1. Determine the mass of carbon required to react with 500 kg (5.00×10^2 kg) of copper(II) oxide to produce copper metal and carbon dioxide. [mass-mass]

2. Calculate the volume of carbon dioxide gas produced at SATP by the complete combustion of 692 g of isooctane, $C_8H_{18(l)}$. Note: molar volume of a gas at SATP = 22.4 L/mol. [mass-gas]

3. What mass of chromium would need to be placed in hydrochloric acid to produce 2.5 L of hydrogen gas at SATP? (Note: chromium(III) product formed.) [gas-mass]

4. If 20.0 g of magnesium react with an excess of hydrochloric acid, how many grams of the magnesium compound would be produced? [mass-mass]

5. How many litres of chlorine gas at STP must be reacted with an excess solution of sodium iodide if the amount of the compound produced is determined to be 10.0 g? [mass-gas]

6. In the burning of butane ($C_4H_{10(g)}$), what volume (mL) of steam would be produced if 20.52 mL $O_{2(g)}$ were consumed at STP? [gas-gas]