68. An electrical circuit contains two resistors. The net resistance in the circuit is
given by the product of the two individual resistances divided by their sum.
a. Choose variables to represent the two given resistances. Write an algebraic
equation for the net resistance in the circuit.
b. Determine the net resistance if the two individual resistances are 10 and
20 ohms.

69. When a sum of money is invested in an interest-bearing account, the simple interest
accumulated is given by the product of the original investment (called the principal), the interest rate, and the time in years that the money is invested. The
sum of the principal and the interest is called the amount.
a. Choose variables to represent the principal, the interest rate, and the time the
money is invested. Write algebraic expressions for the interest and the amount.
b. Determine the amount accumulated if $800 is invested at 9% for 3 years.

70. The expansion in length that a section of highway will experience on a very hot
day is given by a constant $k$ times the length of the section of highway times the
difference between the present temperature and the temperature when the high-
way was built.
a. Choose variables to represent the length of a highway, the present tempera-
ture, and the temperature when the highway was built. Write an algebraic equa-
tion for the amount the highway will expand.
b. Determine the amount that a 1000-foot section of highway will expand at
105°F if the highway was built at 65°F and the value of the constant is
0.000012.

### 1.2

#### SUMS AND DIFFERENCES

**Factors and Terms**

Algebraic expressions that are multiplied together are known as factors, while
expressions that are added together are called terms. For example,

$$3x + 4yz$$

contains two terms; the first term, $3x$, contains two factors,
and the second term, $4yz$, contains three factors;

$$3(x - 4y^2)$$

consists of a single term; however, the factor $x - 4y^2$ con-
tains two terms, $x$ and $-4y^2$.

The numerical coefficient, or simply coefficient, of a term is its numerical
factor. For example,

- the coefficient of $x$ in the term $6x$ is 6;
- the coefficient of $a^7b$ in the term $-2a^7b$ is $-2$;
- the coefficient of $xy$ in the term $xy$ is 1.