



Name:

Date:

Class Period:

THE STOICHIOMETRY OF S'MORES

Student Handout

Introduction:

In this laboratory experiment, you will explore the principles of stoichiometry by building S'mores, the delicious, chocolate, marshmallow, and graham cracker treats.

Purpose:

To determine the limiting reactant in the synthesis of S'mores.

Materials:

Per Group:

- | | |
|----------------------|-----------------------|
| 1. 1 Chocolate bar | 4. Paper plate |
| 2. 6 Marshmallows | 5. Napkins |
| 3. 5 Graham crackers | 6. Electronic balance |

Procedures / Data:

The following symbols will be used for each reactant.

C = chocolate square

M = marshmallow

G = graham cracker

1. Mass and record one of each reactant.

Chocolate square (the size you wish to use on each S'more): _____ g

Marshmallow: _____ g

Graham cracker (the size you wish to use on each S'more): _____ g

2. Perform a **synthesis reaction**, thus forming a S'more. Write the balanced equation for the reaction below.

3. Cause the reaction to go to completion by forming as many of the products as you possibly can. Mass and record **ONE** of the representative products.



S'more: _____ g

4. Count and record the number of products you were able to form. _____

Post-Lab Questions:

1. Is there a relationship between the mass of a S'more and the masses of the reactants used to make it? If so, what is the relationship? What law have you studied in this course that might define this relationship?
2. A limiting reactant is the material responsible for a reaction reaching completion. In the reaction, what was the limiting reactant?
3. What reactants, if any, were in excess? Mass and record the total of each excess reactant.

Extension Questions:

1. How many S'mores could you make if you had started with 100g of each reactant?
2. What would be the limiting reactant?
3. How much of each excess reactant would result?