NAME

Module 2 Writing and Simplifying Algebraic Expressions
Lesson 2 Translating Word Phrases into Algebraic Expressions

Write an algebraic expression for the following. Any letter may be used to write an expression for the phrase "some number" or "a number".

1. fifteen more than some number

$x + 15$

2. 7 added to m

$m + 7$

3. two less than y

$y - 2$

4. the difference 12 minus N

$12 - N$

5. some number doubled

$2x$

6. the product of –9 and g

$-9g$

7. a number t divided by –26

$\frac{t}{-26}$

8. the quotient 58 divided by a number

$\frac{58}{N}$

9. 5 more than the square of b

$b^2 + 5$

10. y cubed decreased by 11

$y^3 - 11$

11. 7 times 3 plus 5

$7(3) + 5$

12. 7 times the sum of 3 and 5

$7(3 + 5)$

13. –7 times a number v increased by thirteen

$-7v + 13$

14. 9 times the quantity 5 plus y

$9(5 + y)$

15. two-thirds of the square of a number

$\frac{2}{3}N^2$

16. three times the cube of a number divided by –4

$\frac{3N^3}{-4}$

17. 8 less than the quotient r divided by 5

$\frac{r}{5} - 8$

18. 6 added to the quotient 7 divided by a number

$\frac{7}{x} + 6$

19. 32 added to 3 times the square of a number

$3x^2 + 32$

20. 5 more than the product of 7 and the cube of D

$7D^3 + 5$

Journal

1. Why does it matter which of two different numbers is written first in a subtraction expression?
2. In two different ways, express $n + 4$ in words.
3. Which operations can be performed with any two numbers, getting the same result, regardless of the order?
4. List some words that may indicate that grouping symbols are needed in an expression.
5. Compare and contrast the term "square" with the term "cube" as used in writing algebraic expressions.

Cumulative Review

List all the sets of numbers that contain each given number.

1. -15 **reals, rationals, and integers**
2. π **real and irrational numbers**
3. -4.29574 **reals, rationals**
4. 0 **reals, rationals, integers, and whole numbers**
5. $5{,}497$ **reals, rationals, integers, whole numbers, and natural numbers**

Simplify each expression.

6. $5^3 - 3^2$ **116**
7. $7 + 3(6 - 2)$ **19**
8. $15 \div 3 + 10(-8)$ **-75**
9. $|12 - 57| + \frac{2}{3}\left(7 + \sqrt{4}\right)$ **-39**
10. $\left(\frac{2}{5}\right)\left(\frac{15}{8}\right) \div \left(\frac{3}{7}\right)\left(\frac{14}{9}\right)$ **$\frac{9}{8}$ or $1\frac{1}{8}$**

Possible Journal Responses

1. **Subtraction is not commutative, so changing the order also changes the value of the expression. For example, $5 - 3 = 2$, but $3 - 5 = -2$.**
2. **Answers may vary. 4 more than a number; the sum of a number and 4; 4 added to *n* are a few possibilities.**
3. **Addition and multiplication. We know from the Commutative Rules for Addition and Multiplication that order does not matter in sums or products.**
4. **Words that indicate that grouping symbols may be needed include "the quantity", "the sum", and "the difference".**
5. **The terms "square" and "cube" as used in writing algebraic expressions each refer to exponents, or powers. "Square" means raise the number or variable to the second power, while "cube" means raise the number or variable to the third power.**