

Name _____ Date _____ Period _____

S'mores and Stoichiometry

As discussed in class, stoichiometry is looking at the amount of reactants or products in a reaction. When studying stoichiometry, using examples of food is an excellent way to gain an understanding at how this works. For this activity, we will be making s'mores to understand how stoichiometry works with chemical reactions.

Use the following equation (stoichiometry requires balanced equations!!) as an example of how one s'more is made.



Preactivity questions:

- How many S'mores can you make from these combinations?
 - $2 \text{ Gc} + 1 \text{ M} + 4 \text{ Cp} = \underline{\hspace{2cm}} \text{ Gc}_2\text{MCp}_4$
 - $4 \text{ Gc} + 2 \text{ M} + 8 \text{ Cp} = \underline{\hspace{2cm}} \text{ Gc}_2\text{MCp}_4$
 - $10 \text{ Gc} + 5 \text{ M} + 20 \text{ Cp} = \underline{\hspace{2cm}} \text{ Gc}_2\text{MCp}_4$
- Say that each graham cracker weighs 7 g, each marshmallow weighs 3 mg, and each chocolate piece weighs .005 kg. What is the percentage of each ingredient in a final s'more?
- If you are given 30 g in chocolate pieces, what percentage of the chocolate would be in excess?

Answer the following questions with your partner and then come show them to Mr. Foland before moving on.

- Write a balanced chemical equation for someone who needs to make 47 s'mores.

2. Say Mr. Foland only has 67 chocolate pieces and a large abundance of all the other ingredients required to make s'mores. How many s'mores in total would Mr. Foland be able to make based off the amount of chocolate?

3. What is the balanced chemical equation for the problem above?

4. Would there be any excess chocolate pieces? Would this allow another s'more to be made in its entirety? Why is this important in regards to chemical reactions?

5. Use the following Periodic Table of Deliciousness to answer the following questions.

Periodic Table of Deliciousness	
1 M .00004	2 Cp .05
3 Gc .7	

- a. If you have 23 grams of marshmallow, what will the mass be of your final s'more?

- b. If you have 20 grams of chocolate, how many particles of graham crackers would you have?

- c. If you have 120 grams in s'mores, what was the mass of marshmallow required to make this?

Mr. Foland's initials _____

NOW YOU CAN MAKE AND EAT YOUR S'MORE!!!!

Post Activity Questions: Once you've enjoyed your s'more and seen stoichiometry principles in practice, answer the following questions.

1. Why would big chemical companies need to use stoichiometry when producing their product?

2. Write the chemical equation for your ideal s'more below!!!