

Name : _____ Date : _____



Stoichiometry Worksheet (Mass to Mass)



1. In the combustion of 54.5 g of butane (C_4H_{10}), how many grams of CO_2 are produced? Write and balance the equation before solving.

2. Consider the following reaction: $2 KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2 KNO_3$

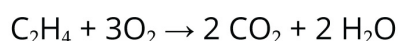
a. Calculate the mass of PbI_2 produced by reacting 30 g KI.

b. What mass of $Pb(NO_3)_2$ is required to make 50.69 g of KNO_3 ?

3. Write and balance the single replacement reaction between aluminum and zinc chloride.

What is the combined mass of the products when 3 g of zinc chloride react?

4. In the following reaction:



How much (in grams) water will be produced if you start with 65 grams of ethylene (C_2H_4)?

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Stoichiometry Worksheet (Mass to Mass)



1. In the combustion of 54.5 g of butane (C_4H_6), how many grams of CO_2 are produced? Write and balance the equation before solving.



$$54.5 \text{ g } C_4H_6 \times \frac{1 \text{ mol } C_4H_6}{54 \text{ g } C_4H_6} \times \frac{8 \text{ mol } CO_2}{2 \text{ mol } C_4H_6} \times \frac{44 \text{ g } CO_2}{1 \text{ mol } CO_2} = 178 \text{ g } CO_2$$

2. Consider the following reaction: $2 KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2 KNO_3$

a. Calculate the mass of PbI_2 produced by reacting 30 g KI .

$$30 \text{ g } KI \times \frac{1 \text{ mol } KI}{166 \text{ g } KI} \times \frac{1 \text{ mol } PbI_2}{2 \text{ mol } KI} \times \frac{461 \text{ g } PbI_2}{1 \text{ mol } PbI_2} = 41.7 \text{ g } PbI_2$$

b. What mass of $Pb(NO_3)_2$ is required to make 50.69 g of KNO_3 ?

$$50.69 \text{ g } KNO_3 \times \frac{1 \text{ mol } KNO_3}{101.1 \text{ g } KNO_3} \times \frac{1 \text{ mol } Pb(NO_3)_2}{2 \text{ mol } KNO_3} \times \frac{331.2 \text{ g } Pb(NO_3)_2}{1 \text{ mol } Pb(NO_3)_2} = 83.03 \text{ g } Pb(NO_3)_2$$

3. Write and balance the single replacement reaction between aluminum and zinc chloride.



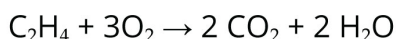
What is the combined mass of the products when 3 g of zinc chloride react?

$$3 \text{ g } ZnCl_2 \times \frac{1 \text{ mol } ZnCl_2}{136.4 \text{ g } ZnCl_2} \times \frac{2 \text{ mol } AlCl_3}{3 \text{ mol } ZnCl_2} \times \frac{133.5 \text{ g } AlCl_3}{1 \text{ mol } AlCl_3} = 2 \text{ g } AlCl_3$$

$$3 \text{ g } ZnCl_2 \times \frac{1 \text{ mol } ZnCl_2}{136.4 \text{ g } ZnCl_2} \times \frac{3 \text{ mol } Zn}{3 \text{ mol } ZnCl_2} \times \frac{65.4 \text{ g } Zn}{1 \text{ mol } Zn} = 1.4 \text{ g } Zn$$

Combined mass: $2 \text{ g} + 1.4 \text{ g} = 3.4 \text{ g}$

4. In the following reaction:



How much (in grams) water will be produced if you start with 65 grams of ethylene (C_2H_4)?

$$65 \text{ g } C_2H_4 \times \frac{1 \text{ mol } C_2H_4}{28 \text{ g } C_2H_4} \times \frac{2 \text{ mol } H_2O}{1 \text{ mol } C_2H_4} \times \frac{18 \text{ g } H_2O}{1 \text{ mol } H_2O} = 83.5 \text{ g } H_2O$$