Polynomial Applications

Section 12 Review

Answer each question below. Darken the circle that represents the correct answer.

1. Carlye's bedroom is 2 feet longer than its width. The perimeter is 44 feet. What is the length of her bedroom?

A 10 feet

B 12 feet

C 20 feet

D 22 feet

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2. The Davis family has a piece of land that is 3 times as wide as it is long. The family wants to put a fence around the perimeter of the land. Which of the following equations could be used to calculate the linear amount of fencing needed, F, in terms of length, L?

A $F = 3L^2$

B $F = 4L$

C $F = 8L$

D $F = 4L^2$

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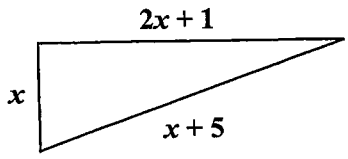
3. Which expression represents the perimeter of the triangle shown below?



A $4x + 6$

B $2x + 3$

C $2x^2 + 1$

D $2x^2 + x$

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4. If a circle has a diameter of $(x + 3)$ inches, what is its circumference?

A $(x\pi + 3\pi)$ inches

B $(2x\pi + 6\pi)$ inches

C $\frac{(x + 3)\pi \text{ inches}}{2}$

D $(x^2 + 6x + 9)$ inches

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5. A square has a side length of x. A rectangle has a length that is 4 inches longer than the square and a width that is 2 inches shorter than the square. If the areas of the square and rectangle are equal, what is the length of the rectangle?

A 2 inches

B 4 inches

C 8 inches

D 10 inches

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6. Dr. Janisek has an office space that is in the shape of a square. The length of each wall is 12 feet. She wants to move to a larger office that is also in the shape of a square. If each wall in the larger office is x feet longer than 12 feet, which of the following expresses the area of the larger office space?

A $(x^2 + 12)$ feet

B $(x^2 + 144)$ feet

C $(x^2 + 6x + 12)$ feet

D $(x^2 + 24x + 144)$ feet

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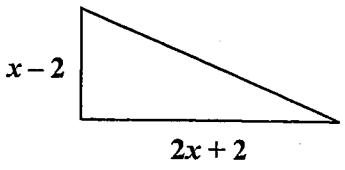
7. Which of the following represents the area of the triangle shown below?



A $3x$

B $2x^2 - 4$

C $x^2 - x - 2$

D $2x^2 - 2x - 4$

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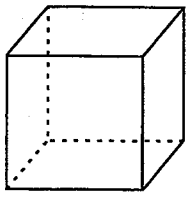
8. The figure below diagrams a cube.



Which of the following polynomials represents the surface area of this cube in square inches?

A $25x^2 - 20x + 4$

B $150x^2 - 120x + 24$

C $30x - 12$

D $150x^2 + 24$

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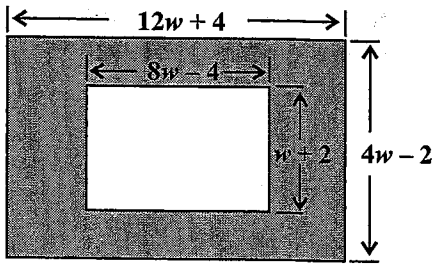
9. A mat border inside a picture frame has the following dimensions.



What is the expression for the area of the mat border (the shaded region)?

A $40w^2 + 4w$

B $40w^2 - 20w - 16$

C $40w^2 - 20w$

D $40w^2 + 4w - 16$

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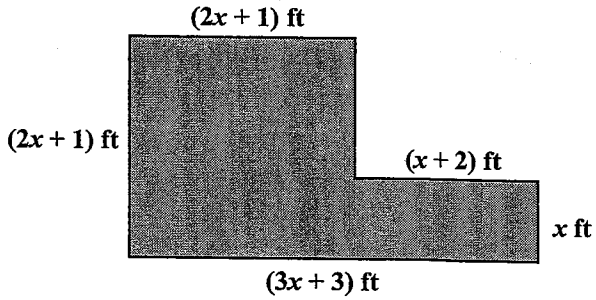
10. The figure below is made up of a square and a rectangle.



What is the total area, in square feet, of the figure?

A $9x + 7$

B $10x + 8$

C $5x^2 + 2x + 1$

D $5x^2 + 6x + 1$

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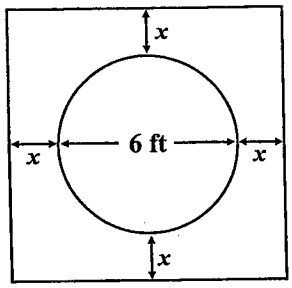
11. **A sculpture on display in an art museum has a circular base that measures 6 feet in diameter. The display is enclosed by a rope in the shape of a square. The shortest distance between the base of the sculpture and the rope is x feet on each side.**



Which polynomial represents the perimeter, in feet, of the region enclosed by the rope?

A $8x + 24$

B $4x + 36$

C $x^2 + 6x + 9$

D $4x^2 + 24x + 36$

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12. **Which of the following polynomials represents the area of a circle with a radius of $(x - 3)$ feet?**

A $(x^2 + 9)\pi$ ft^2

B $(x^2 - 6x + 9)\pi$ ft^2

C $(2x^2 - 12x + 18)\pi$ ft^2

D $(2x - 6)\pi$ ft

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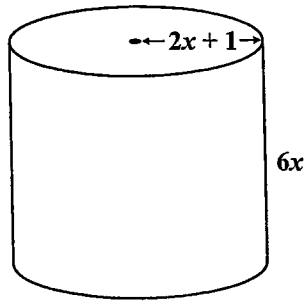
13. **A company that makes cylindrical cans shows the dimensions for a new can on the diagram below.**



Which expression could be used to calculate the volume of the new can?

A $24\pi x^3 + 6\pi x$

B $72\pi x^3 + 6\pi x^2$

C $24\pi x^3 + 24\pi x^2 + 6\pi x$

D $144\pi x^3 + 24\pi x^2 + 12\pi x$

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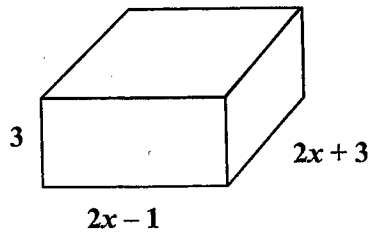
14. **What is the volume of the following prism?**



A $12x^2 - 9$ cubic units

B $12x^2 + 9$ cubic units

C $4x^2 + 4x - 3$ cubic units

D $12x^2 + 12x - 9$ cubic units

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