STOICHIOMETRY
PRACTICE WORKSHEET

1.The combustion of a sample of butane, C_4H_{10} (lighter fluid), produced 2.46 grams of water.

$$2\ C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O$$

(a) How many moles of water formed?

(b) How many moles of butane burned?

(c) How many grams of butane burned?

(d) How much oxygen was used up in moles?

(e) How much oxygen was used up in grams?

2.Using the following equation:

$$Pb(SO_4)_2 + 4\ LiNO_3 \rightarrow Pb(NO_3)_4 + 2\ Li_2SO_4$$

How much(in grams) lithium nitrate will be needed to make 250 grams of lithium sulfate, assuming you have enough lead (IV) sulfate to react?

3. Using the following equation:

$$Fe_2O_3 + 3\ H_2 \rightarrow 2\ Fe + 3\ H_2O$$

Calculate how many grams of iron can be made from 16.5 grams of Fe_2O_3.

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Answers

1.The combustion of a sample of butane, C_4H_{10} (lighter fluid), produced 2.46 grams of water.

$$2\ C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O$$

(a) How many moles of water formed?

2.46 g H_2O x (1 mol H_2O/18 g H_2O) = 0.137 mol H_2O

(b) How many moles of butane burned?

0.137 mol H_2O x (2 mol C_4H_{10}/10 mol H_2O) = 0.027 mol C_4H_{10}

(c) How many grams of butane burned?

0.027 mol C_4H_{10} x (58.12 g C_4H_{10}/1 mol C_4H_{10}) = 7.94 g C_4H_{10}

(d) How much oxygen was used up in moles?

0.137 mol H_2O x (13 mol O_2/10 mol H_2O) = 0.1781 mol O_2

(e) How much oxygen was used up in grams?

0.1781 mol O_2 x (16 g O_2/1 mol O_2) = 2.85 g O_2

2.Using the following equation:

$$Pb(SO_4)_2 + 4\ LiNO_3 \rightarrow Pb(NO_3)_4 + 2\ Li_2SO_4$$

How much(in grams) lithium nitrate will be needed to make 250 grams of lithium sulfate, assuming you have enough lead (IV) sulfate to react?

250 g Li_2SO_4 x (1 mol Li_2SO_4/110 g Li_2SO_4) x (4 mol $LiNO_3$/2 mol Li_2SO_4) x (69 g $LiNO_3$/1 mol $LiNO_3$) = 313.6 g

3. Using the following equation:

$$Fe_2O_3 + 3\ H_2 \rightarrow 2\ Fe + 3\ H_2O$$

Calculate how many grams of iron can be made from 16.5 grams of Fe_2O_3.

16.5 g Fe_2O_3 x (1 mol Fe_2O_3/159.7 g Fe_2O_3) x (2 mol Fe/1 mol Fe_2O_3) x (55.8 g Fe/1 mol Fe) = 11.5 g Fe