

Lab: S'mores Stoichiometry

Name: _____

ABSENT STUDENT DATA

Definitions: "Stoichio" means element and "metry" means the process of measuring. The mass and quantity relationships among reactants and products in a reaction are found using the process of stoichiometry.

Problem: Using different parts of stoichiometry, answer questions about building s'mores. ((YUM!))

1. Graham crackers (S) added to marshmallows (Mm) and pieces of chocolate (Or) will produce S'mores (S_2MmOr_3). **Write** and then **balance** a chemical equation for making a S'more.

2. Use the balance to determine the mass of each **part** of the S'more.
A Graham Cracker "piece" is half of a cracker. A Chocolate "piece" is one single rectangle.

Substance	Symbol	Mass
Graham Cracker	S	7.8 g/piece
Marshmallow	Mm	6.4 g/piece
Chocolate Pieces	Or	8.3 g/piece

SHOW YOUR WORK and calculate the mass of one S'more (S_2MmOr_3) below:

3. **SHOW YOUR WORK** If there are 258 grams of marshmallows in one bag, how many marshmallows are in the bag?

$$258 \text{ g Mm} \times \frac{1 \text{ Mm}}{\text{grams Mm}} =$$

4. **SHOW YOUR WORK** If an entire bar of chocolate has a mass of 45.1 grams, how many pieces of chocolate does it contain?

$$45.1 \text{ g Or} \times \frac{1 \text{ Or}}{\text{grams Or}} =$$

5. According to the balanced equation for making a S'more, write out equivalence statements (Example: 2 S = 1 Mm) for the following combinations.

Mm to S

Mm to Or

S to S'mores

Mm to S'mores

Or to S'mores

6. **SHOW YOUR WORK** If you were given 30.0 grams of Graham Crackers and an excess of all other ingredients, how many S'mores would you be able to make?

$$30.0 \text{ g S} \times \frac{1 \text{ S}}{\text{grams S}} \times \frac{\text{S}_2\text{MmOr}_3}{\text{S}} =$$

7. **SHOW YOUR WORK** If you were given 50.0 grams of Chocolate pieces, how many S'mores could you make?

8. **SHOW YOUR WORK** If you made 300.0 grams of S'mores, determine how many grams chocolate pieces would be required.

9. **SHOW YOUR WORK** If you are given 16.0 grams of graham crackers, 25 grams of chocolate pieces, and 8 grams of marshmallows, how many s'mores could you make?