Answer on Question #70884 - Chemistry - Other

Question:
one type of anaerobic respiration converts glucose to ethanol and carbon dioxide. if the molecular weight of glucose is 180g/mol and the molecular mass of ethanol is 50g/mol. how many grams of carbon dioxide are produced when 1mol of glucose is digested

Solution:
Let's write the reaction equation:

$$C_6H_{12}O_6 \rightarrow 2CO_2 + 2C_2H_5OH.$$

As one can see, 1 mole of glucose is needed to produce 2 moles of carbon dioxide:

$$\frac{n(C_6H_{12}O_6)}{1} = \frac{n(CO_2)}{2};\ n(CO_2) = 2 \cdot n(C_6H_{12}O_6).$$

The mass of carbon dioxide is the product of the number of the moles and molar mass:

$$m(CO_2) = \ n(CO_2) \cdot M(CO_2) = 2\ (mol) \cdot 44.01\ (g\ mol^{-1}) = 88\ g$$

Answer: 88 g