Name: _____ **Date:** _____

A Recipe for Galactic Goo: 4th Grade Stoichiometry Squad

Calculate secret ingredient ratios and predict chemical yields to save a space station's experimental laboratory from an overflowing foam crisis.

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1. The 'Cosmic Chef' needs to make Neon Noodles. The recipe says: 2 cups of Blue Dust + 1 cup of Sparkle Water = 2 bowls of Noodles. If the Chef has 6 cups of Blue Dust and plenty of water, how many bowls can he make?

A. 2 bowls
B. 4 bowls
C. 6 bowls
D. 12 bowls

2. In chemistry, we use a giant number called a 'Mole' to count tiny particles. If 1 Mole of 'Zargon Gas' weighs 20 grams, then 2 Moles of 'Zargon Gas' would weigh _____ grams.

A. 10 grams
B. 20 grams
C. 40 grams
D. 80 grams

3. True or False: In a chemical reaction, if you start with 100 grams of 'Star Glitter,' you must end up with exactly 100 grams of total product because atoms cannot be destroyed.

A. True
B. False

4. To build a 'Moon Rover' molecule, you need 3 Wheels and 1 Crate. If you have 12 Wheels and 10 Crates, which item will you run out of first?

A. The Wheels
B. The Crates
C. Neither, they finish at the same time
D. The Moon Rover

5. Scientists use the 'Molar Mass' to turn Grams into Moles. If a substance has a Molar Mass of 5g/mol, how many Moles are in a 25-gram sample?

A. 1 Mole
B. 5 Moles
C. 20 Moles
D. 125 Moles

6. A reaction requires a 1:3 ratio of Iron to Oxygen. If a scientist uses 5 atoms of Iron, how many atoms of Oxygen does she need to complete the reaction perfectly?

Name: _____ **Date:** _____

A. 3 atoms
B. 5 atoms
C. 15 atoms
D. 8 atoms

7. True or False: A 'Mole' is a specific number (Avogadro's Number) used because atoms are too small to count one by one.

A. True
B. False

8. Imagine a reaction: 4A + 1B -> 2C. If you want to create 10 units of 'C', how many units of 'B' must you start with?

A. 2 units
B. 5 units
C. 10 units
D. 20 units

9. If the molar mass of 'Bubbly-on' is 10g/mol and the molar mass of 'Glow-ite' is 30g/mol, which statement is true about 1 Mole of each?

A. They have the same number of particles, but Glow-ite is heavier.
B. Glow-ite has more particles because it is heavier.
C. Bubbly-on is heavier because it has a smaller molar mass.
D. They have different numbers of particles but the same mass.

10. True or False: Stoichiometry is like a math 'map' that tells chemists exactly how much of each ingredient they need to avoid wasting materials.

A. True
B. False