# 8-3 Word Problem Practice
Multiplying Polynomials

1. THEATER The Loft Theater has a center seating section with $3c + 8$ rows and $4c - 1$ seats in each row. Write an expression for the total number of seats in the center section.

2. CRAFTS Suppose a quilt made up of squares has a length-to-width ratio of 5 to 4. The length of the quilt is $5x$ inches. The quilt can be made slightly larger by adding a border of 1-inch squares all the way around the perimeter of the quilt. Write a polynomial expression for the area of the larger quilt.

3. SERVICE A folded United States flag is sometimes presented to individuals in recognition of outstanding service to the country. The flag is presented folded in a triangle. Often the recipient purchases a case designed to display the folded flag to protect it from wear. One such display case has dimensions (in inches) shown below. Write a polynomial expression that represents the area of wall space covered by the display case.
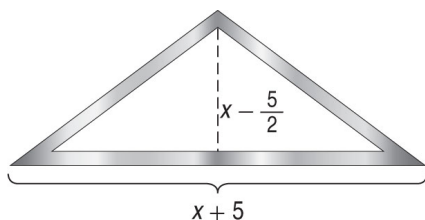
Source: American Flag Store

4. MATH FUN Think of a whole number. Subtract 2. Write down this number. Take the original number and add 2. Write down this number. Find the product of the numbers you wrote down. Subtract the square of the original number. The result is always –4. Use polynomials to show how this number trick works.

5. ART The museum where Julia works plans to have a large wall mural replica of Vincent van Gogh's *The Starry Night* painted in its lobby. First, Julia wants to paint a large frame around where the mural will be. The mural's length will be 5 feet longer than its width, and the frame will be 2 feet wide on all sides. Julia has only enough paint to cover 100 square feet of wall surface. How large can the mural be?
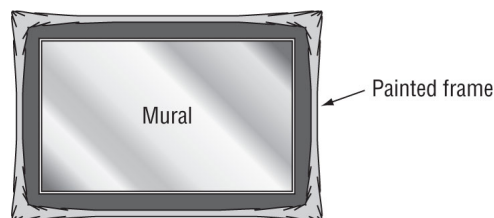
a. Write an expression for the area of the mural.

b. Write an expression for the area of the frame.

c. Write and solve an equation to find how large the mural can be.