Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Stoichiometry Worksheet 1 – Mole-to-Mole and Mole-to-Gram Calculations

**Learning Target** Perform mole-to-mole conversions.

Directions : You must solve each of the following problems using dimensional analysis.

1. For this reaction: \_\_\_\_Al + \_\_\_\_O 2 → \_\_\_\_Al 2 O 3

a. How many moles of aluminum oxide will be formed from 17 moles of aluminum

reacting?

b. How many moles of oxygen are needed to react with 23.8 moles of aluminum?

2. For this reaction: 4 NH3 + 5 O2 → 4 NO + 6 H2O

a. How many moles of oxygen are needed to react with 3.24 moles of ammonia, NH3?

b. How many moles of water are produced from 12.8 moles of oxygen?

3. For this reaction: Fe3O4 + 4 CO → 3 Fe + 4 CO2

a. How many moles of carbon dioxide are produce from 2.87 moles of Fe3O4 ?

b. How many moles of carbon monoxide are needed to react with 8.25 moles of Fe3O4 ?

4. For this reaction: 6 PbO + O2 → 2 Pb3 O4

a. How many moles of Pb3O4 are produced from 1.25 moles of oxygen?

b. How many moles of oxygen must react with 8.75 moles of lead(II) oxide?

**Learning Target** Perform gram-to-mole conversions.

Directions : You must solve each of the following problems using dimensional analysis. EVERY

number in your work should be followed by a unit and a formula.

5. For this reaction: \_\_\_\_Al + \_\_\_\_O 2 → \_\_\_\_Al 2 O 3

a. How many moles of aluminum oxide will be formed from 12.1 grams of oxygen?

b. How many moles of oxygen are needed to react with 12.5 grams of aluminum?

6. For this Reaction: 4 NH 3 + 5 O 2 → 4 NO + 6 H 2 O

a. How many moles of oxygen are needed to react with 3.75 grams of ammonia?

b. How many moles of nitrogen monoxide are produced from 7.45 grams of oxygen?

7. For this reaction: \_\_\_\_KClO 3 → \_\_\_\_KCl + \_\_\_\_O 2

a. How many moles of potassium chloride are produced from 9.3 grams of potassium

chlorate?

b. How many moles of potassium chlorate are needed to produce 13 grams of oxygen?

8. For this reaction: \_\_\_\_Fe + \_\_\_\_S 8 → \_\_\_\_FeS

a. How many moles of iron are needed to produce 12.3 grams of iron(II) sulfide?

b. How many moles of iron(II) sulfide are produced from 4.5 g of sulfur [S 8 ]?