

Section Overview



Evaluating Algebraic Expressions

Lesson 1-7

Why? In order to use formulas and algebraic expressions to solve problems, we must be able to substitute number values for the variables and find the resulting numerical value of the entire expression.

The **order of operations** is the same for evaluating both numerical and algebraic expressions.

Evaluate $5 + 4y$ for $y = 3$.

$$\begin{aligned} 5 + 4y \\ 5 + 4(3) \\ 5 + 12 \\ 17 \end{aligned}$$

Evaluate $5 + 4y^2$ for $y = 3$.

$$\begin{aligned} 5 + 4y^2 \\ 5 + 4(3)^2 \\ 5 + 4(9) \\ 5 + 36 \\ 41 \end{aligned}$$

Translating Words into Math

Lesson 1-8

Why? The first step in solving real-world problems using algebra is learning to represent quantities and situations with variables and expressions.

Algebraic expressions can represent an infinite number of possibilities in a situation.

In the situation at the right, the expression $8h$ represents many different possibilities as the variable number of hours changes.

Situation: \$8 per hour

Variable: h

Expression: $8h$

The **variable h** represents the number of hours.

The **expression $8h$** represents the amount of money earned by working h hours.

Combining Like Terms

Lesson 1-9

Why? Evaluating an expression for a given value of a variable is usually easier if the expression is first simplified by combining like terms.

Expression	Like Terms	Like Terms Combined
$3a - 3b + 3c$	none	$3a - 3b + 3c$
$8n + 2 - 7n$	$8n$ and $7n$	$n + 2$
$2x^2 - y + 6 + x^2 + 2$	$2x^2$ and x^2 ; 6 and 2	$3x^2 - y + 8$

Solving Equations

Lessons 1-10, 1-11, 1-12

Why? Students often solve one-step equations by observation. However, they will need the concepts learned at this level to solve multistep equations.

Equation	Operation in Equation	Identify the Inverse Operation	Isolating the Variable
$x + 7 = 15$	Addition	Subtraction	$x = 8$
$y - 5 = 9$	Subtraction	Addition	$y = 14$
$6 \cdot n = 24$	Multiplication	Division	$n = 4$
$\frac{a}{9} = 3$	Division	Multiplication	$a = 27$