Lesson 6: Algebraic Expressions—The Distributive Property

Classwork

Exercise 1

Write an expression using the symbols 1, 2, 3, and 4 and any mathematical operation that evaluates to . Then use that expression to create one that evaluates to.

Exercise 2

Define the rules of a game as follows:

a. Using the following 3, x, y, and z create as many expressions as you can using addition.

b. Can any be rewritten and still be equivalent?

Exercise 3

Roma says that collecting like terms can be seen as an application of the distributive property. Is writing an application of the distributive property? Show why?

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| **Distributive Property** | For any numbers a, b, and c  a(b + c) = ab + ac  (b + c)a = ba + ca  a(b – c) = ab – ac  (b – c)a = ba – ca |

Evaluate each expression in two different ways.

11(8 + 2) = 11(8 + 2) =

6(7 – 3) = 6(7 – 3) =

Recreation North Country Rivers of York, Maine offers one-day white water rafting trips on the Kennebec River. The trip cost $69 per person and wet suits are $15 each.

Write two equivalent expressions to find the total cost of one trip for a family of four if each person uses a wet suit.

Expression 1 Expression 2

**Distributive Property and Simplifying Expressions**

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| **Term** | A number, a variable, or a product or quotient of numbers and variables. |

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| **Like terms** | Terms containing the same variable and have the same exponent on the variable. |

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| **Coefficient** | The number in front of the variable. Also known as the numerical factor. |

**Exercise 4**

**Simplify each expression.**

a. 11x + 6x = b. 8x2 + 2x2 + 3x2 = c. 11x + 6x + 8x2 + 2x2 =

d. 4w4 + w4 + 3(w2 – w4) = e. 2ab + 3ab + 7a2b + 9a2b = f. 5(a + b) + 6(a + b) =

**Exercise 5**

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| **Order of Operations** |

**Always work left to right**

**Step 1** Do operations that occur in **Evaluate**

grouping symbols (parentheses, 12(9 – 6) ÷ 2 + 32 – 5

brackets, fraction bars)

**Step 2** Evaluate all powers

**Step 3** Do all multiplication and/or division

**Step 4** Do all addition and/or subtraction

Problem Set

1. Insert parentheses to make each statement true.
   1. b.

2. Evaluate

a. 12 ÷ 3 · (25 – 42) b. 24 + 4 ÷ 2 c. 8[62 – 3(2 + 5)] ÷ 8 + 3 d. 5 + 2[6 + (3 – 1)3]

3. Simplify the following expressions.

a. 2 + t2 + t2 + 3= b. x3 + 3 + 5 + x3 = c. 4x + 3 + 5.6x + x =

d. 5(2y + 3x) + 6(y + x) = e. 3ab + 4a2b + 5(2a2b) =

4. Given that which of the shaded regions is larger and why?

