Section Overview

Professional Development

Order of Operations — Lesson 1-6

Why? Mathematicians have agreed on a certain order in which to perform operations. This allows everyone to get the same answer when simplifying the same expression.

1. Perform operations inside grouping symbols. → $40 - 4(5 - 2)^2 + 1$
2. Evaluate powers. → $40 - 4(3)^2 + 1$
3. Perform multiplication and division from left to right. → $40 - 4(9) + 1$, $40 - 36 + 1$, $4 + 1$
4. Perform addition and subtraction from left to right. → 5

Simplifying Expressions — Lesson 1-7

Why? The Associative, Commutative, and Distributive Properties are used to perform mental arithmetic and to simplify algebraic expressions.

Commutative Property	
Addition	**Multiplication**
$a + b = b + a$	$a \cdot b = b \cdot a$

Associative Property	
Addition	**Multiplication**
$a + b + c = (a + b) + c = a + (b + c)$	$abc = (ab)c = a(bc)$

Distributive Property	
Addition	**Subtraction**
$a(b + c) = ab + ac$	$a(b - c) = ab - ac$

Functions — Lesson 1-8

Why? Functions are used in many real-world applications.

In a function, the output depends on the input. For any input, there is exactly one output.

$y = 3x - 5$ (Output: y; Input: x)

Ordered pairs (x, y) can be generated by a function.

x	$y = 3x - 5$	(x, y)
-2	$3(-2) - 5 = -11$	$(-2, -11)$
-1	$3(-1) - 5 = -8$	$(-1, -8)$
0	$3(0) - 5 = -5$	$(0, -5)$
1	$3(1) - 5 = -2$	$(1, -2)$
2	$3(2) - 5 = 1$	$(2, 1)$

When the points are graphed, they may form a pattern. For example, these points lie on a line.