CHEMISTRY 11 STOICHIOMETRY SHEET #3

For the questions below, you must first come up with a balanced chemical equation. This must be shown in your answer. Answer on separate paper showing all work.

1. Hydrogen peroxide, H_2O_2, spontaneously breaks down into water and oxygen gas. What mass of hydrogen peroxide will be required to produce 32.0 grams of oxygen gas?

2. Clean burning of coal (elemental carbon) will, under the right conditions, produce only carbon dioxide. What mass of coal would be needed to produce 228 g of carbon dioxide?

3. Sulfur when burned combines with oxygen AND water. The combination yields sulfuric acid. If a handful of coal has 1.00 gram of sulfur in it as impurities, what mass of sulfuric acid will be produced when this amount of sulfur is consumed ?

4. Sugar, $C_{12}H_{22}O_{11}$, will dehydrate giving carbon and water. What mass of carbon will be produced as 509 g of sugar is dehydrated ?

5. What mass of mercury is produced if 101 g of mercuric oxide is decomposed into its elements ?

6. A length of magnesium ribbon with a mass of 0.122 g is burned. What mass of magnesium oxide would you expect to be present after the reaction ?

7. A butane lighter contains approx. 25.0 g of butane, C_4H_{10}. What mass of carbon dioxide would be produced as the butane burns ?

8. A gram of green algae is able to absorb 4.7×10^{-3} mole of carbon dioxide per hour by photosynthesis (see <u>unbalanced</u> reaction below). How long would it take for the algae to double its own mass ?

   NOTE : Algae , as well as other plants, make other products as well as the one listed here but **we will assume** that this algae only gains mass by making **glucose.**

$$CO_2 + H_2O \longrightarrow C_6H_{12}O_6 + O_2$$

answers:

1. 68.0 g
2. 62.2 g
3. 3.06 g
4. 214 g
5. 93.5 g
6. 0.202 g
7. 75.9 g
8. 7.1 h