Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ College: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

**The Law of Conservation of Mass (SPI.9.11)**

**Objectives:**

By the end of class, I will be able to:

* Define the law of conservation of mass.
* Calculate the mass of the products given the mass of the reactants or vice-versa.

**KEY POINTS:**

1. **According to the Law of Conservation of Mass atoms are not \_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **R.E.P means Mass of \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ Mass of \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Check for Understanding:**

**If the total mass of the reactants is 88 grams, what is the total mass of the products?**

**\_\_\_\_\_\_**

**Example 2:**

**\_\_\_\_ grams reactant L + 2 grams reactant M → 8 grams product N**

**Example 3:**

**40 g of calcium reacts with 71 g of chlorine to produce \_\_\_\_\_ g of calcium chloride.**

**“We Own This” (Guided Practice):**

1. \_\_\_\_\_ g of potassium reacts with 20 g of oxygen to produce 50 g of potassium oxide.
2. Re-Write Equation: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_
3. Solve for X:
4. 1 grams reactant A + 10 grams reactant B → \_\_\_\_\_\_ grams product C
5. Equation: \_\_\_\_\_ + \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_
6. Solve for X:
7. 15 g of lithium reaction with \_\_\_\_\_ g sulfur to produce 45 g of lithium sulfide.
8. Equation:
9. Solve for X:
10. 3 grams reactant W + \_\_\_\_ grams reactant X → 2 grams product Y + 10 grams product Z
11. Equation:
12. Solve for X:

**“I Own This” (Independent Practice):**

1. 1 grams reactant X + 10 grams reactant Y → \_\_\_\_\_\_ grams product Z
2. 6 grams reactant E + \_\_\_\_ grams reactant F → 2 grams product G + 10 grams product H
3. Burning 2 kilograms of wood leaves 1 kilogram of ash and \_\_\_\_ grams of carbon dioxide gas.

* How did you know how much carbon dioxide would be produced?

1. Combining 4 grams of oxygen and 8 grams of iron to produce \_\_\_ grams of iron oxide

1. Fred mixed 12 grams of Hershey’s chocolate into a cup that had 35 grams of milk in it. He then put a lid on the cup and shook it until the chocolate was completely mixed with the milk. What is the mass of the chocolate milk?
2. A chemist mixed 23 grams of hydrofluoric acid with 17 grams of mossy zinc. The mossy zinc disintegrated in the hydrofluoric acid. This all happened in a sealed beaker. What was the mass of the products left in the beaker?

**Part D**: Determine if each chemical reaction illustrates the law of conservation of mass. Circle YES or NO and show your work.

1. 3 grams reactant A + 3 grams reactant B 🡪 3 grams product C YES / NO
2. 12 grams reactant K + 49 grams reactant L 🡪 61 grams product M YES / NO
3. 63 grams reactant E + 59 grams reactant F 🡪 4 grams product G YES / NO
4. 436.1 grams reactant U + 21.8 grams reactant V 🡪 457.9 g product W YES / NO

10. *Find the missing mass in each equation.*

|  |  |
| --- | --- |
| **1.** 2 H2O2 🡪 2 H2O + O2  30 g🡪? g + 15 g | **2.** CaCO3 🡪 CaO + CO2  ? g 🡪 300 g + 38 g |
| **3.** 2 NaCl + Ca(OH)2 🡪 CaCl2 + 2 NaOH  ? g + 20 g 🡪 100 g + 40 g | **4.** 2 Mg + O2 🡪 2MgO  ? g + 17.3g 🡪 25.8 g |
| **5.** Sn + 2HFl 🡪 SnFL­2­ + H2  7 g + 86 g 🡪 70 g + ? g | **6.** SnO2 + 2H2 🡪 Sn + H2O  2.75 g + ? g 🡪 1.30 g + 5.05 g |