**NAME** _____

*Chemistry I Review*
*Stoichiometry*

**INSTRUCTIONS:** Work each problem in the space provided. You will need your pencil, calculator, and Periodic Table handout. Show your work; answers without shown work will receive *no credit.* Be sure to circle your answers.

1. Determine the number of moles in $3.75 \times 10^{24}$ molecules of Carbon dioxide.

2. How many moles are in 22.35 g of sodium chloride?

3. What is the mass of $9.22 \times 10^{24}$ molecules of potassium nitrate?

4. How many grams of iron(III) oxide can be produced from 24.12 g of iron metal?

5. How much carbon dioxide is produced by the complete combustion of 150.00 g of hexane, $C_6H_{14}$?

6. What amount of hydrogen gas is formed by the reaction of 11.38 g of zinc metal with excess hydrochloric acid?

7. How many grams of oxygen gas will be produced by the decomposition of 44.00 g of potassium chlorate into potassium chloride and oxygen gas?

8. What mass of lead (II) sulfide is formed by the reaction of 15.20 g of lead(II) nitrate with excess ammonium sulfide?

9. Oh, crud … I'm out of magnesium oxide. How many grams of magnesium metal do I need to use if I have to make 36.00 g of the oxide for a lab?

10. I forgot to record how much silver I had after a reaction (this just isn't my day). I treated the silver with nitric acid and got 16.30 g of silver nitrate. Assuming a complete reaction, how much silver did I have to start with?

$$Ag + HNO_3 \rightarrow AgNO_3 + H_2$$

11. A reaction between tin(II) nitrate and sodium carbonate produced 8.44 g of tin(II) carbonate. How much tin (II) nitrate did I have to begin with?

$$Sn(NO_3)_2 + Na_2CO_3 \rightarrow SnCO_3 + NaNO_3$$

12. Given the reaction:

$$Ti(CO_3)_2 + HCl \rightarrow TiCl_4 + CO_2 + H_2O$$

If 66.55 g of $Ti(CO_3)_2$ is reacted with HCl What How many grams of carbon dioxide that can be formed?

13. Given the reaction:

$$(NH_4)_2SO_4 + NaOH \rightarrow Na_2SO_4 + NH_3 + H_2O$$

If 0.05889 g $(NH_4)_2SO_4$ reacts with NaOH. How many grams of $Na_2SO_4$ can be formed?

14. The reaction between solid sodium and iron (III) oxide is one in a series of reactions that inflates an automobile bag.

$$Na + Fe_2O_3 \rightarrow Na_2O + Fe$$

If 85.0 g of Na are used in this reaction, determine the mass of iron that will be formed.

15. Determine the amount of $H_2O$ that will be produced from the combustion of 25.0 g of methane.