Name: _____ **Date:** _____

Answer Key: Chef Atom's Recipe Rescue: A 5th Grade Mole Quest

Students count giant 'batches' of atoms and balance snack-themed reactions to understand how chemical recipes work in the real world.

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1. In chemistry, a 'mole' is most similar to which of these everyday grouping words?

Answer: A) A dozen (12 items)

Just as a 'dozen' always means 12 things, a 'mole' is a specific number used to group a very large amount of tiny atoms together.

2. True or False: A mole of heavy gold atoms and a mole of light helium atoms contain the exact same number of particles.

Answer: A) True

A mole is a set count (Avogadro's number). Even if the atoms have different weights, one mole always contains the same amount of 'pieces'.

3. If a cookie recipe (equation) says you need 2 cups of sugar for every 1 bag of flour, the ratio is _____.

Answer: B) 2 to 1

Stoichiometry is like a recipe ratio; if you have 2 of one ingredient for 1 of another, the ratio is 2:1.

4. Why do scientists use the 'mole' instead of just counting individual atoms one by one?

Answer: B) Because atoms are too tiny and there are too many of them

Atoms are so small that even a tiny drop of water has billions of them. The mole helps scientists talk about these huge numbers easily.

5. True or False: Stoichiometry is the study of the amounts of materials used and made in chemical reactions.

Answer: A) True

Stoichiometry is essentially 'chemical math' that helps us predict how much stuff we need for an experiment.

6. If 1 balloon requires 2 breaths of air to fill, how many breaths do you need for 3 balloons? _____

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Answer: D) 6 breaths

Using stoichiometric thinking, if the ratio is 2 per balloon, then 3 balloons x 2 breaths = 6 breaths total.

7. What happens to the total weight of the ingredients after a chemical reaction 'recipe' is finished?

Answer: A) It stays the same

The Law of Conservation of Mass says that in a reaction, the total weight of what you start with equals the weight of what you end with.

8. In the 'reaction' 2 Wheels + 1 Frame = 1 Bicycle, the '2' and '1' are called _____.

Answer: B) Coefficients (Numbers that show amounts)

Coefficients are the large numbers in front of chemical symbols that tell us how many units or 'moles' of each thing we have.

9. True or False: You can use a kitchen scale to measure the mass of a mole of a substance.

Answer: A) True

Since we know the 'molar mass' of different elements, we can weigh out a specific amount in grams to get exactly one mole of atoms.

10. If a chemist has 1 mole of Silver and 1 mole of Gold, what do they have an equal amount of?

Answer: B) Equal number of atoms

The mole always refers to the number of pieces. Even if gold atoms are heavier than silver, one mole of each contains the same number of atoms.