

Stoichiometry Worksheet 3 – Gram-to-Gram Calculations

Learning Target Students will calculate the theoretical yield in moles and grams

Textbook Section 9.2

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.

1. For this reaction: $\text{Fe}_3\text{O}_4 + 4 \text{CO} \rightarrow 3 \text{Fe} + 4 \text{CO}_2$
 - a. How many grams of iron are produced from 23.2 grams of carbon monoxide?

 - b. How many grams of carbon dioxide are produced to react with 0.945 grams of Fe_3O_4 ?

2. For this reaction: $6 \text{PbO} + \text{O}_2 \rightarrow 2 \text{Pb}_3\text{O}_4$
 - a. How many grams of Pb_3O_4 are produced from 7.85 grams of lead(II) oxide?

 - b. How many grams of lead(II) oxide must react with 1.75 grams of oxygen?

3. For this reaction: $4 \text{Al} + 3 \text{O}_2 \rightarrow 2 \text{Al}_2\text{O}_3$
 - a. How many grams of aluminum oxide will be formed from 17 grams of aluminum reacting?

 - b. How many grams of oxygen are needed to react with 12.8 grams of aluminum?

4. For this reaction: $4 \text{NH}_3 + 5 \text{O}_2 \rightarrow 4 \text{NO} + 6 \text{H}_2\text{O}$
 - a. How many grams of oxygen are needed to react with 1.24 grams of NH_3 ?

 - b. How many grams of water are produced from 7.65 grams of oxygen?

1a) 34.7 g iron

1b) 0.718 g carbon dioxide

2a) 8.04 g Pb_3O_4

2b) 73.2 g lead(II) oxide

3a) 32 g aluminum oxide

3b) 11.4 g oxygen

4a) 2.91 g oxygen

4b) 5.17 g water