

Chemistry Bell Work, February 26- Feb 27

ACT Prep, Mass & Change 3, System
(closed & open), Conservation of
Mass,

Bell Work, Monday , 2/26/18, 4 questions



1. What is a system?

The thing you are experimenting with including the container.
When creating a model, a system is the thing or things you are representing.

2. Define “open system”?

Stuff can enter and exit the system.

3. Define closed system.

Nothing can enter or exit the system.

4. State the law of Conservation of Mass based on your lab result.

COM: If nothing enters or leaves the system, the mass of the system remains the same, despite changes in its appearance.

If matter is neither created nor destroyed during a chemical reaction, the mass of a closed system should remain constant during any chemical process.

“In a closed system, whatever amount of mass you start with, that’s what you end up with.”

1. For the chemical reaction $X + Y \rightarrow Z$, how much product will result from mixing 100 grams of X with 50 grams of Y?

The law of Conservation of Mass (COM) says grams of reactants = grams of product

$$100 \text{ g of X} + 50 \text{ g of Y} = \text{g of Z}$$

$$100 \text{ g} + 50 \text{ g} = 150 \text{ g} \quad 150 \text{ g of Z}$$

grams reactants = 150g, grams of product = 150g

2. In the chemical reaction $M + N \rightarrow P$

25 grams of P are produced. If there was originally 10 grams of M, how many grams of N did you start with?

$$10 \text{ g of M} + ? \text{ g of N} = 25 \text{ g of P}$$

$$\text{g of N} = 25 \text{ g P} - 10 \text{ g M}$$

$$\text{g of N} = 15 \text{ g}$$

grams reactants = 25 g, grams of product = 25 g



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3. Steel wool is composed mostly of iron ($\approx 99\%$). Explain what happened to the steel wool when heated that resulted in a mass increase.

Oxygen particles were added to the steel wool.

4. Is the mass increase the result of a physical or chemical change? Justify your answer.

The change was a chemical change because the iron that makes up the steel wool and the a chemical reaction to form iron oxide, known as rust, thus forming a new substance. The production of a new substance is a chemical change.