Name: _____ **Date:** _____

Answer Key: Bakery Batch Balance: 4th Grade Stoichiometry Quiz

Recipe ratios, ingredient measuring, and batch prediction. This reinforcement activity helps students apply balance concepts to a relatable culinary chemistry context.

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1. If one giant cookie recipe requires 2 scoops of sugar and 3 scoops of flour, how many scoops of flour do you need if you use 4 scoops of sugar?

Answer: C) 6 scoops

Since the sugar doubled (from 2 to 4), the flour must also double (from 3 to 6) to keep the recipe balanced.

2. Scientists use a special counting unit called a _____ to group huge numbers of tiny atoms together, much like a baker uses a 'dozen' to group 12 eggs.

Answer: B) Mole

A mole is a fundamental unit in chemistry used to measure the amount of a substance, representing 6.022 x 10^23 particles.

3. In a chemical reaction, the total weight of the ingredients you start with is the same as the total weight of the finished product.

Answer: A) True

This is the Law of Conservation of Mass; matter is not created or destroyed, only rearranged.

4. Imagine a 'Smore' is made of 1 Graham Cracker, 1 Marshmallow, and 2 Chocolate squares. If you have 5 Marshmallows and plenty of everything else, how many Smores can you make?

Answer: B) 5 Smores

Because each Smore requires exactly 1 marshmallow, the number of marshmallows limits the total number of Smores to 5.

5. The study of the relationship between the amounts of reactants and products in a chemical reaction is called _____.

Answer: B) Stoichiometry

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Stoichiometry is the section of chemistry that involves calculating the quantities of substances involved in chemical reactions.

6. Different atoms, like Oxygen and Hydrogen, have different weights even if you have one 'mole' of each.

Answer: A) True

Just as a dozen feathers weigh less than a dozen bricks, a mole of light atoms weighs less than a mole of heavy atoms.

7. In the 'reaction' to build a toy car (4 Wheels + 1 Body = 1 Car), what happens if you have 8 wheels and only 1 body?

Answer: B) You can make 1 car and have 4 wheels left

The body is the 'limiting reactant.' You only have enough to make one car, leaving the extra wheels unused.

8. To find out the mass of one mole of a substance, scientists look at the _____ mass on the periodic table.

Answer: A) Molar

Molar mass is the weight in grams of one mole of that specific element or compound.

9. If a chemical recipe says you need a ratio of 1:2, it means for every 1 part of the first thing, you always need 2 parts of the second thing.

Answer: A) True

Ratios describe the proportional relationship between two amounts, which is the basis of stoichiometry.

10. Which of these is the best example of a 'ratio' in everyday life?

Answer: B) Using 1 cup of milk for every 2 cups of cereal

An amount of one thing compared to another (1:2) is a perfect example of a mathematical and chemical ratio.