

$$\frac{25 \text{ g C}_4\text{H}_{10}}{58.14 \text{ g}} \times \frac{1 \text{ mol C}_4\text{H}_{10}}{1} \times \frac{4 \text{ mol C}}{1 \text{ mol C}_4\text{H}_{10}} = 1.7 \text{ moles C}$$

9. How many grams of carbon are in 25 g of butane? C<sub>4</sub>H<sub>10</sub> 58.14 g/mole

$$\frac{25 \text{ g C}_4\text{H}_{10}}{58.14 \text{ g}} \times \frac{1 \text{ mol C}_4\text{H}_{10}}{1} \times \frac{4 \text{ mol C}}{1 \text{ mol C}_4\text{H}_{10}} \times \frac{12.01 \text{ g C}}{1 \text{ mol C}} = 21 \text{ g C}$$