Name _____ Date _____ Class _____

11–1 Practice Problems

1. Lead will react with hydrochloric acid to produce lead chloride and hydrogen. How many moles of hydrochloric acid are needed to completely react with 0.36 mol of lead?

2. How many moles of HNO_3 will be produced when 0.51 mol of N_2O_5 reacts according to the following equation?
$$N_2O_5 + H_2O \rightarrow 2HNO_3$$

3. Carbon will react with zinc oxide to produce zinc and carbon dioxide. How many moles of carbon dioxide will be produced if 0.38 mol of ZnO is completely reacted?

4. How many moles of NaBr will be produced when 0.69 mol of bromine reacts according to the following equation?
$$Br_2 + 2NaI \rightarrow 2NaBr + I_2?$$

5. Phosphorus will react with bromine to produce phosphorus tribromide. How many moles of phosphorus tribromide will be produced if 0.78 mol of bromine is reacted?

6. How many moles of hydrogen will be produced if 0.44 mol of CaH_2 reacts according to the following equation?
$$CaH_2 + 2H_2O \rightarrow Ca(OH)_2 + 2H_2$$

7. How many moles of oxygen will be needed to react with 0.38 mol of C_3H_8 according to the following equation?
$$C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O?$$

8. Nitrogen can react with hydrogen to produce ammonia. How many moles of nitrogen will be needed to produce 0.48 mol of NH_3?

9. Iron will react with oxygen to produce Fe_2O_3. How many moles of Fe_2O_3 will be produced if 0.18 mol of Fe reacts?

10. How many moles of water will be produced if 2.35 mol of oxygen reacts according to the following equation?
$$2C_6H_6 + 15O_2 \rightarrow 12CO_2 + 6H_2O?$$

Name _____ Date _____ Class _____

11–1 Review and Reinforcement

Stoichiometry

Complete the following sentences by filling in the appropriate word or phrase from the list below. Each word or phrase may be used once, more than once, or not at all.

reactants	actual	coefficients
molar ratio	particles	subscripts
quantitative	conservation of matter	mass

1. Stoichiometry is the study of the _____ relationships that exist in chemical reactions.
2. Stoichiometry can be used to determine how much product will form from a given amount of _____.
3. The _____ in a balanced equation indicate(s) the number of particles of each substance taking place in the reaction.
4. It is possible to interpret the coefficients in a balanced chemical equation as either the number of moles or the number of _____ involved in the reaction.
5. The coefficients in an equation do not show the _____ number of moles, only the relative number involved.
6. You must determine the _____ in a balanced equation before solving any stoichiometry problem.
7. A balanced equation verifies the law of _____.

If the statement is true, write "true." If it is false, change the underlined word or words to make the statement true. Write your answer on the line provided.

_____ 8. The term stoichiometry is derived from the <u>Greek</u> words *stoicheion*, meaning element, and *metron*, meaning measure.

_____ 9. You can determine the number of moles of any substance produced in a reaction if you know the number of moles of at least <u>two</u> of the reactants.

_____ 10. The molar ratio of hydrogen to oxygen in the equation $2H_2 + O_2 \rightarrow 2H_2O$ is <u>1:2</u>.

_____ 11. The total mass of the reactants is <u>equal</u> to the total mass of the products in a chemical reaction.

_____ 12. Mole-mole problems involve conversions from moles of one substance to <u>mass</u> of another.