

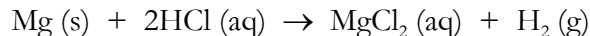
### Extra Problems for Chapter 7

1. Indicate how many moles are contained in each sample below:
  - a. 100.0 grams of silicon
  - b. 150.0 grams of water (H<sub>2</sub>O)
  - c. 500.0 grams of glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>)
2. Determine the mass of each sample below:
  - a. 5.41 moles of sulfur
  - b. 0.12 moles of potassium chloride (KCl)
  - c. 1.761 moles of ethanol (C<sub>2</sub>H<sub>6</sub>O)
3. How many atoms are found in 500.0 grams of magnesium?
4. How many molecules exist in 10.0 grams of aluminum chloride (AlCl<sub>3</sub>)?
5. A chemist has  $5.0 \times 10^{25}$  molecules of ammonia (NH<sub>3</sub>). How many moles is that? How many grams is that?
6. The hydrate of sodium carbonate (Na<sub>2</sub>CO<sub>3</sub>) has ten water molecules for every sodium carbonate molecule.
  - a. Write the chemical formula of hydrated sodium carbonate.
  - b. If you have 50.0 grams of the anhydrous form, how many grams of water can it absorb?
7. The formation reaction for sodium sulfate (Na<sub>2</sub>SO<sub>4</sub>) is given below:



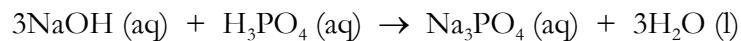
If you want to make 10.0 moles of Na<sub>2</sub>SO<sub>4</sub>:

- a. How many moles of sodium would you need?
  - b. How many moles of sulfur would you need?
  - c. How many moles of oxygen would you need?
8. A chemist is making hydrogen according to the following chemical equation:



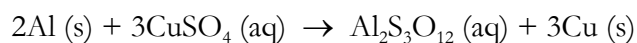
If he adds 15 moles of HCl (aq) to an excess of Mg (s), how many moles of H<sub>2</sub> (g) will he make?

9. Consider the following reaction:



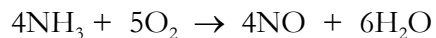
How many grams of  $\text{H}_3\text{PO}_4$  (aq) are necessary to make 100.0 moles of water?

10. A chemist is using the following reaction



to make copper (Cu). If he uses 100.0 grams of aluminum and excess  $\text{CuSO}_4$ , how many grams of copper can he make?

11. A chemist is running the following chemical reaction:



If she wants to make 15.0 g of water, how much  $\text{NH}_3$  does she need?