

Algebra I

Lesson 2.5

Apply the Distributive Property

Warm-Up

Kristin paid \$1.90 per black-and-white photo and \$6.80 per color photo to have the pictures digitally restored. Let b represent the number of black-and-white photos and c represent the number of color photos.

- (a) Write an expression for the total amount spent on having photos restored.

$$1.90b + 6.80c$$

- (b) Use your expression from part (a) to find the total cost if she had 8 black-and-white and 12 color photos done.

$$1.90(8) + 6.80(12)$$
$$\$96.80$$

It costs \$96.80 for 8 black and white and 12 color photos.

Example 1. Apply the Distributive Property

Simplify each of the following using the Distributive Property.

(a) $3(x+6)$ $3x+18$

(b) $(n+5)n$ n^2+5n

(c) $y(y-12)$ y^2-12y

(d) $(8-x)9$ $72-9x$ or $-9x+72$

The Distributive Property

$$a(b+c) = ab+ac$$

$$(b+c)a = ba+ca$$

$$a(b-c) = ab-ac$$

$$(b-c)a = ba-ca$$

Example 2. Distributing a Negative Number

Simplify each of the following using the Distributive Property.

(a) $(y-2)(-4)$ $-4y+8$

(b) $-5x(4-x)$ $-20x+5x^2$ or $5x^2-20x$

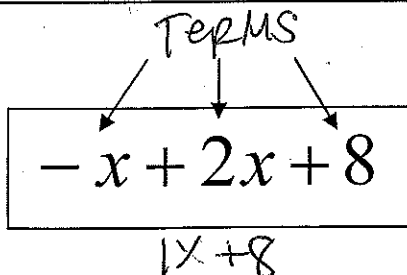
(c) $-(3y-9)$ $-3y+9$

Terms - parts of an expression that are added together

Coefficients - number part of a term that has a variable part

Like Terms - terms with the same variable parts

Constant - term with a number part but no variable part



Coefficients: -1 and 2

Like Terms: $-x$ and $2x$

CONSTANT TERM = 8

$x+8$

Example 3. Identify Parts of an Expression

Identify the **terms**, **like terms**, **coefficients** and **constants** in the expression $-2x - 8 + 6x + 5$.

TERMS: $-2x, -8, 6x, 5$

LIKE TERMS: -8 and $5, -2x$ and $6x$

COEFFICIENTS: -2 and 6

CONSTANTS: -8 and 5

Example 4. Simplify by Collecting Like Terms

Simplify by using the Distributive Property and collecting like terms.

(a) $6(x+3) + 2(8+x)$

$$6x + 18 + 16 + 2x$$

$$4x + 34$$

(b) $5(6+n) + 2(n-2)$

$$30 + 5n + 2n - 4$$

$$7n + 26$$

Example 5. Solving a Multi-Step Problem

Your daily workout plan involves a total of 50 minutes of running and swimming. You burn 15 calories per minute when running and 9 calories per minute when swimming. Let r be the number of minutes that you run. Write an equation to represent the number of calories you burn based on the number of minutes you run (r). Then, find the number of calories you burn in your 50 minute workout if you run for 20 minutes.

$$C = 15r + 9(50 - r)$$

$$C = 15r + 450 - 9r$$

$$C = 6r + 450$$

$$C = 6(20) + 450$$

$$C = 570$$

C = Calories burned

r = number of minutes
you run

You burn 570 calories
if you run for 20 minutes
and swim for 30 minutes.

Assignment: Page 99 (6 - 38) even

Review:

Evaluate the expression.

1. $\frac{10 \cdot 8}{4^2 + 4}$

2. $\frac{6^2 - 12}{3^2 + 15}$

3. $\frac{75 - 5^2}{11 + (3 \cdot 4)}$

4. $\frac{(3 \cdot 7) + 9}{2^3 + 5 - 3}$

5. $\frac{(2 + 5)^2}{3^2 - 2}$

6. $\frac{6 + 7^2}{3^3 - 9 - 7}$

7. $6 - (-8) - 11$

8. $4 - 8 - 3$

9. $6 + (-13) + (-5)$