

1-1

Study Guide and Intervention***Variables and Expressions***

Write Mathematical Expressions In the **algebraic expression**, ℓw , the letters ℓ and w are called **variables**. In algebra, a variable is used to represent unspecified numbers or values. Any letter can be used as a variable. The letters ℓ and w are used above because they are the first letters of the words *length* and *width*. In the expression ℓw , ℓ and w are called factors, and the result is called the **product**.

Example 1

Write an algebraic expression for each verbal expression.

a. four more than a number n

The words *more than* imply addition.

four more than a number n

$$4 + n$$

The algebraic expression is $4 + n$.

b. the difference of a number squared and 8

The expression *difference of* implies subtraction.

the difference of a number squared and 8

$$n^2 - 8$$

The algebraic expression is $n^2 - 8$.

Example 2

Evaluate each expression.

a. 3^4

$$\begin{aligned} 3^4 &= 3 \cdot 3 \cdot 3 \cdot 3 && \text{Use 3 as a factor 4 times.} \\ &= 81 && \text{Multiply.} \end{aligned}$$

b. five cubed

Cubed means raised to the third power.

$$\begin{aligned} 5^3 &= 5 \cdot 5 \cdot 5 && \text{Use 5 as a factor 3 times.} \\ &= 125 && \text{Multiply.} \end{aligned}$$

Exercises

Write an algebraic expression for each verbal expression.

1. a number decreased by 8

2. a number divided by 8

3. a number squared

4. four times a number

5. a number divided by 6

6. a number multiplied by 37

7. the sum of 9 and a number

8. 3 less than 5 times a number

9. twice the sum of 15 and a number

10. one-half the square of b

11. 7 more than the product of 6 and a number

12. 30 increased by 3 times the square of a number

Evaluate each expression.

13. 5^2

14. 3^3

15. 10^4

16. 12^2

17. 8^3

18. 2^8