Stoichiometry Problems

2Na$_{(s)}$ + 2H$_2$O$_{(l)}$ → 2NaOH$_{(aq)}$ + H$_{2(g)}$
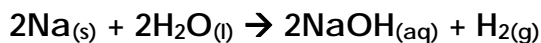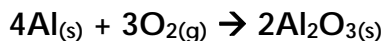
1. If 90.0 g of sodium are dropped into excess water, how many liters of hydrogen gas would be produced at standard pressure and 22°C assuming all of the sodium reacts?

4Al$_{(s)}$ + 3O$_{2(g)}$ → 2Al$_2$O$_{3(s)}$

2. If 100.0 g of aluminum is oxidized completely, how many grams of aluminum oxide would be produced?

SnO$_{2(s)}$ + C$_{(s)}$ → Sn$_{(s)}$ + CO$_{2(g)}$

3. How many liters of carbon dioxide would be produced at standard pressure and 25 °C for every 1.00 kg of tin produced?

Cu$_{(s)}$ + 2AgNO$_{3(aq)}$ → Cu(NO$_3$)$_{2(aq)}$ + 2Ag$_{(s)}$
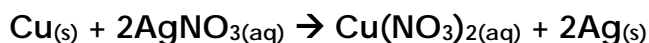
4. 5.00 grams of copper are placed into 300.0mL of a 0.20M solution of silver nitrate. How many grams of silver are produced? Does any unreacted copper remain?

2Fe$_{(s)}$ + 3H$_2$SO$_{4(aq)}$ → Fe$_2$(SO$_4$)$_{3(aq)}$ + 3H$_{2(g)}$

5. If a balloon is to be filled with 5.0 L of hydrogen at standard pressure and 20 °C, how many mL of 0.3M sulfuric acid are needed and how many grams of iron are needed. (Assume the reaction has a 92% yield).

2KClO$_{3(s)}$ → 2KCl$_{(s)}$ + 3O$_{2(g)}$

6. If 10.0 grams of potassium chlorate are heated until no more oxygen is released, how many grams of potassium chloride will remain in the reaction vessel?