Stoichiometry

Name:

Use your knowledge of stoichiometry to answer the following questions. You must show work to receive credit!

Use the following equation for questions 1-3. Make sure to balance the equation before attempting to solve the problems that follow.

 $CO_2 + H_2O \longrightarrow C_{12}H_{22}O_{11} + O_2$

1. How many grams of sucrose $(C_{12}H_{22}O_{11})$ is produced from 224 L of carbon dioxide at STP?

2. How many liters of carbon dioxide at STP are needed to produce 50.0 g of sucrose $(C_{12}H_{22}O_{11})$?

3. What mass of water would be needed to combine with 200.0 L of carbon dioxide (at STP)?

Use the following equation for questions 4-6. Make sure to balance the equation before attempting to solve the problems that follow.

- $CO + Fe_2O_3 \longrightarrow Fe + CO_2$
- 4. What mass of iron (III) oxide will react with 50.0 L of carbon monoxide at STP?

5. What volume of carbon dioxide at STP is produced form 1.00×10^3 g of iron (III) oxide?

6. What mass of iron is produced when 0.300 L carbon dioxide is produced at STP?

Use the following equation for questions 7-9. Make sure to balance the equation before attempting to solve the problems that follow.

 $NaHCO_3 + H_2SO_4 \longrightarrow Na_2SO_4 + CO_2 + H_2O$

7. How many grams of sodium sulfate is produced from 2.40 x 10^{24} formula units of sodium bicarbonate, assuming there is plenty of sulfuric acid (H₂SO₄)?

8. How many liters of carbon dioxide at STP would be produced form 2.40×10^{24} formula units of sodium bicarbonate? Assume there is excess sulfuric acid (H₂SO₄).

9. How many formula units of sulfuric acid (H₂SO₄) would be used when 250.0 L CO₂ is produced at STP?