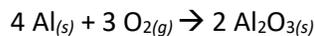
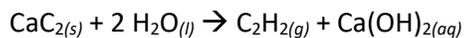


## Chemistry – Chapter 12 Book problems #1: Introduction to stoichiometry

1. This equation shows the formation of aluminum oxide, which is found on the surface of aluminum objects exposed to the air:



- Write the six mole ratios that can be derived from this equation.
  - How many moles of aluminum are needed to form 3.7 mol  $\text{Al}_2\text{O}_3$ ?
2. According to the equation:  $4 \text{Al}_{(s)} + 3 \text{O}_{2(g)} \rightarrow 2 \text{Al}_2\text{O}_{3(s)}$
- How many moles of oxygen are required to react completely with 14.8 mol Al?
  - How many moles of  $\text{Al}_2\text{O}_3$  are formed with 0.78 mol  $\text{O}_2$  reacts with aluminum?
3. Acetylene gas ( $\text{C}_2\text{H}_2$ ) is produced by adding water to calcium carbide ( $\text{CaC}_2$ ).



How many grams of acetylene are produced by adding water to 5.00 g  $\text{CaC}_2$ ?

4. Use the equation in question 13 to determine how many moles of  $\text{CaC}_2$  are needed to react completely with 49.0 g  $\text{H}_2\text{O}$ .