

Name: _____ Date: _____
 1. Write the complete, balanced, chemical equation for the combustion of methane, ethane, propane and butane. Be sure to give the correct state of the products.
 a) methane

$$\text{CH}_4(g) + 2\text{O}_2(g) \rightarrow \text{CO}_2(g) + 2\text{H}_2\text{O}(l)$$

$$m = \frac{1000g}{16.04g/mol} = 62.31 \text{ mol}$$

$$m = ?$$
 b) ethane

$$2\text{C}_2\text{H}_6(g) + 7\text{O}_2(g) \rightarrow 4\text{CO}_2(g) + 6\text{H}_2\text{O}(l)$$

$$m = 1000g$$

$$m = ?$$

2. Calculate the mass of CO_2 produced from the combustion of 1000 g of methane.
 a) moles of CH_4

$$n = \frac{m}{M} = \frac{1000g}{16.04g/mol} = 62.31 \text{ mol}$$
 b) moles of CO_2

$$62.31 \text{ mol} \cdot \frac{1}{1} = 62.31 \text{ mol}$$
 c) mass of CO_2

$$m = n \cdot M = 62.31 \text{ mol} \cdot 44.01g/mol = 2742g$$

3. Calculate the mass of CO_2 produced from the combustion of 1000 g of ethane.
 a) moles ethane

$$n = \frac{m}{M} = \frac{1000g}{30.07g/mol} = 33.26 \text{ mol}$$
 b) moles CO_2

$$33.26 \text{ mol} \cdot \frac{4}{2} = 66.52 \text{ mol}$$
 c) mass CO_2

$$m = n \cdot M = 66.52 \text{ mol} \cdot 44.01g/mol = 2928g$$

Complete: c, d, e, f + # 3

Feb 3-3:59 PM