Name : _____

Date : _____

STOICHIOMETRY MOLAR MASS WORKSHEET

Answer the following questions.

1. Here is an unbalanced equation depicting the formation of carbon dioxide (CO_2) as a result of the combustion of Carbon Monoxide (CO):

$$CO\ (g) + O_2\ (g) \rightarrow CO_2\ (g)$$

How much CO is needed to produce 0.69 g of CO_2?

2. How much NaCl is produced (in grams) when Cl_2 reacts with 0.29 g of NaI? The unbalanced equation is provided below:

$$NaI\ (s) + Cl_2\ (g) \rightarrow NaCl\ (s) + I_2\ (g)$$

3. Determine how much $Ca(OH)_2$ is produced when CaC_2 reacts with 0.64 grams of water, as per the following balanced chemical equation:

$$CaC_2\ (s) + 2\ H_2O\ (l) \rightarrow Ca(OH)_2\ (aq) + C_2H_2\ (g)$$

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Answers

1. Here is an unbalanced equation depicting the formation of carbon dioxide (CO_2) as a result of the combustion of Carbon Monoxide (CO):

$$CO\ (g) + O_2\ (g) \rightarrow CO_2\ (g)$$

How much CO is needed to produce 0.69 g of CO_2?

Firstly we need to balance the equation provided to us. To get the balanced equation, we will multiply CO and CO_2 by 2, resulting in

$$2CO\ (g) + O_2\ (g) \rightarrow 2CO_2\ (g)$$

The amount of CO needed to produce 0.69 g of CO_2 = (28/44) x 0.69 = 0.439 g

2. How much NaCl is produced (in grams) when Cl_2 reacts with 0.29 g of NaI? The unbalanced equation is provided below:

$$NaI\ (s) + Cl_2\ (g) \rightarrow NaCl\ (s) + I_2\ (g)$$

Let's balance the equation given. To get the balanced equation, we need to multiply NaI and NaCl by 2, resulting in

$$2NaI\ (s) + Cl_2\ (g) \rightarrow 2NaCl\ (s) + I_2\ (g)$$

The amount of NaCl produced by 0.29 g of NaI = (58.44/149.89) x 0.29 = 0.113 g

3. Determine how much $Ca(OH)_2$ is produced when CaC_2 reacts with 0.64 grams of water, as per the following balanced chemical equation:

$$CaC_2\ (s) + 2\ H_2O\ (l) \rightarrow Ca(OH)_2\ (aq) + C_2H_2\ (g)$$

As the equation is already balanced, we can directly calculate the amount of Ca(OH)2 produced in this reaction.

So, when 0.64 grams of water is added to CaC_2, the amount of $Ca(OH)_2$ produced is = (74.093/36) x 0.64 = 1.317 g