Name _____ Date _____

LESSON 1 Algebraic Expressions

When you do not know the value of a number, use a **variable,** a letter that stands for an unknown number. You already used variables in setting up proportion problems. You have also used variables to find the area of a rectangle ($A = l \times w$). In this formula, A, l, and w are variables that represent the area (A), length (l), and width (w) of the rectangle.

A mathematical expression with at least one variable is called an **algebraic expression.**

For example, $3n + 12$, $\frac{w}{5} - 7$, $m - n$, and $2(p + 4)$ are all algebraic expressions. Notice they have operation signs with variables or variables and numbers. They do not have an equals sign.

Example

Letisha wrote 3 postcards. Then she wrote some more postcards. Write an algebraic expression to explain the total number of postcards Letisha wrote.

STEP 1 **Identify what you know and what you do not know.**
Know: Letisha wrote 3 postcards.
Do not know: how many more postcards Letisha wrote.

STEP 2 **Write a description of the situation in words.**
Letisha wrote 3 postcards plus an unknown number of additional postcards.

STEP 3 **Choose a variable for the unknown.**
Let the letter a stand for the number of additional postcards.

STEP 4 **Substitute numbers, operation signs, and variables for the words.**

3 plus *unknown number* of additional postcards

↓ ↓ ↓

3 + a **expresses the total number of postcards Letisha wrote.**

ON YOUR OWN

The park where Diego works hired 12 fewer workers this year than it did last year. Write an algebraic expression for the number of workers the park hired this year.

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Practice

Building Skills

Name the variable.

1. $6n + 5$

2. $5w$

3. $m - 1.5$

4. $\frac{x}{8} + 3$

Write an algebraic expression.

5. 45 more than a number

6. n less than 20

7. the product of some number and 6

8. some number divided by 12

9. 3 less than 5 times a number

10. w less than y

Problem Solving

Write an algebraic expression.

11. The temperature dropped 5 degrees in the last hour. Write an algebraic expression for the new temperature.

12. Terrell's dog, Sparky, gained 8 lb in the last year. Write an algebraic expression that shows how much Sparky weighs now.

13. A clothing store sells gym shorts for $7.50 a pair plus tax. Write an algebraic expression for the total price.

14. Five friends equally shared the bill for lunch. Write an algebraic expression for the amount each friend paid.

15. At a chess play-off, your school's chess team received 2 points less this year than twice the number of points it received last year. Write an algebraic expression for the number of points your school's team received this year.

16. You earn $8 per hour. Your cousin earns more than you do. Write an algebraic expression that shows how much money your cousin earns for 6 hours of work.