## 1.3 Applications to Geometry and Literal Equations

**Example 1:** ***Solving an Application Involving Perimeter:***

The length of a rectangular corral is 2 ft more than 3 times the width. The corral is situated such that one of its shorter sides is adjacent to a barn and does not require fencing. If the total amount of fencing is 774 ft, then find the dimensions of the corral.

**Example 2:** ***Solving an Application Involving Angles***

Two angles are supplementary, and the measure of one is 16° less than 3 times the other. Find their measures.

(***Recall:*** Two angles are complementary if the sum of their measures is 90°.
Two angles are supplementary if the sum of their measures is 180°.)

*__Definition:__ *Literal Equations* are equations the contain several variables. A formula is a literal equation with a specific application.

Example:

$$P = 2l + 2w$$

where $P$: perimeter of a rectangle, $l$: the length, and $w$: the width. Notice, $P$ is expressed in terms of $l$ and $w$.

**Example 3:** ***Solving a Literal Equation:***

Buckingham Fountain is one of Chicago's most familiar landmarks. With 133 jets spraying a total of 14,000 gal of water per minute, Buckingham Fountain is one of the world's largest fountains. The circumference of the fountain is approximately 880 ft.

a. The circumference of a circle is given by $C = 2\pi r$. Solve the equation for $r$.

b. Use the equation from part a to find the radius and diameter of the fountain. Use 3.14 for $\pi$ and round to the nearest foot.

**Example 4:** ***Solving a Literal Equation:***

The formula for the volume of a right circular cylinder is $V = \pi r^2 h$. Solve for $h$.

**Example 5:** ***Solving a Literal Equation:***

a. Given $-2x + 3y = 5$. Solve for $y$.

b. Solve the equation for $x$: $ax - 3 = cx + 7$