BOT Geometry B Pre-Test

Name: _____ **Date:** _____

1. If the coordinates of the vertices of $\triangle ABC$ are $A(3, -2)$, $B(7, -2)$, and $C(5, 5)$, what is the area of the triangle?

   A. 10 B. 14 C. 20 D. 28

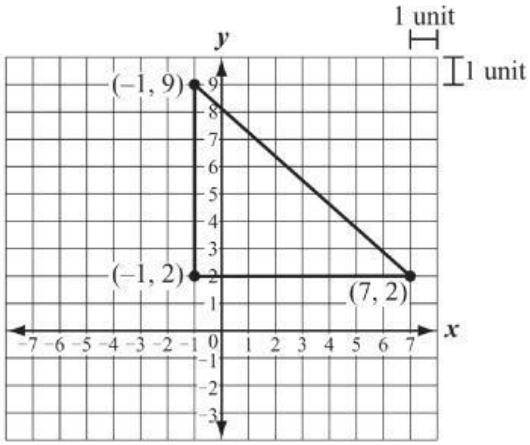
2. The vertices of $\triangle ABC$ are $A(0, 6)$, $B(3, 0)$, and $C(11, 0)$. What is the area of $\triangle ABC$ in square units?

   A. 9 B. 12 C. 24 D. 33

3. The coordinates of the vertices of rectangle $ABCD$ are $A(2, 2)$, $B(2, 6)$, $C(8, 6)$, and $D(8, 2)$. The area of rectangle $ABCD$ is

   A. 16 B. 24 C. 36 D. 48

4. A triangle is shown on the coordinate plane below.

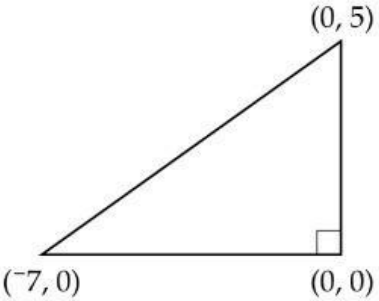


   What is the area of the triangle?

   A. 21 square units B. 26 square units

   C. 28 square units D. 56 square units

5. Look at the triangle below.

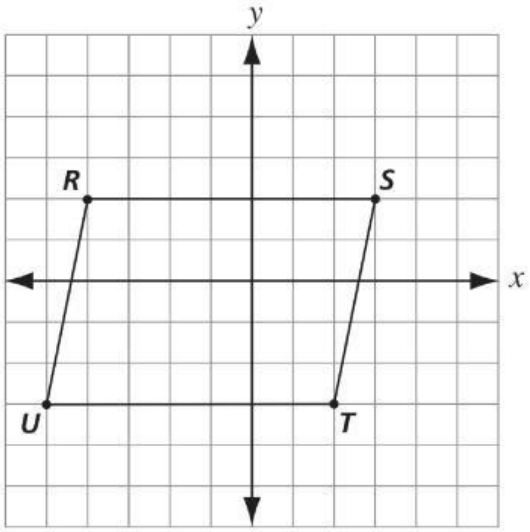


   What is the perimeter of the triangle? Round the answer to the nearest tenth of a unit.

   A. 9.3 units B. 12.0 units

   C. 20.6 units D. 86.0 units

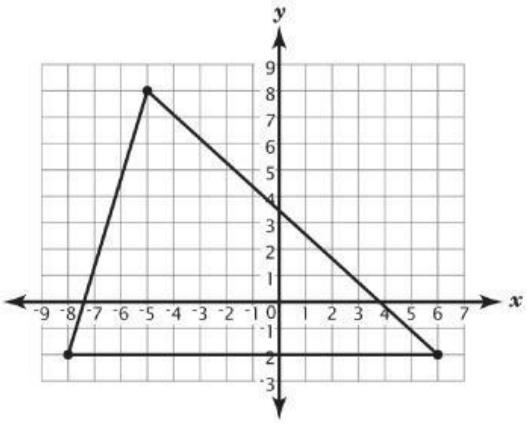
6. Use the grid below to answer question 15.



What is the area of parallelogram *RSTU* in the grid?

A. 30 square units
B. 35 square units
C. 42 square units
D. 48 square units

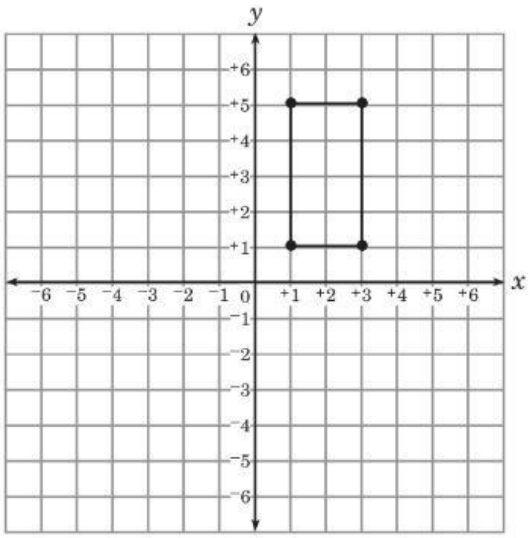
7. Study the triangle on the grid below.



What is the area of the triangle?

A. 35 square units
B. 68 square units
C. 70 square units
D. 140 square units

8. What is the perimeter of the rectangle drawn in the coordinate plane?



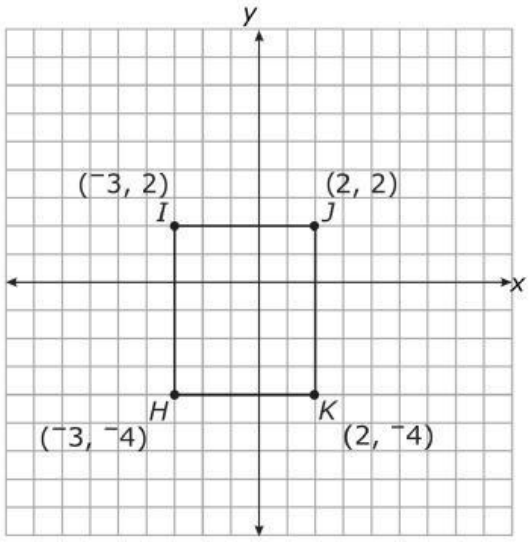
A. 12 units

B. 8 units

C. 6 units

D. 4 units

9. What is the area of rectangle *HIJK*?

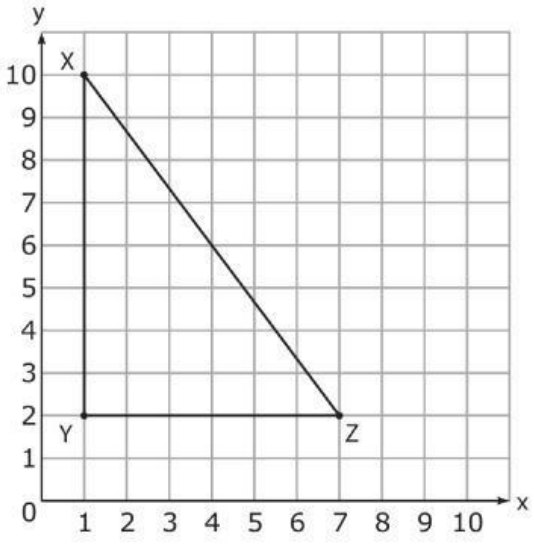


A. 22 square units

B. 26 square units

C. 30 square units

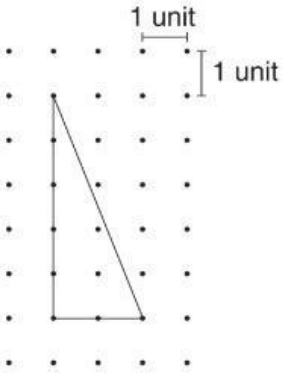
10. Triangle *XYZ* is shown below.



What is the perimeter of triangle *XYZ*?

A. 24 units B. 25 units C. 26 units

11. Look at this triangle.

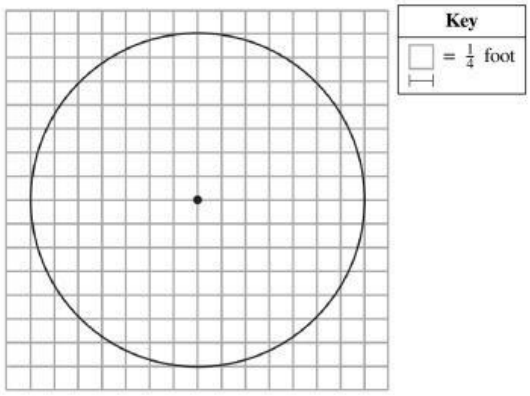


What is the area of the triangle?

A. 4 square units B. 5 square units

C. 7 square units D. 10 square units

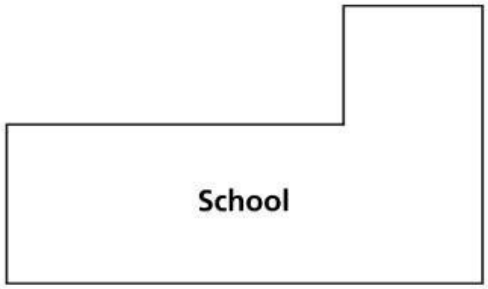
12. The figure below represents a circular fountain.



Round to the nearest square foot, what is the area of the fountain?

A. 10 B. 11 C. 38 D. 44

13. Use the figure below to answer the question.



Heidi wants to find the distance around her school. Which does Heidi need to measure?

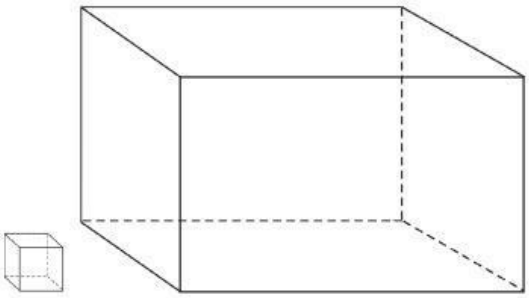
A. Area B. Capacity

C. Perimeter D. Circumference

14. Rich made punch for a party. He wants to know if it will fit into a container. What does Rich need to know about the container?

A. Its capacity
B. Its shape
C. Its thickness
D. Its weight

15. Carlos wants to know how many small cubes will fit in the box.



Which measurement of the box is Carlos finding when he fills it with cubes?

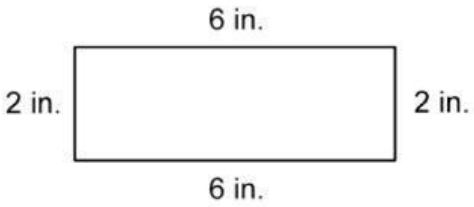
A. the area of the box
B. the length of the box
C. the surface area of the box
D. the volume of the box

16. Dan wraps a box with paper.

What should Dan measure to determine the amount of paper he needs to wrap the box?

A. circumference
B. perimeter
C. surface area
D. volume

17.



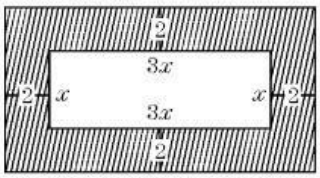
If I added up the lengths of all four sides of this rectangle, what would I be calculating?

A. Distance
B. Perimeter
C. Area
D. Length

18. Jimmy wants to know how much fencing he should buy to fence his yard. What does he need to calculate?

A. The perimeter of his yard
B. The area of his yard
C. Both a and b above
D. All of the above

19. Find a polynomial expression for the shaded area.



A. $16x^2 - x^2$

B. $(3x + 4) \cdot (x + 4) = 3x^2 + 16x + 16$

C. $16x + 16$

D. none of these

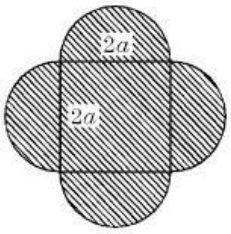
20. The figure shown is a square whose sides are $2a$ units long and are also the diameters of semicircles. The area of the shaded figure is:

A. $2a^2(2 + \pi)$

B. $2a^2 + 2\pi a^2$

C. $a^2(\pi + 2)$

D. none of these



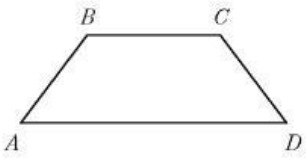
21. Find the area of the trapezoid if $BC = 6$, $AD = 12$, and $AB = CD = 5$

A. 45

B. 36

C. 30

D. none of these



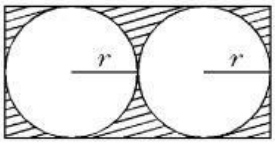
22. The area of the shaded portion is:

A. $2r^2(\pi - 4)$

B. $2r^2(4 - \pi)$

C. $r^2(2 - \pi)$

D. none of these



23. A square pyramid has a base of edge 6 and an altitude of 10. The volume is:

A. 120 B. 156 C. 360 D. 90

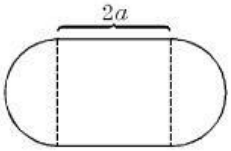
24. Two ends of an otherwise square swimming pool are semi-circles. (See the accompanying figure.) If the square part of the pool has sides of length $2a$, then the area of the pool is given by:

A. $a^2(4 + \pi)$ sq units

B. $4a^2 + 2\pi a^2$ sq units

C. $2a^2 + 4\pi a^2$ sq units

D. none of these



25. Find the volume of a rectangle solid each of whose side, bottom, and front faces are 20 sq. in., 24 sq. in., and 30 sq. in. respectively.

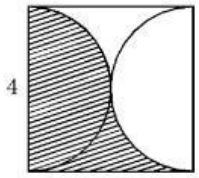
A. 14,400 cu. in. B. 120 cu. in.

C. 25 cu. in. D. none of these

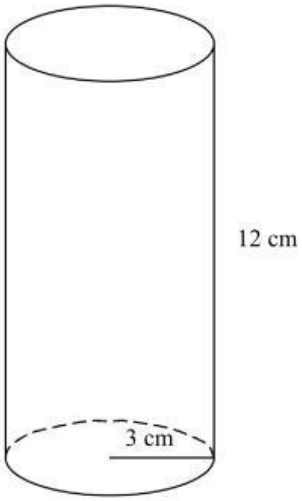
26. Semicircles with diameters the sides of a square are drawn. The area of the shaded region is:

A. 6 B. 8 C. 16

D. none of these



27. The right circular cylinder represented below has a base radius of 3 centimeters and a height of 12 centimeters.

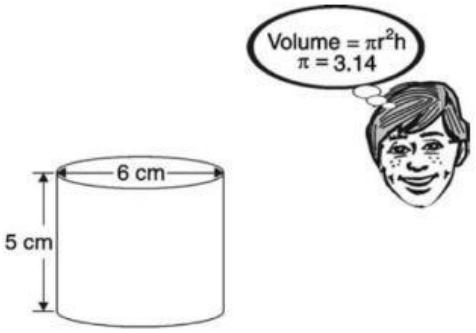


What is the volume of the right circular cylinder in cubic centimeters?

A. $36\pi\,\text{cm}^3$ B. $72\pi\,\text{cm}^3$

C. $108\pi\,\text{cm}^3$ D. $432\pi\,\text{cm}^3$

28. Use the picture below to answer the question that follows.

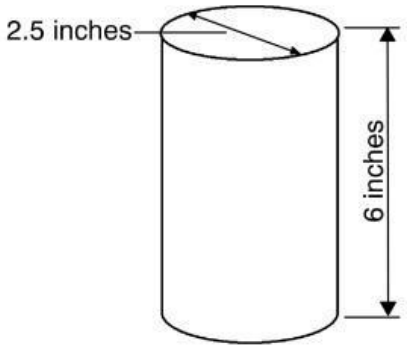


Which is the volume of the cylinder?

A. $94.2\,cm^3$ B. $141.3\,cm^3$

C. $188.4\,cm^3$ D. $565.2\,cm^3$

29. Estimate the volume of the cylinder.



A. 15 cubic inches B. 30 cubic inches

C. 50 cubic inches D. 150 cubic inches

30. A powdered drink mix container is in the shape of a right circular cylinder. The dimensions of the container are shown below.

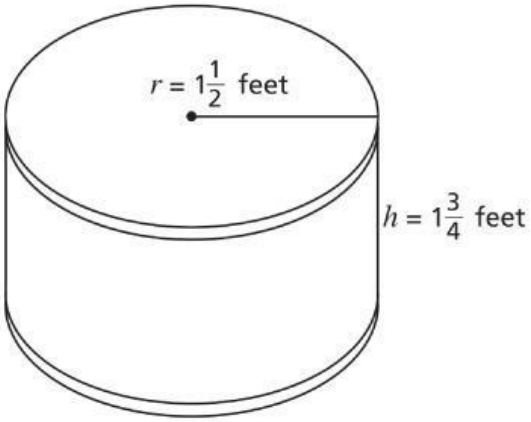
Which of the following is closest to the volume of the container?

A. 188 cubic inches B. 283 cubic inches

C. 471 cubic inches D. 1131 cubic inches

31. Use the figure below to answer question 41.

Bass Drum

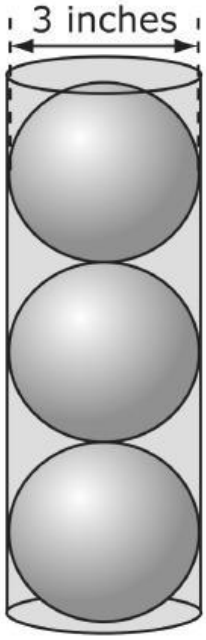


The bass drum above is shaped like a cylinder. What is the approximate volume of the bass drum? (Use 3.14 for π.)

A. 8.2 cubic feet
B. 12.4 cubic feet
C. 16.5 cubic feet
D. 17.8 cubic feet

32. A cylindrical container holds 3 balls.

The diameter of a ball is 3 inches.

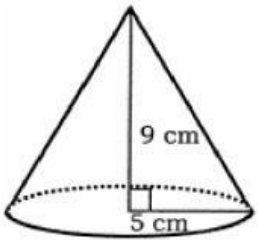


Volume of a Cylinder $V = \pi r^2 h$
V = volume
r = radius
h = height
(Use 3.14 for π.)

To the nearest cubic inch, what is the minimum **volume** of the container?

A. 27 cubic inches
B. 64 cubic inches
C. 85 cubic inches

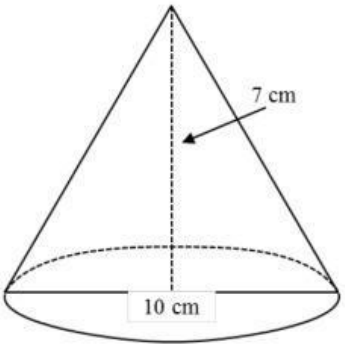
33. What is the **volume** of the given cone?



A. $225\pi\,cm^3$ B. $75\pi\,cm^3$

C. $25\pi\,cm^3$ D. $15\pi\,cm^3$

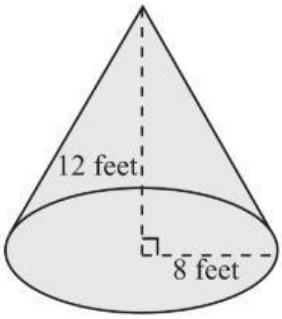
34. What is the *approximate* volume of the cone below?



A. $70\,cm^3$ B. $183\,cm^3$

C. $549\,cm^3$ D. $733\,cm^3$

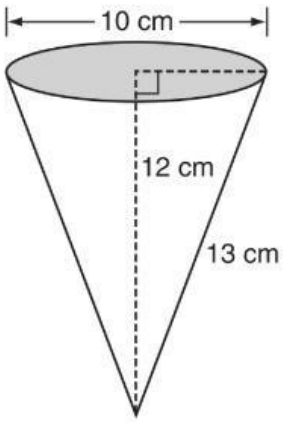
35. The cone shown below has a radius of 8 feet and a height of 12 feet. What is the volume of the cone?



A. 32πcubic feet B. 256πcubic feet

C. 374πcubic feet D. 768πcubic feet

36. An ice cream company needs to know how much ice cream can fit into its new ice cream cones.



(Not drawn to scale)

Using 3.14 for π, approximately how much ice cream will fill the cone level with the top?

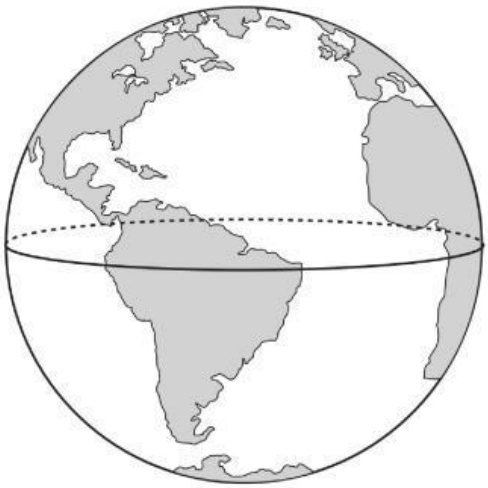
A. $188\,cm^3$ B. $314\,cm^3$

C. $340\,cm^3$ D. $942\,cm^3$

37. A sphere had a 6-inch radius (r). What was the volume of the sphere?

A. 24π cubic inches
B. 32π cubic inches
C. 216π cubic inches
D. 288π cubic inches

38. Tiffany wants to calculate the volume of her globe. The globe is in the shape of a sphere, as represented by the picture below. She measured the circumference of the globe along the equator to be 24 inches.



Which of the following measures is closest to the volume of Tiffany's globe?

A. 46 cubic inches
B. 61 cubic inches
C. 183 cubic inches
D. 234 cubic inches

39. A candy is in the shape of a sphere. The candy has a radius of 1.5 centimeters. Which of the following is closest to the volume of the candy? (Use 3.14 for π.)

A. $113\,cm^3$
B. $19\,cm^3$
C. $14\,cm^3$
D. $2\,cm^3$

40. Kate uses the formula below to calculate the volume of a sphere with radius r.

$$V = \frac{4}{3}\pi r^3$$

What is the approximate volume of a sphere with a radius of 3 inches? (π is approximately 3.14)

A. 113 cubic inches
B. 339 cubic inches
C. 1017 cubic inches
D. 3052 cubic inches

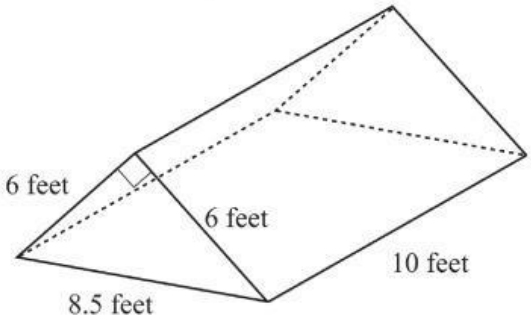
41. Madison is filling balloons with helium. When full, the balloons are nearly spherical in shape with a diameter of 12 inches.

What is the approximate volume of each balloon when it is full?

A. 115 cubic inches
B. 450 cubic inches
C. 680 cubic inches
D. 900 cubic inches

42. The triangular prism below represents the shape of Sylvia's tent.

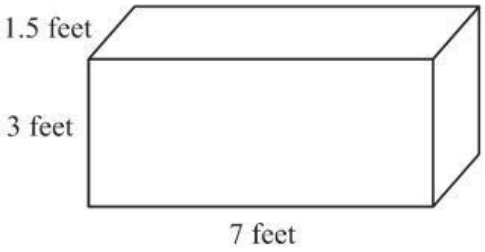
Sylvia's Tent



What is the volume of the tent in cubic feet?

A. 180 B. 241 C. 255 D. 360

43. A fish tank is shaped like the rectangular prism pictured below.

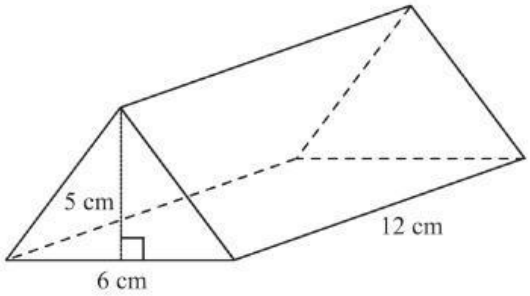


What is the volume of the fish tank in cubic feet?

A. 11.5 B. 13.5 C. 22.5 D. 31.5

44. The figure below shows a triangular prism that Tasha is using for a science experiment.

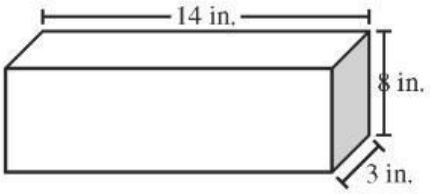
Tasha's Prism



What is the volume of Tasha's prism?

A. $180\,cm^3$ B. $242\,cm^3$

C. $324\,cm^3$ D. $360\,cm^3$

45. 

This rectangular prism has a length of 14 inches, a height of 8 inches, and a width of 3 inches. What is the volume?

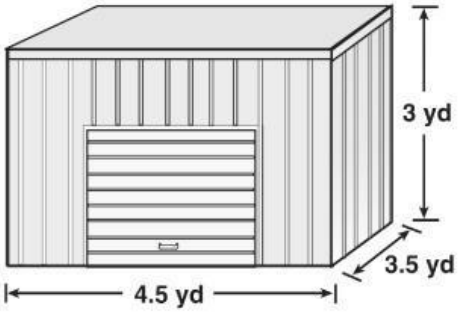
A. 25 cu in. B. 42 cu in.

C. 112 cu in. D. 336 cu in.

46. What is the volume, in cubic inches, of the school locker below?

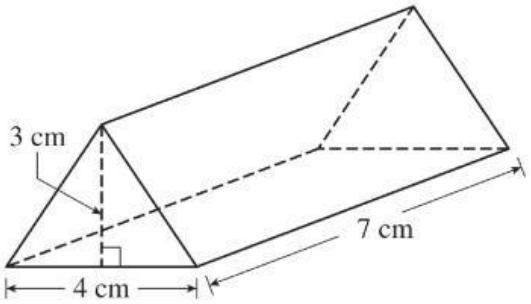
A. 2880 B. 2580 C. 390 D. 360

47. What is the volume, in cubic yards, of the storage unit below?



A. 11 B. 24 C. 40.5 D. 47.25

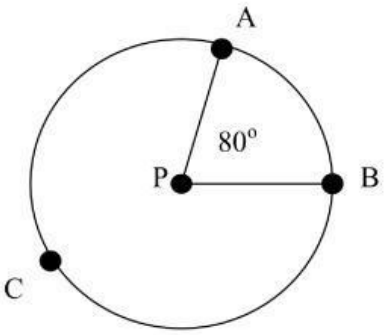
48. A triangular prism is shown in the diagram below.



What is the volume of the prism? (V = Area of base $\times h$)

A. $33\,cm^3$ B. $42\,cm^3$ C. $49\,cm^3$ D. $84\,cm^3$

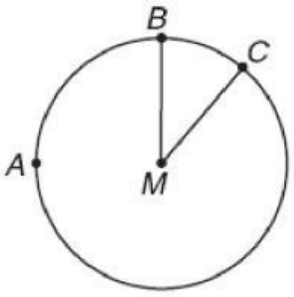
49. Points A, B, and C are on circle P.



What is the $m\overset{\frown}{ACB}$?

A. 280° B. 220° C. 160° D. 80°

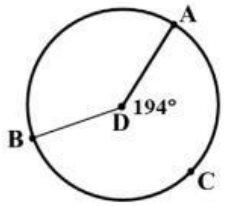
50. Points A, B, and C lie on circle M, as shown below.



What is the measure of $\angle BMC$ if the measure of arc BAC is 320°?

A. 40° B. 80° C. 160° D. 320°

51. What is the length of $\overset{\frown}{AB}$ if radius $\overline{AD} = 14$?



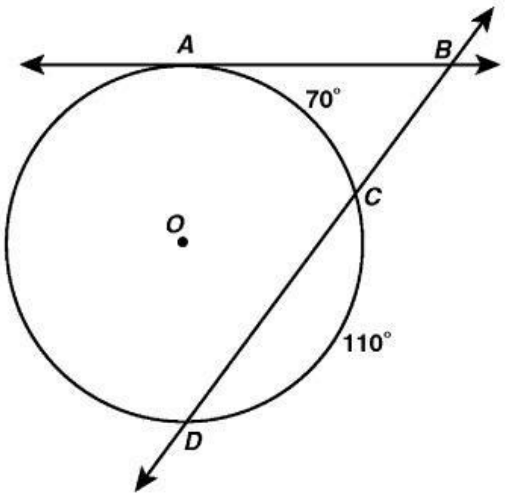
A. Length of $\overset{\frown}{AB}$ is 47.4 linear units.

B. Length of $\overset{\frown}{AB}$ is 40.45 linear units.

C. Length of $\overset{\frown}{AB}$ is 23.7 linear units.

D. Length of $\overset{\frown}{AB}$ is 2716 linear units.

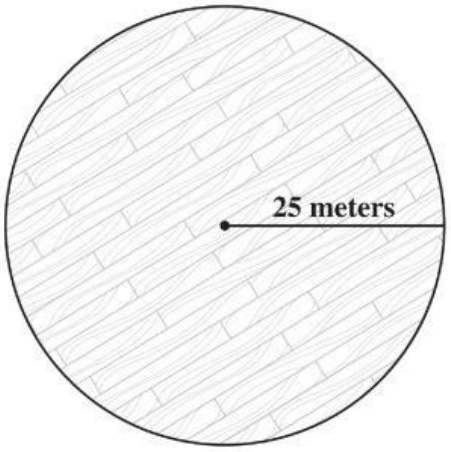
52. In the figure below, $\overleftrightarrow{AB}$ is tangent to circle O at point A, secant $\overleftrightarrow{BD}$ intersects circle O at points C and D, $m\overset{\frown}{AC} = 70°$ and $m\overset{\frown}{CD} = 110°$.



What is $m\angle ABC$?

A. 20° B. 40° C. 55° D. 70°

53. This circular stage has a radius of 25 meters.

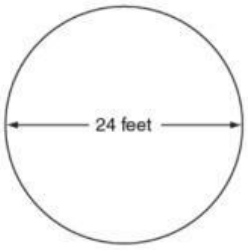


Which equation could be used to find the area of the stage in square meters?

A. $A = 25\pi$ B. $A = 50\pi$

C. $A = \pi \cdot 25^2$ D. $A = \pi \cdot 50^2$

54. A local park district just installed a circular pool that has a diameter of 24 feet. The cover fits exactly on the pool.



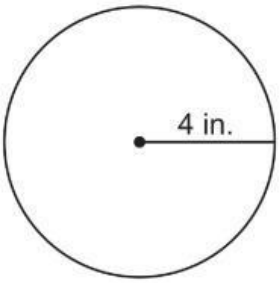
Swimming Pool

What is the area of the cover?

A. 75.36 square feet B. 150.72 square feet

C. 452.16 square feet D. 1,808.64 square feet

55. A city is building a new pool. A scale drawing of the pool is shown below.



Scale
1 in. : 3 ft

What is the area, in square feet, of the pool?

A. 16π B. 24π C. 48π D. 144π