STANDARD VII: The student will be able to solve problems involving a variety of algebraic and geometric concepts.

OBJECTIVE

4. Apply properties of plane and solid geometric figures.

ELIGIBLE CONTENT

- Diagrams may be included.
- Word problems may be used.
- The following content may be included:
  - area and perimeter of triangles, rectangles, and squares
  - area and circumference of a circle, given radius or diameter
  - perimeter of a regular polygon, given one side
  - volume of rectangular prism or cylinder
  - sum of the measures of the angles in a triangle
  - sum of the measures of the angles in a rectangle
- Determining any dimension of a figure may be required.
- Determining any dimension of a figure when the dimension is expressed as an algebraic expression may be required.

SAMPLE ITEMS

1 A box has a volume of 2880 cubic inches, a height of 20 inches, and a square base. What is the length of a side of the base?

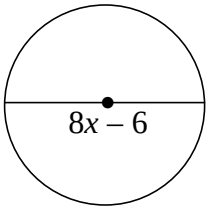
A 12 inches

B 24 inches

C 48 inches

D 144 inches

2 What is the area of a circle with $d = 8x - 6$?



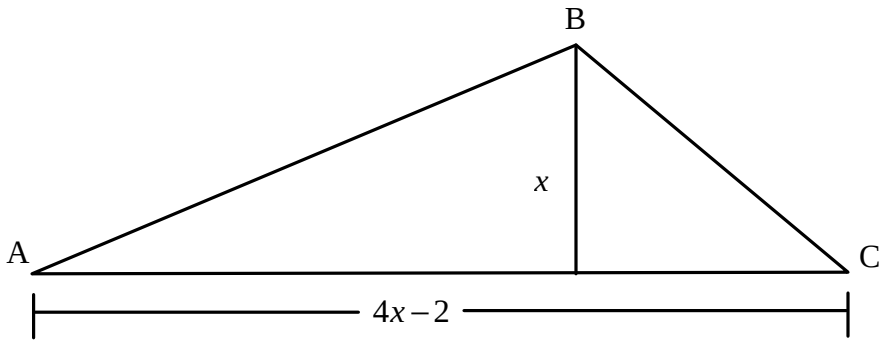
A $(16x - 12)$p

B $(28x + 9)$p

C $(16x^2 + 12x + 9)$p

D $(16x^2 - 24x + 9)$p

3 What is the area of the triangle ABC?



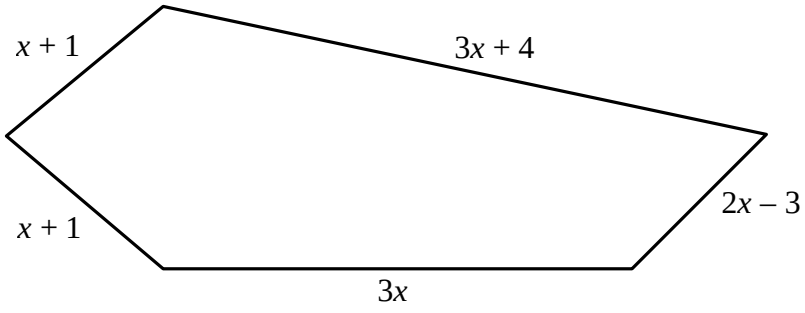
A $2x^2 - x$

B $2x^2 - 1$

C $2x^2 - 2x$

D $2x^2 - 2$

4 If the perimeter of the figure shown below is 33 centimeters, what is the value of x?



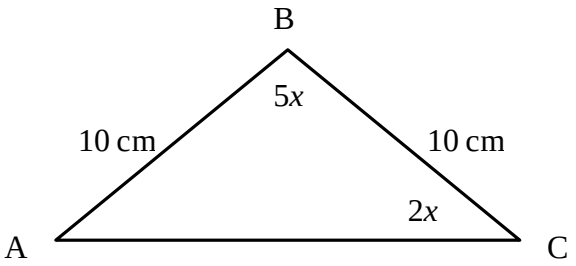
A $\frac{12}{5}$

B 3

C $\frac{18}{5}$

D 33

5 What is the measure of angle A in the figure below?



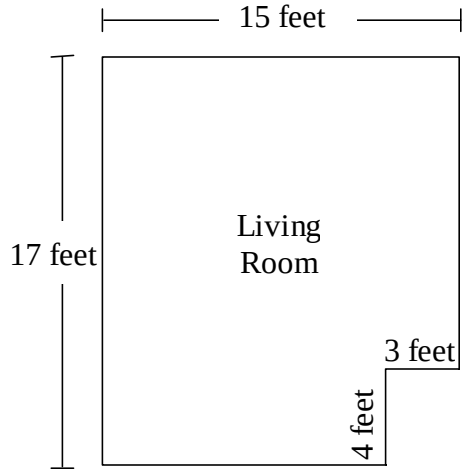
A 20°

B 30°

C 40°

D 50°

6 How many square feet of carpet are needed to cover the living room shown in the diagram below?



A 210 square feet

B 222 square feet

C 243 square feet

D 255 square feet

7 A circular manhole has a lid that has a circumference of 26π inches. What is the area of the lid?

A 169π square inches

B 676π square inches

C 169 square inches

D 676 square inches

8 A pool was built in the shape of a circle with diameter $d = 10$ feet. What is the approximate distance around the pool?

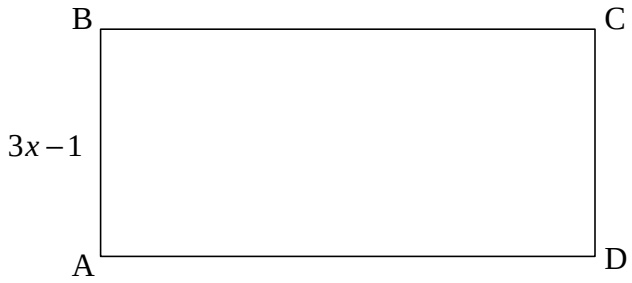
A 18 feet

B 31 feet

C 63 feet

D 78 feet

9 The perimeter of the rectangle shown below is $16x + 8$. The length of side AB is $3x - 1$. What is the length of side AD?



A $5x + 3$

B $5x + 5$

C $10x + 10$

D $13x + 9$