Chapter 7   Chemical Reactions

Balancing Chemical Equations

Write a balanced equation for the reaction between potassium and water to produce hydrogen and potassium hydroxide, KOH.
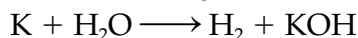
1. Read and Understand

What information are you given?

Reactants: K, H_2O
Products: H_2, KOH

2. Plan and Solve

Write a chemical equation with the reactants on the left side and the products on the right.

$$K + H_2O \longrightarrow H_2 + KOH$$

This equation is not balanced. The number of hydrogen atoms on the left does not equal the number of hydrogen atoms on the right. Change the coefficients of H_2O and KOH in order to balance the number of hydrogen atoms.

$$K + 2H_2O \longrightarrow H_2 + 2KOH$$
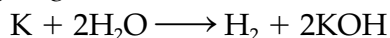
Change the coefficient of K in order to balance the number of potassium atoms.

$$2K + 2H_2O \longrightarrow H_2 + 2KOH$$

3. Look Back and Check

Is your answer reasonable?

The number of atoms on the left equals the number of atoms on the right.

Math Practice

On a separate sheet of paper, solve the following problems.

1. Magnesium burns in the presence of oxygen to form magnesium oxide, MgO. Write a balanced equation for this reaction.

2. Hydrogen peroxide, H_2O_2, decomposes to form water and oxygen. Write a balanced equation for this reaction.

3. Barium hydroxide, $Ba(OH)_2$, reacts with nitric acid, HNO_3, to form barium nitrate and water. Write a balanced equation for this reaction.