STOICHIOMETRY: GRAMS TO GRAMS NOTES

**Vocabulary:**

*Stoichiometry***-** Greek,"stoiechion" meaning "element," and "metron" meaning "to measure.” The process of calculating substance quantities in a reaction using the balanced equation.

*Balanced Equation***-** An equation that upholds mass conservation and equal element counts on both sides of an equation.

*Coefficient***-** a whole number put before a formula in a chemical equation to achieve equilibrium.

*Conversion factor***-** a numeric ratio of equal measurements used to convert quantities between different units.

*Moles(mol)***-** the quantity of an element or compound containing 6.02 x 1023(Avagadro’s number) particles (ex. atoms, ions, etc.) of that element/compound.

*Molar (Molecular) Mass***-**the weight (in grams) of a single mole of particles (atoms, ions, or molecules) of an element/compound.

# Steps:

1. \_\_\_\_\_\_\_\_\_ the equation
2. Convert grams A given in the problem to \_\_\_\_\_\_\_ by dividing by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the periodic table.
3. Determine the \_\_\_\_\_\_to \_\_\_\_\_\_ ratio between A and B.
4. Convert moles of B to \_\_\_\_\_\_\_\_\_ by multiplying the \_\_\_\_\_\_\_ \_\_\_\_\_\_\_of B.
5. \_\_\_\_\_\_\_\_\_\_\_ across, \_\_\_\_\_\_\_\_\_\_\_\_\_ bottom.

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**ketzbook’s Stoichiometry Tricks Video:**

*Problem:* How many grams of carbon dioxide are produced when 2800 grams of octane are burned in excess air?

1. Balance reaction:

\_\_\_C₄H18 + \_\_\_O₂ → \_\_\_CO₂ + \_\_\_H₂O

1. Mass of A(C₄H18) given: \_\_\_\_\_\_\_\_
2. Molar Mass of A(C₄H18): \_\_\_\_\_\_\_\_
3. Mole to Mole Ratio of A and B \_\_\_\_\_\_\_\_\_\_\_\_\_
4. Molar Mass of B(CO₂): \_\_\_\_\_\_\_\_
5. Use the given information to solve the problem:

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1. Answer: \_\_\_\_\_\_\_\_\_\_

**Practice Problem:**

*Problem:* If 14 grams of H2 and excess O2 react to produce water. How many grams of H2O are produced?

1. Balance the equation:

\_\_\_H2 +\_\_\_\_ O2 ->\_\_\_ H2O

1. Determine mass A:\_\_\_\_\_
2. Convert mass A into 1 mol A:\_\_\_\_\_
3. Determine the mole-to-mole ratio:
4. 2 moles C₄H₁₀ require 26 moles O₂
5. Using the given information to solve the problem:

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7. Answer: \_\_\_\_\_\_\_\_\_

*Adapted from:*

*Foundation, C.-12. (n.d.). 12 foundation. CK. https://flexbooks.ck12.org/cbook/ck-12-chemistry-flexbook-2.0/section/12.1/primary/lesson/everyday-stoichiometry-chem/*

*Foundation, C.-12. (n.d.-a). 12 foundation. CK. https://flexbooks.ck12.org/cbook/ck-12-chemistry-flexbook-2.0/section/10.4/primary/lesson/conversions-between-moles-and-mass-chem/*

*Foundation, C.-12. (n.d.-a). 12 foundation. CK. https://flexbooks.ck12.org/cbook/ck-12-chemistry-flexbook-2.0/section/10.2/primary/lesson/conversions-between-moles-and-atoms-chem/*