Name _____ Date _____ Class _____

7.7 Problem Solving

Multiplying Polynomials

Write the correct answer.

1. A bedroom has a length of $x + 3$ feet and a width of $x - 1$ feet. Write a polynomial to express the area of the bedroom. Then calculate the area if $x = 10$.

2. The length of a classroom is 4 feet longer than its width. Write a polynomial to express the area of the classroom. Then calculate the area if the width is 22 feet.

3. Nicholas is determining if he can afford to buy a car. He multiplies the number of months m by $i + p + 30f$ where i represents the monthly cost of insurance, p represents the monthly car payment, and f represents the number of times he fills the gas tank each month. Write the polynomial that Nicholas can use to determine how much it will cost him to own a car both for one month and for one year.

4. A seat cushion is shaped like a trapezoid. The shorter base of the cushion is 3 inches greater than the height. The longer base is 2 inches shorter than twice the height. Write the polynomial that can be used to find the area of the cushion. (The area of a trapezoid is represented by $\frac{1}{2}h(b_1 + b_2)$.)

The volume of a pyramid can be found by using $\frac{1}{3}Bh$ where B is the area of the base and h is the height of the pyramid. The Great Pyramid of Giza has a square base, and each side is about 300 feet longer than the height of the pyramid. Select the best answer.

5. Which polynomial represents the approximate area of the base of the Great Pyramid?

   A $h + 90{,}000$

   B $2h + 90{,}000$

   C $h^2 + 600h + 90{,}000$

   D $2h^2 + 600h + 90{,}000$

6. Which polynomial represents the approximate volume of the Great Pyramid?

   F $\frac{1}{3}h^3 + 200h^2 + 30{,}000h$

   G $\frac{1}{3}h^2 + 200h + 30{,}000$

   H $h^3 + 600h^2 + 90{,}000h$

   J $3h^3 + 600h^2 + 90{,}000h$

7. The original height of the Great Pyramid was 485 feet. Due to erosion, it is now about 450 feet. Find the approximate volume of the Great Pyramid today.

   A $562{,}500\ \text{ft}^3$

   B $616{,}225\ \text{ft}^3$

   C $84{,}375{,}000\ \text{ft}^3$

   D $99{,}623{,}042\ \text{ft}^3$