

1.2.2 Simplifying Algebraic Expressions

$$\begin{array}{c} \text{term} \quad \text{term} \\ 2x + 3 \\ \uparrow \quad \quad \quad \uparrow \\ \text{coefficient} \quad \text{constants} \end{array}$$

Like Terms...
...have the same variable part.

$$\begin{array}{cc} \textcircled{3x^2} & \textcircled{-5x^2} \\ \cancel{3x} & \cancel{-5x^2} \end{array}$$

$$\begin{array}{cc} -4 & 2 \end{array}$$

Constant Terms...
...are also like terms.

The distributive property lets you **combine like terms** that have variables by adding the coefficients.

Simplify by Combining Like Terms

$$10y + 15y = 25y$$

$$6m^2 - 12m - 7m^2$$

$$\textcircled{-m^2 - 12m}$$

$$3(x-2) - 5(x-8)$$

$$\begin{array}{c} \underline{3x} - \underline{6} - \underline{5x} + \underline{40} \\ \textcircled{-2x + 34} \end{array}$$

Two algebraic expressions are **EQUIVALENT** if they have the same value for all values of their variables. Ex... lets say $x = 3$

$$\begin{array}{ccc}
 7x + 4x & & 11x \\
 \boxed{7x + 4x} & \text{and} & \boxed{11x} \\
 \begin{array}{c} 21 + 12 \\ 33 \end{array} & & \begin{array}{c} 33 \\ 33 \end{array} \\
 \boxed{11x} & \xrightarrow{\text{red arrow}} &
 \end{array}$$

$$\begin{array}{ccc}
 5x - (6x + y) & \text{and} & -x - y \\
 \begin{array}{c} 5x - 6x - y \\ -x - y \end{array} & \xrightarrow{\text{blue arrow}} &
 \end{array}$$

A statement such as $7x + 4x = 11x$ that equates two equivalent expressions is called an **IDENTITY**.

Real-Life Model

You want to buy either scented lotion or bath soap for 8 people. The lotions are \$6 each and the soaps are \$5 each.

Write an expression for the total amount you will spend. Evaluate the expression when 5 of the people get lotion.

$$5x + 6y = \text{Total}$$

$x = \#$ of soaps
 $y = \#$ of lotions

using only 1 variable

$$6x + 5(8 - x) = \text{Total}$$

$$6(5) + 5(3) = \text{Total}$$

$$30 + 15 = \text{\$45}$$

$x = \#$ of people lotion

Assignment:

p. 15

48-54 even
58, 60

Quiz Next Week - Sept. ?