SAMPLE PROBLEM B

Translate the following chemical equation into a sentence:

$$BaCl_2(aq) + Na_2CrO_4(aq) \longrightarrow BaCrO_4(s) + 2NaCl(aq)$$

SOLUTION

Each reactant is an ionic compound and is named according to the rules for such compounds. Both reactants are in aqueous solution. One product is a precipitate and the other remains in solution. The equation is translated as follows: Aqueous solutions of barium chloride and sodium chromate react to produce a precipitate of barium chromate plus sodium chloride in aqueous solution.

PRACTICE

Answers in Appendix E

1. Write word and balanced chemical equations for the following reactions. Include symbols for physical states when indicated.
   a. Solid calcium reacts with solid sulfur to produce solid calcium sulfide.
   b. Hydrogen gas reacts with fluorine gas to produce hydrogen fluoride gas. (Hint: See **Table 1.**)
   c. Solid aluminum metal reacts with aqueous zinc chloride to produce solid zinc metal and aqueous aluminum chloride.
2. Translate the following chemical equations into sentences:
   a. $CS_2(l) + 3O_2(g) \longrightarrow CO_2(g) + 2SO_2(g)$
   b. $NaCl(aq) + AgNO_3(aq) \longrightarrow NaNO_3(aq) + AgCl(s)$
3. Hydrazine, N_2H_4, is used as rocket fuel. Hydrazine reacts violently with oxygen to produce gaseous nitrogen and water. Write the balanced chemical equation.

extension

Go to **go.hrw.com** for more practice problems that ask you to write balanced chemical equations.

Keyword: HC6RXNX

Significance of a Chemical Equation

Chemical equations are very useful in doing quantitative chemical work. The arrow in a balanced chemical equation is like an equal sign. And the chemical equation as a whole is similar to an algebraic equation in that it expresses an equality. Let's examine some of the quantitative information revealed by a chemical equation.

1. *The coefficients of a chemical reaction indicate relative, not absolute, amounts of reactants and products.* A chemical equation usually shows the smallest numbers of atoms, molecules, or ions that will satisfy the law of conservation of mass in a given chemical reaction.