

Section Overview

Variables and Expressions

Lesson 1-1

Why? Students must be able to translate between words and algebra in order to solve real-world problems.

From Algebra to Words

$x + 5$ the **sum** of x and 5

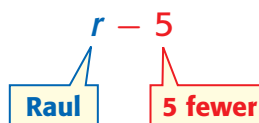
$y - 4$ the **difference** of y and 4

$6(t)$ the **product** of 6 and t

$b \div 3$ the **quotient** of b and 3

From Words to Algebra

Tom has **5 fewer** CDs **than Raul**, who has r CDs.



Evaluating an Algebraic Expression

Evaluate $2x - 3y$ for $x = 7$ and $y = 4$.

$$\begin{aligned} 2x - 3y \\ 2(7) - 3(4) \\ 14 - 12 \\ 2 \end{aligned}$$

Operations with Real Numbers

Lessons 1-2, 1-3

Why? Real numbers are all the numbers on the number line: positives, negatives, and zero. Operations with real numbers are required for solving real-world problems.

Adding Real Numbers

Same sign: Add absolute values.

$$-3 + (-5) = -8$$

Different signs: Subtract absolute values.

$$-7 + 4 = -3$$

Multiplying or Dividing Real Numbers

Same sign: The product or quotient is **positive**.

$$3 \cdot 5 = 15$$

$$-12 \div (-6) = 2$$

Different signs: The product or quotient is **negative**.

$$-2 \cdot 9 = -18$$

$$20 \div (-4) = -5$$

Subtracting Real Numbers

$$\begin{aligned} 2 - 6 \\ 2 + (-6) \\ -4 \end{aligned}$$

Dividing Real Numbers

$$\begin{aligned} 15 \div 3 \\ 15 \cdot \frac{1}{3} \\ 5 \end{aligned}$$

Exponents, Powers, and Square Roots

Lessons 1-4, 1-5

Why? Exponents and powers are often used in sciences. Square roots are often used in physics and geometry.

There is no number x such that $x \cdot x = \sqrt{-4}$, so $\sqrt{-4}$ is not a real number.