Algebra II **Section 1.4**
Auch **Date:**

Objectives

- Simplify and evaluate algebraic expressions.

Example 1

Write an algebraic expression to represent each situation.

a) The distance remaining for a runner after *m* miles of a 26.2 mile marathon.

b) the number of hours it takes to fly 1800 miles at an average rate of *n* miles per hour.

Try it! Write an algebraic expression to represent each situation.

b) Lucy's age *y* years after her 18^{th} birthday

b) the number of seconds in *h* hours.

Order of Operations

1. **P**arentheses and grouping symbols
2. **E**xponents
3. **M**ultiply and **Divide** from left to right
4. **A**dd and **S**ubtract from left to right

Example 2

Evaluate each expression for the given values of the variables.

a) $x + 3xy - 2y$, for x = 4 and y = 7

b) $b^2z - 2bz + z^2$, for b = 6 and z = 2.

Try it! Evaluate each expression for the given values of the variables.

a) $x^2y - xy^2 + 3y$, for x = 2 and y = 5.

Example 3

Simplify each expression.

a) $x^2 + 5x + 2y + 7x^2$

b) $b(5a^2 - 2a) - 11a^2b + 2ab$

Try it! Simplify each expression.

a) $-3(2x - xy + 3y) - 11xy$

Example 4

Holly's hybrid car gets 45 miles per gallon on the highway and 25 miles per gallon in the city.

a) Write an equation for the total number of miles she can drive if her fuel tank holds 15 gallons of gas.

b) How many total miles can she drive on one tank of gas if she uses 5 gallons on the highway?

Try it!

A travel agent is selling 100 discount packages. He makes $50 for each Hawaii package and $80 for each Cancun package.

a) Write an expression to represent the total the agent will make selling a combination of the two packages..

b) How much will he make if he sells 28 Hawaii packages?