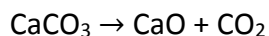# Answer on Question #65218 - Chemistry - General Chemistry

Question: 10g of cacoz calcium trioxo carbonate of heating gives 4.4g and 5.6g. show the observation are in agreement with the law of conservation of mass

Solution:

Calcium carbonate ($CaCO_3$) decomposes when heated:

$CaCO_3 \rightarrow CaO + CO_2$

M ($CaCO_3$) = 100 g · mol^{-1};

M (CaO) = 56 g · mol^{-1};

M (CO_2) = 44 g · mol^{-1};

Knowing mass of $CaCO_3$ we can find a number of substances calcium carbonate:

$$n(CaCO_3) = \frac{m}{M} = \frac{10}{100} = 0.1 \; mol$$

For reaction equation find a number of substances the reaction products:

n (CaO) = n (CO_2) = n ($CaCO_3$) = 0.1 mol

Knowing the number of substances products find their weight:

$$m(CaO) = n \cdot M = 0.1 \cdot 56 = 5.6 \; g$$
$$m(CO_2) = n \cdot M = 0.1 \cdot 44 = 4.4 \; g$$

Thus, by heating 10 g of calcium carbonate produced 4.4 grams of carbon dioxide and 5.6 g of calcium oxide that expected from the law of conservation of mass (mass (weight) of substances that react always equal to the mass (weight) of substances that result from reaction).

Answer: *m* (CaO) = 5.6 g and *m* (CO_2) = 4.4 g.