Name: _____   **Period:** _____   **Seat#:** _____

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1) What does the term limiting reagent mean?

2) What does the term excess reagent mean?

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3) How can you tell if a practice problem is a "regular" stoichiometry problem, or a "limiting" stoichiometry problem?

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4) What are the numbered "steps" for performing a limiting reagent problem?

5) Explain which unit is "key" to identifying limiting reagents. What is wrong with just using grams? Give a thoughtful and detailed explanation.

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6) Using the equation and diagram below, identify what the limiting reagent would be.

$Mg + O \rightarrow MgO$

7) Using the equation and diagram below, identify what the limiting reagent would be.

$2Na + S \rightarrow Na_2S$

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8) Explain what is wrong with the following student answer on a quiz question:

Question: Using the information below, identify what the limiting reagent is for the reaction.
_$2H_2 + O_2 \rightarrow 2H_2O$ You have 15 g of H_2, and 10 g of O_2._

There is a 2:1 ratio of H_2 to O_2 needed to perform the reaction. You only have a 1.5 : 1 ratio of H_2 to O_2, so therefore you do not have enough H_2, so it is limiting. You would have needed 20 grams of H_2 to finish the reaction.
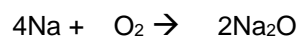
9) Identify the limiting reagent: You react 4 moles of CH_4 with 2.5 moles of O_2 in a combustion reaction.

CH_4 + $2O_2$ → CO_2 + $2H_2O$
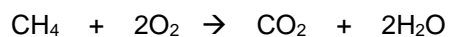
10) If you react 3 moles of sodium, with 40 grams of chlorine gas to make sodium chloride, which chemical is the limiting reagent?

11) Identify the limiting reagent: you react 46 grams of sodium with 32 grams of oxygen gas to make sodium oxide.

$4Na$ + O_2 → $2Na_2O$

12) If you react 3.5×10^{25} molecules of magnesium oxide with 7.8×10^{24} molecules of lithium hydroxide, which is the limiting reagent?

13) If you react 453 g of iron with 134 g of oxygen gas to form iron (III) oxide, which is the limiting reagent?

14) Will you have enough calcium phosphate to completely react with 75.6 grams of aluminum sulfate if you start with 2.6 moles of calcium phosphate? Show how you justify your answer.

___$Ca_3(PO_4)_2$ + _____ $Al_2(SO_4)_3$ →
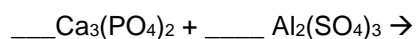
15) You react 23 grams of zinc with 25 grams of hydrochloric acid in a single replacement reaction. What is the excess reagent?