## 5 SECTION 5.1

## **The Nature of Chemical Reactions**

1. Identify the reactants and products in each of the following chemical reactions.

a.  $Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3$ 

**b.**  $2 \text{AgNO}_3 + \text{H}_2 \text{SO}_4 \rightarrow \text{Ag}_2 \text{SO}_4 + 2 \text{HNO}_3$ 

2. Explain where the energy to cook food comes from when a gas stove burns natural gas,  $CH_4$ , and oxygen,  $O_2$ .

**3. Describe** three signs that a chemical reaction has taken place, and give an example of each sign.

**4. Identify** the elements present in the original compound using the following statement of a chemical reaction. A white solid is heated and gives off carbon dioxide,  $CO_2$ , and water,  $H_2O$ , leaving behind sodium carbonate,  $Na_2CO_3$ .

5. Contrast endothermic and exothermic reactions.

**6. Predict** the products of the decomposition reactions of the following substances:

a. mercury oxide, HgO

**b.** silver oxide, Ag<sub>2</sub>O