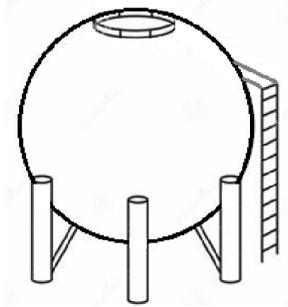


Geometry
Measurement and Coordinate Geometry

Name: _____ Date: _____

1. What is the midpoint of the longest side of the triangle with vertices $(1, 4)$, $(3, 4)$, and $(3, 6)$?
- A. $(1, 1)$
 - B. $(2, 4)$
 - C. $(2, 5)$ – correct
 - D. $(3, 5)$

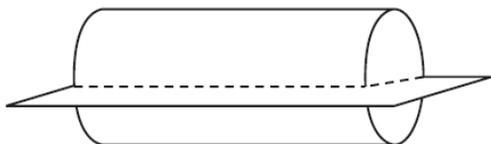
2. Joe's Painting has been hired by East Miami City to paint a spherical water tower with a diameter of 62 feet. To determine how much paint needs to be ordered, Joe needs to calculate the surface area of the water tower. What is the exact surface area of the water tower?



- A. 961π
- B. $3,844\pi$ - correct
- C. $15,376\pi$
- D. $39,721\pi$

3. Which point is on a circle with a center of $(3, -9)$ and a diameter of 10?
- A. $(-6, 5)$
 - B. $(-5, -15)$
 - C. $(6, -5)$ – correct
 - D. $(13, -9)$

4. Kristy emptied the frozen apple juice from a can. She then cut the frozen juice horizontally as shown in the figure above.



What shape did Kristy see along her cut?

- A. circle
- B. cylinder
- C. rectangle – correct
- D. sphere

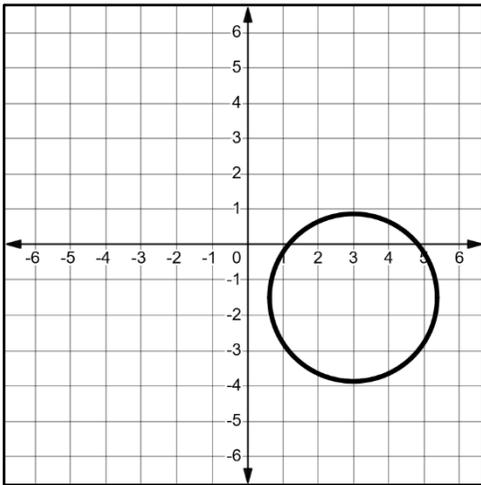
Geometry
Measurement and Coordinate Geometry

5. A large snowman is made of three spherical snowballs with radii of 1 foot, 2 feet, and 3 feet, respectively. Determine and state the amount of snow, in cubic feet, that is used to make the snowman. Round your answer to the nearest cubic foot.

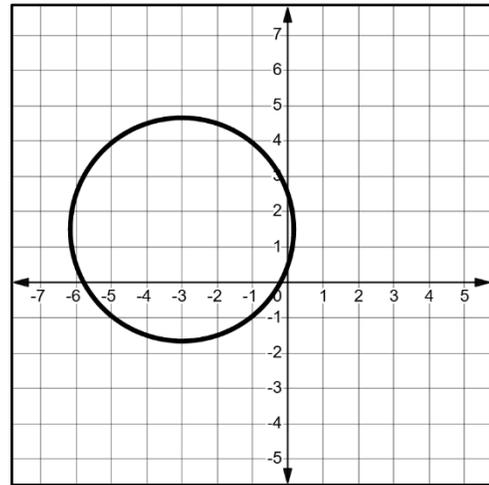
151 ft^3

6. A circle with a circumference of 5π has its center at $(-3, 1.5)$. Which of the following graphs best represents this circle?

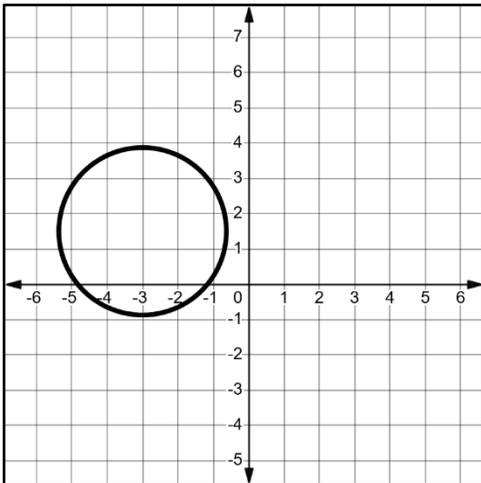
A.



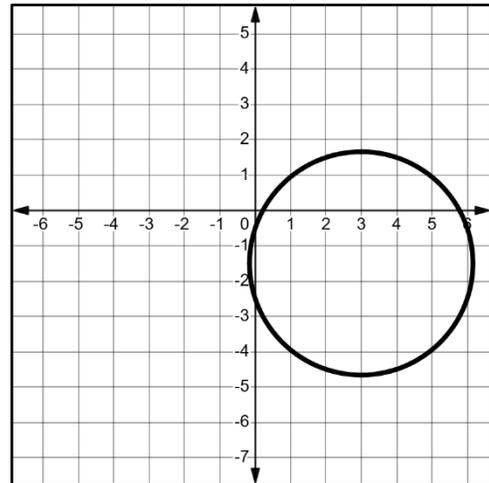
B.



C. - correct

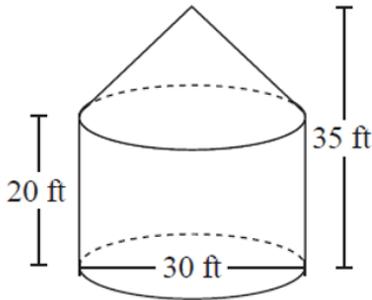


D.



Geometry
Measurement and Coordinate Geometry

7. The grain bin below is made up of a cylinder with a cone on top. The total height of the bin is 35 feet. The height of the cylinder portion is 20 feet, and the diameter of the base is 30 feet.



Part A: Which expression represents the total volume, in cubic feet, of the grain bin?

- A. $\pi \cdot (15)^2 \cdot 20 + \pi \cdot (15)^2 \cdot 5$ – correct
- B. $\pi \cdot (30)^2 \cdot 20 + \pi \cdot (30)^2 \cdot 5$
- C. $\pi \cdot (15)^2 \cdot 30 + \frac{1}{3} \cdot \pi \cdot (15)^2 \cdot 5$
- D. $\pi \cdot (30)^2 \cdot 30 + \frac{1}{3} \cdot \pi \cdot (30)^2 \cdot 5$

Part B: To the nearest cubic foot, how much grain will this bin hold?

17,671 cubic feet

8. A number line shows two points:

- Point M at -6
- Point N at 6

If a weighted average is taken where Point M contributes 40% and Point N contributes 60%, what is the weighted average of the two points?

- A. 0.0
- B. 1.2 – correct
- C. 2.4
- D. 3.6

9. Quadrilateral $MATH$ has coordinates $M(1,1)$, $A(-2,5)$, $T(3,5)$, and $H(6,1)$. Select all the true statements about quadrilateral $MATH$.

- A. $\overline{MT} \cong \overline{AH}$
- B. $\overline{MA} \perp \overline{AT}$
- C. $\overline{MT} \perp \overline{AH}$ – correct
- D. $\overline{MA} \cong \overline{AT} \cong \overline{TH} \cong \overline{HM}$ – correct
- E. $MATH$ is a rhombus and a square.
- F. $MATH$ is a rhombus but not a square. – correct

Geometry
Measurement and Coordinate Geometry

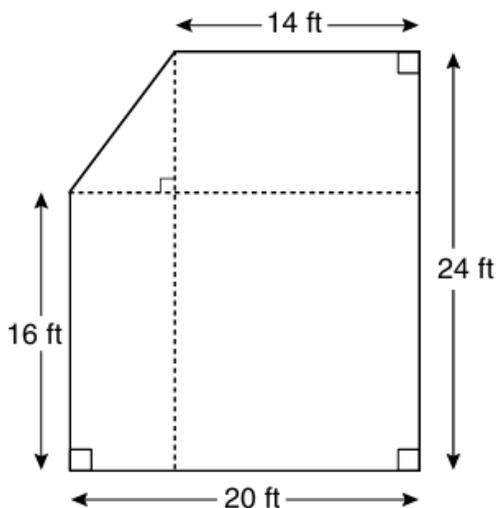
10. Pure silver has a density of 10.5 g/cm^3 . Samantha has a pure silver charm on her necklace in the shape of a sphere. The radius of the charm is 0.5 cm . Determine and state the mass of the charm, to the nearest tenth of a gram.

5.5

11. Which of the following represents a circle with center at $(-7, 11)$ and a 25 units diameter.

- A. $(x + 7)^2 + (y + 11)^2 = 625$
- B. $(x + 7)^2 + (y - 11)^2 = 156.25$ – correct
- C. $(x - 11)^2 + (y + 7)^2 = 625$
- D. $(x - 11)^2 + (y - 7)^2 = 156.25$

12. A local farm is building a fenced area to keep small goats. The shape of the fenced area and its measurements is shown below.



Part A: What is the total area of the fenced space? Round your answer to the nearest square foot.

456 ft^2

Part B: According to agricultural guidelines, each small goat needs at least 23 square feet of space. What is the maximum number of goats the farm can safely keep in this area?

- A. 18 goats
- B. 19 goats – correct
- C. 20 goats
- D. 22 goats

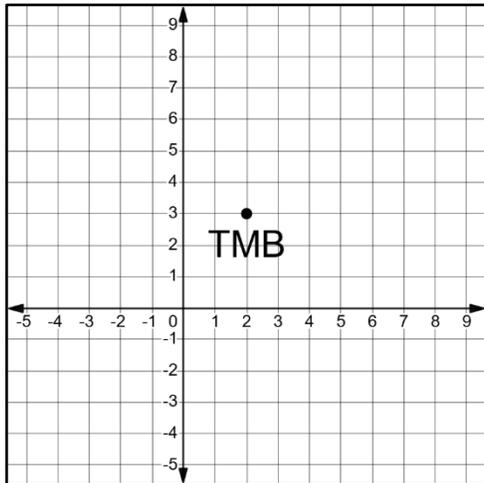
13. Triangle ABC has coordinates $A(-10, 6)$, $B(-1, 6)$, and $C(-4, 0)$. Which of the following could represent the midsegment of $\triangle ABC$ that is parallel to side \overline{AB} ?

- A. $x = -4.5$
- B. $y = 4.5$
- C. $x = -3$
- D. $y = 3$ – correct

Geometry

Measurement and Coordinate Geometry

14. An air traffic control system at Miami Executive Airport (TMB), located at $(2, 3)$ on the grid below, uses radar signals to track the positions of airplanes. The radar can detect airplanes flying within a circular region that extends 35 miles from TMB in all directions. Each grid unit represents 5 miles.



KEY
$\text{H} = 5 \text{ miles}$

Part A: An airplane is heading directly toward TMB from the location represented by coordinates $(-4, 7)$ on the grid.

Can the plane be detected by the radar?

The plane [can cannot] be detected by the radar because it is [7.2 36] miles away, so the plane is [inside outside] the circular region detected by the radar.

Part B: Another airplane is detected exactly on the edge of the radar region at the point $(2, -4)$. The airplane is flying along the tangent line to the circular boundary at this point. Which of the following equations best represents the path of the airplane?

- A. $x = 2$
- B. $x = -4$
- C. $y = 2$
- D. $y = -4$ - correct

15. A square with a side length of 3 inches is rotated about one of its sides to generate a three-dimensional solid. The resulting three-dimensional object is a
- A. cube with a volume of 9.
 - B. cube with a volume of 27.
 - C. cylinder with a volume of 27π . - correct
 - D. cylinder with a volume of 54π .

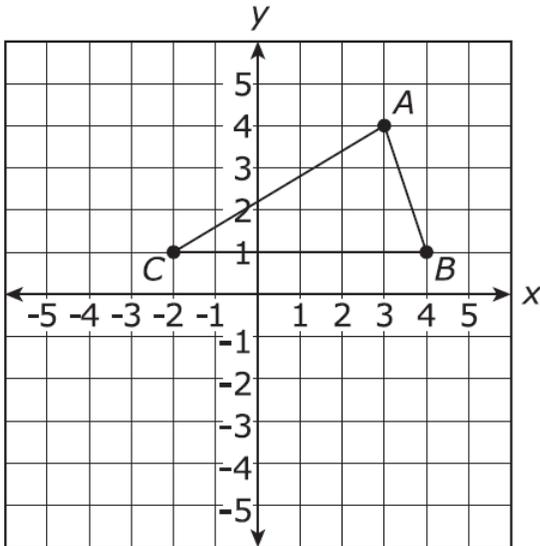
Geometry

Measurement and Coordinate Geometry

16. Which point is NOT on a circle with center at $(0, 0)$ and a radius of 10?

- A. $(0, 5)$ - correct
- B. $(10, 0)$
- C. $(0, -10)$
- D. $(-8, 6)$

17. Triangle ABC is shown on a coordinate plane.



Part A: Determine the perimeter of $\triangle ABC$. Round your answer to the nearest whole number.

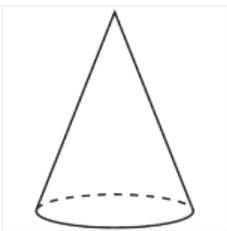
15 *units*

Part B: Determine the area of $\triangle ABC$. Round your answer to the nearest whole number.

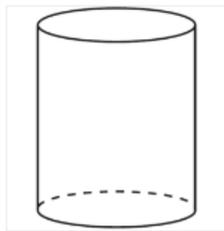
9 *square units*

18. A student has a rectangular postcard that he folds in half lengthwise. Next, he rotates it continuously about the folded edge. Which three-dimensional object below is generated by this rotation?

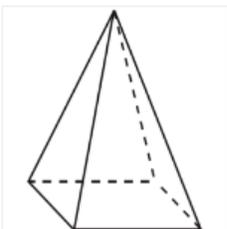
A.



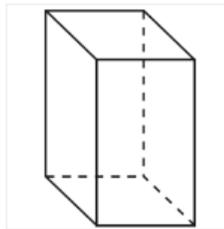
B. - correct



C.



D.



Geometry

Measurement and Coordinate Geometry

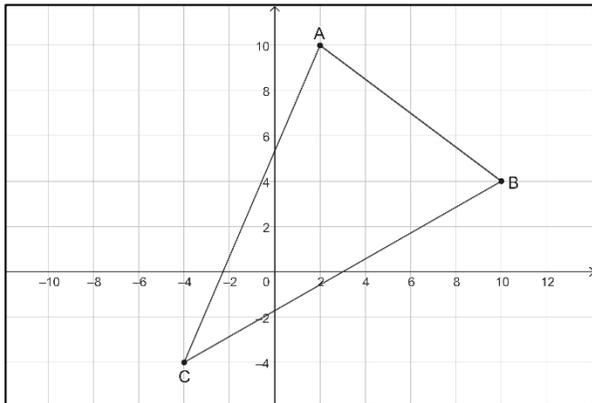
19. A cereal manufacturer needs to change the size of its cereal box to fit on narrower shelves. The dimensions of the current box are 12 inches high by 9 inches wide by 2 inches deep. The new box will have the same height and volume, but the width will be reduced by 1 inch. What will be the depth, to the nearest hundredth of an inch, of the new cereal box? A manufacturing company is currently using cylindrical storage tanks with a diameter of 40 ft and a height of 80 ft, as shown below.

- A. 2.22 inches
- B. 2.25 inches – correct
- C. 2.70 inches
- D. 3.00 inches

20. Karla is asked to draw a circle. She is given three points: the center of the circle and two points that lie on the circle. However, she is not told which point is the center. The points are $(-4, 7)$, $(3, 6)$, and $(-1, 3)$. If Karla correctly wrote the equation of the circle. Which of the following equations is the one that she wrote?

- A. $(x + 4)^2 + (y - 7)^2 = 50$
- B. $(x - 3)^2 + (y - 6)^2 = 50$
- C. $(x - 3)^2 + (y - 6)^2 = 25$
- D. $(x + 1)^2 + (y - 3)^2 = 25$ – correct

21. Triangle ABC is drawn below.



If median \overline{AM} is drawn to side \overline{CB} , which of the following equations represents \overline{AM} ?

- A. $y = 10x - 30$
- B. $y = 10x + 30$
- C. $y = -10x - 30$
- D. $y = -10x + 30$ – correct

22. The domain of circle P is $\{x | -18 \leq x \leq -2\}$. Which of the following represents the center and the radius of circle P ?

- A. center: $(-10, -5)$, radius: 16
- B. center: $(-10, -5)$, radius: 8 – correct
- C. center: $(-5, -10)$, radius: 16
- D. center: $(-5, 10)$, radius: 8

Geometry

Measurement and Coordinate Geometry

23. The vertices of $\triangle JKL$ are $J(-1, -2)$, $K(-3, 3)$, and $L(4, 0)$.

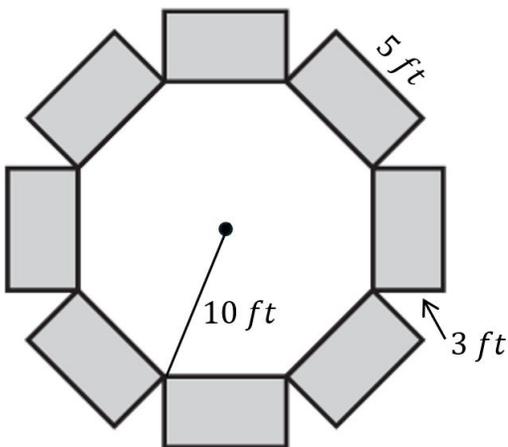
Part A: Which of the following statements are true about $\triangle JKL$?

- A. $\overline{JK} \cong \overline{JL}$ - correct
- B. $\overline{JK} \perp \overline{JL}$ - correct
- C. $m\angle K = m\angle L$ - correct
- D. $m\angle J + m\angle K < 90^\circ$
- E. $m\angle J + m\angle L > 90^\circ$ - correct
- F. $m\angle K + m\angle L = 90^\circ$ - correct

Part B: If the equation of the line that passes through vertices J and K is $(y - 3) = -\frac{5}{2}(x + 3)$. Which of the following is the equation of the line that passes through vertices J and L ?

- A. $(y + 2) = \frac{5}{2}(x + 1)$
- B. $(y + 1) = \frac{5}{2}(x + 1)$
- C. $(y + 2) = \frac{2}{5}(x + 1)$ - correct
- D. $(y + 1) = \frac{5}{2}(x + 1)$

24. As part of a community event, a banquet hall is hosting a Dinner and Dancing night. The layout includes a regular octagonal dance floor in the center of the room, surrounded by rectangular dinner tables as shown in the diagram below.



Event Setup Specifications:

- The dance floor is shaped like a regular octagon with a radius of 10 feet.
- There are 8 identical rectangular tables placed along the sides of the octagon.
- Each table is 5 feet long and 3 feet wide.
- Each table seats 4 guests — 2 guests on the longer side and 1 on each short end.
- To dance comfortably, each guest needs at least 5.2 square feet of space on the dance floor.

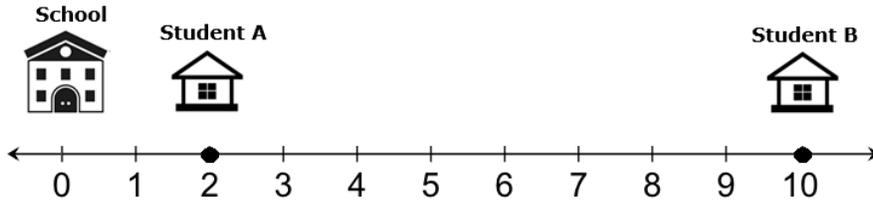
Will all guests be able to dance on the floor at the same time, based on the area available and the space needed per person?

All the guests [will won't] be able to dance on the floor at the same time because the area of the dance floor is [200 193.65 116.19] square feet which divided by 5.2 square feet results in a number of possible dancing guests that is [greater smaller] than the number of guests attending the event.

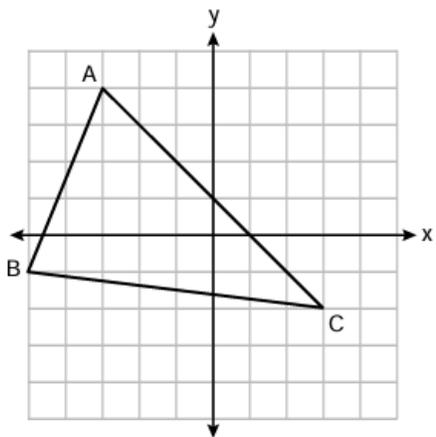
Geometry

Measurement and Coordinate Geometry

25. Two students live at locations 2 miles and 10 miles from the school along the same straight road. A bus stop needs to be placed along this road. If Student A (at 2 miles) uses the stop 25% of the time, and Student B (at 10 miles) uses it 75% of the time, where should the bus stop be placed so that it represents the weighted average of their locations?



- A. 3 miles
B. 4 miles
C. 6 miles
D. 8 miles - correct
26. On a coordinate plane, $\triangle ABC$ has vertices at $A(3, 6)$, $B(12, 6)$, and $C(12, 1)$. Which statements are true? Select all that apply.
- A. $\triangle ABC$ is a right triangle. - correct
B. $\triangle ABC$ is an equilateral triangle.
C. $\triangle ABC$ is an isosceles triangle.
D. $\triangle ABC$ is a scalene triangle. - correct
E. $\angle A$ and $\angle C$ are complementary. - correct
F. $\angle A$ and $\angle C$ are supplementary.
27. Triangle ABC is graphed on the set of axes below. The vertices of $\triangle ABC$ have coordinates $A(23,4)$, $B(25,21)$, and $C(3,22)$.



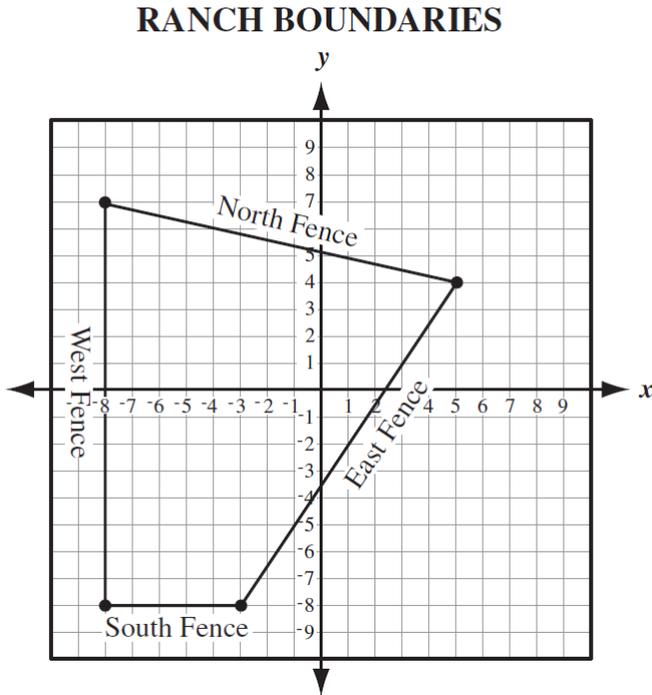
What is the area of $\triangle ABC$?

- A. 16
B. 20
C. 21 - correct
D. 24

Geometry

Measurement and Coordinate Geometry

28. The boundaries of a section of Anita's ranch are plotted on the coordinate plane below.



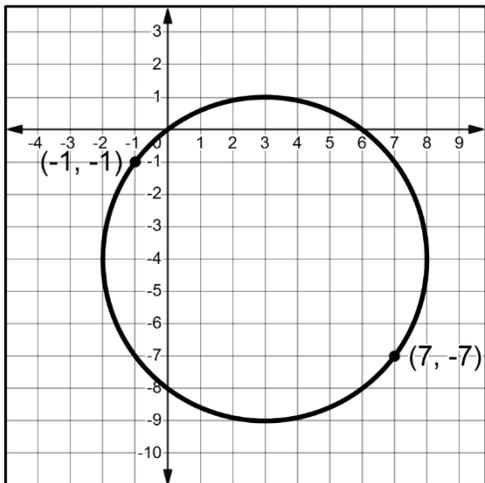
127.5

square units

29. A line segment has endpoints of $(-2, 6)$ and $(-4, -9)$. What is the midpoint of the line segment?

- A. $(3, -7.5)$
- B. $(-3, 7.5)$
- C. $(-3, -1.5)$ - correct
- D. $(-3, 1.5)$

30. A circle is graphed on this coordinate plane.



Part A: What is the radius of the circle?

5

Part B: Which of the following equations represents the circle?

- A. $(x + 3)^2 + (y - 4)^2 = 10$
- B. $(x + 3)^2 + (y - 4)^2 = 10$
- C. $(x - 3)^2 + (y + 4)^2 = 25$ - correct
- D. $(x - 4)^2 + (y + 4)^2 = 25$

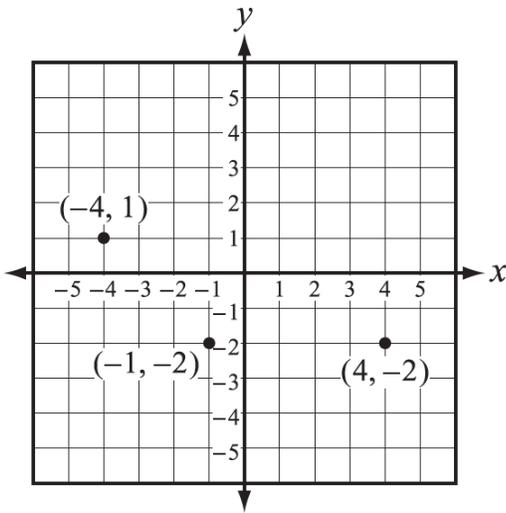
Geometry

Measurement and Coordinate Geometry

31. In isosceles trapezoid $ABCD$, with $AB \neq CD$, diagonal BD has endpoints $(7, 1)$ and $(3, 7)$. What could be the endpoints of diagonal AC ?

- A. $(2, 1)$ and $(7, 7)$
- B. $(3, 1)$ and $(7, 7)$
- C. $(3, 1)$ and $(6, 7)$
- D. $(2, 1)$ and $(6, 7)$ - correct

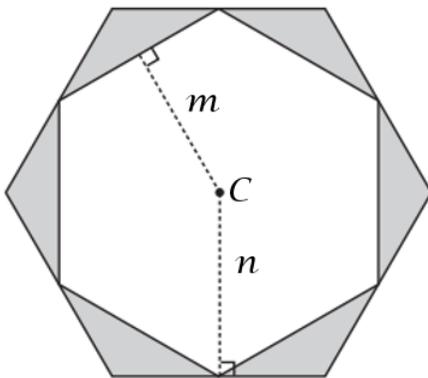
32. The graph below shows three vertices of a quadrilateral at the points $(-4, 1)$, $(4, 2)$, and $(-1, -2)$.



If the fourth vertex is at $(1, 1)$, what is the most precise name for the quadrilateral?

- A. Square
- B. Rectangle
- C. Trapezoid
- D. Parallelogram - correct

33. Two regular hexagons with center C and apothems m and n are shown in the figure below. Each vertex of the smaller hexagon is a midpoint on the side of the larger hexagon.



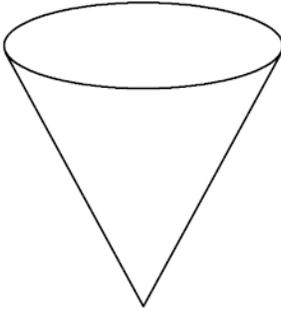
If $m = 18 \text{ cm}$ and $n = 12\sqrt{3} \text{ cm}$, what is the total area of the shaded regions?

- A. $36\sqrt{3} \text{ cm}^3$
- B. $216\sqrt{3} \text{ cm}^3$ - correct
- C. $648\sqrt{3} \text{ cm}^3$
- D. $1,512\sqrt{3} \text{ cm}^3$

Geometry

Measurement and Coordinate Geometry

34. The figure shown is intersected by a plane parallel to the base. What shape is the cross-section?



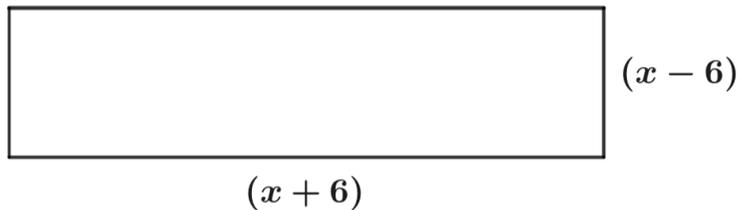
- A. Circle – correct
- B. Cone
- C. Cylinder
- D. Triangle

35. A scientist is plotting the circular path of a particle on a coordinate plane for a lab experiment. The scientist knows the path is a perfect circle and that the particle starts at ordered pair $(-5, -11)$. When the particle is halfway around the circle, the particle is at the ordered pair $(11, 19)$.

Which of the following equations represents the circular path of the particle?

- A. $(x + 3)^2 + (y + 4)^2 = 17$
- B. $(x - 3)^2 + (y - 4)^2 = 34$
- C. $(x - 3)^2 + (y - 4)^2 = (17)^2$ – correct
- D. $(x + 3)^2 + (y + 4)^2 = (34)^2$

36. In the rectangular vegetable garden shown there are 2,304 celery seeds planted.



Part A: If each celery seed needs 4 square inches to grow, what is the area, in square feet, of the vegetable garden?

64 ft^2

Part B: What are the length and the width of the vegetable garden?

$l = 8 ft$ and $w = 8 ft$

$l = 16 ft$ and $w = 4 ft$ – correct

$l = 32 ft$ and $w = 2 ft$

$l = 64 ft$ and $w = 1 ft$

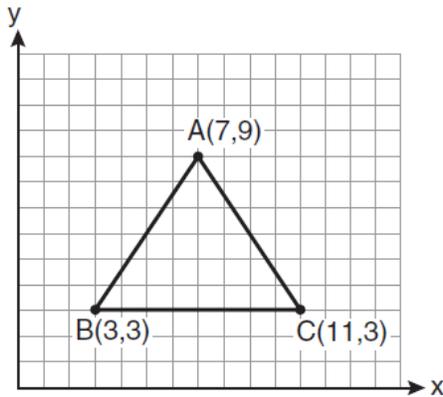
37. Quadrilateral $LMNO$ has coordinates $L(5, 6)$, $M(9, 8)$, $N(11, 12)$, and $O(7, 10)$.

How can quadrilateral $LMNO$ be classified?

- A. Square
- B. rhombus but not a square – correct
- C. rectangle but not a square
- D. parallelogram but neither a rhombus nor a rectangle

Geometry
Measurement and Coordinate Geometry

38. The vertices of the triangle in the diagram below are $A(7,9)$, $B(3,3)$, and $C(11,3)$.

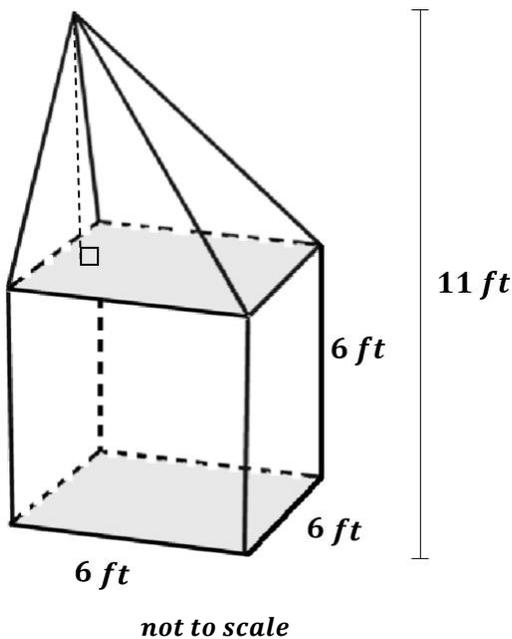


What are the coordinates of the centroid of $\triangle ABC$?

- A. (5, 6)
- B. (7, 3)
- C. (7, 5) – correct
- D. (9, 6)

39. A museum sculpture is composed of an oblique glass pyramid mounted on top of a solid glass cube.

- The base of the pyramid is a square with side length 6 feet.
- The total height of the sculpture is 11 feet, as shown in the diagram.
- The sculpture is made entirely of solid glass, which has a density of 160 pounds per cubic foot.



Part A: Which of the following expressions represents the volume of the entire sculpture in cubic feet?

- A. $6^2 \cdot 6 + \frac{1}{3}6^2 \cdot 11$
- B. $6^2 \cdot 5 + \frac{1}{3}6^2 \cdot 11$
- C. $6^2 \cdot 5 + \frac{1}{3}6^2 \cdot 5$
- D. $6^2 \cdot 6 + \frac{1}{3}6^2 \cdot 5$ – correct

Part B: What is the total volume of the sculpture? Round your answer to the nearest cubic foot.

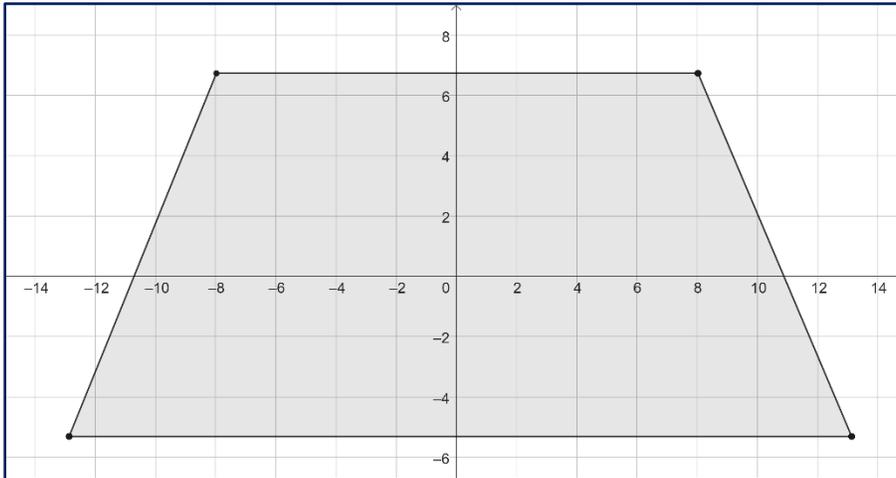
- A. 240
- B. 276 – correct
- C. 312
- D. 348

Part C: What is the total weight, in pounds, of the sculpture?

- A. 34,560
- B. 38,400
- C. 44,160 – correct
- D. 49,920

Geometry
Measurement and Coordinate Geometry

40. A diagram of David's room is shown.



Part A: David plans to cover the floor of his room with new material.

If the floor is an isosceles trapezoid whose bases are 16 feet and 26 feet and sides are 13 feet in length, what is the area of David's room?

- A. 144
- B. 168
- C. 252 – correct
- D. 504

Part B: Each piece of new material has an area of 2.5 square feet. Assuming the pieces of new material can be cut as needed, how many pieces does David need?

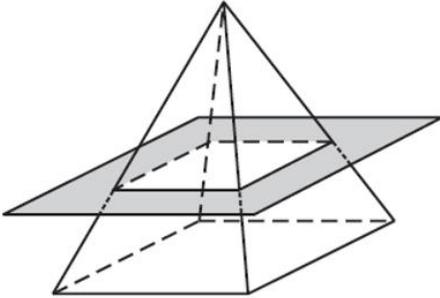
- A. 58
- B. 68
- C. 101 – correct
- D. 202

41. A sealed container is shaped like a right cylinder. The exterior height is 80 cm. The exterior diameter of each base is 28 cm. The circumference of each base is approximately 87.92 cm. The longest diagonal is approximately 84.76 cm. The measure of the total exterior surface area of the container can be used to determine the amount of paint needed to cover the container. Which is the closest approximation of the total exterior surface area, including the bases, of the container? Use $\pi = 3.14$.

- A. 7,209.44 square cm
- B. 7,649.04 square cm
- C. 8,011.68 square cm
- D. 8,264.48 square cm - correct

Geometry
Measurement and Coordinate Geometry

42. The plane shown below is parallel to the base of the pyramid with a regular polygon as a base.



- A. Kite
- B. Square – correct
- C. Triangle
- D. Trapezoid

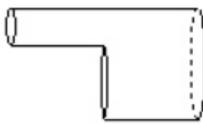
43. Triangle QRS has vertices located at $(1, -4)$, $(3, 4)$ and $(5, -4)$, respectively. Classify the type of triangle QRS .

- A. right triangle
- B. scalene triangle
- C. isosceles triangle - correct
- D. equilateral triangle

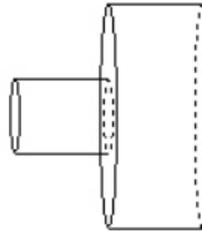
44. Which solid of revolution is produced by rotating the shape below 360° about the given axis?



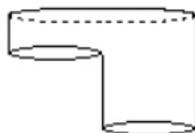
A.



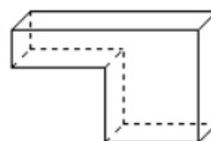
B. - correct



C.

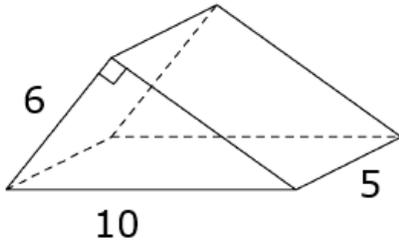


D.



Geometry
Measurement and Coordinate Geometry

45. Find the surface area of the shape below.



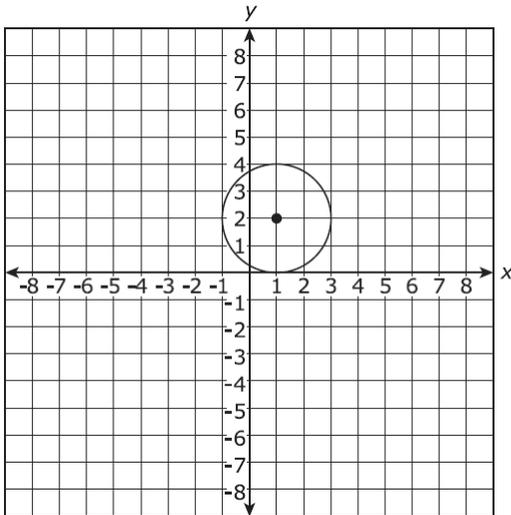
- A. 120 square units
- B. 144 square units
- C. 168 square units - correct
- D. 180 square units

46. A circle is represented by the equation shown.

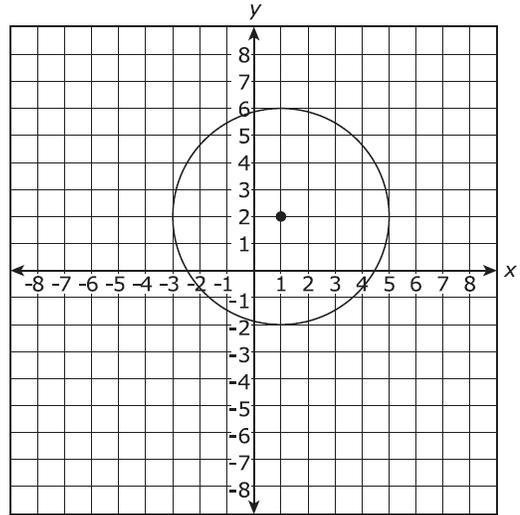
$$(x - 1)^2 + (y - 2)^2 = 4$$

Which graph best represents this circle?

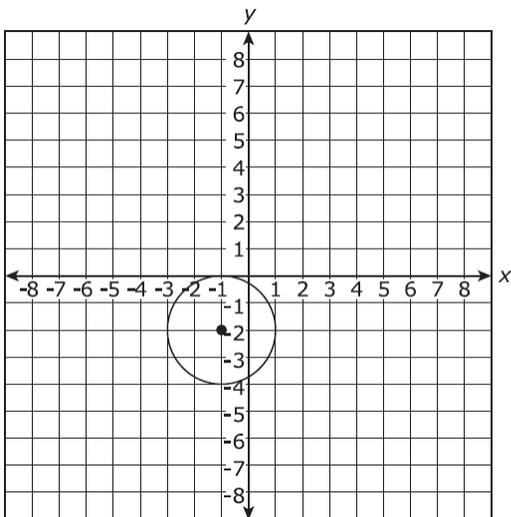
A. -correct



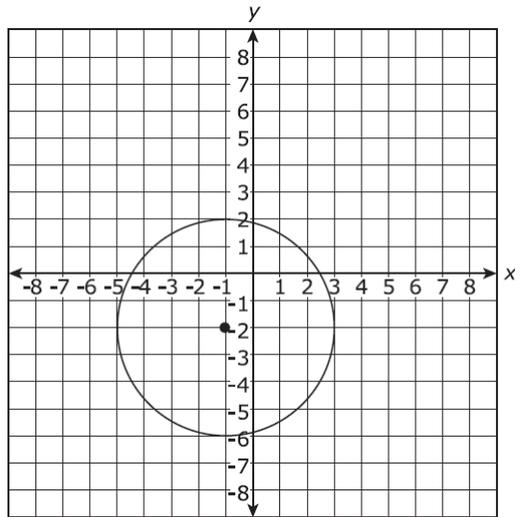
B.



C.

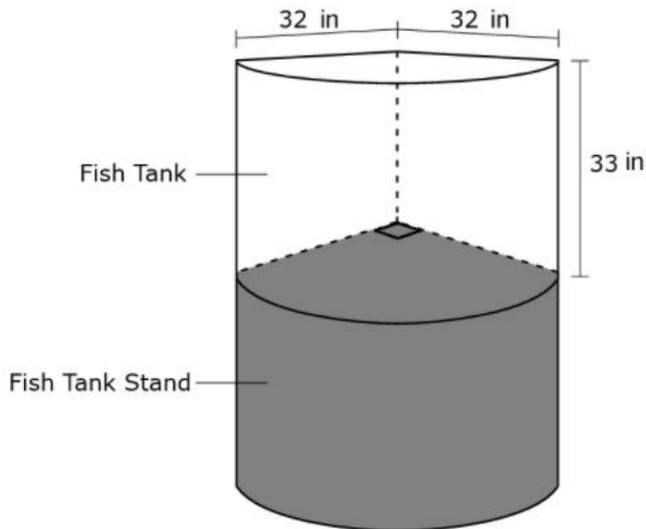


D.



Geometry
Measurement and Coordinate Geometry

47. A local aquarium store is setting up a new glass fish tank for an exhibition. The tank will be placed on a stand in the corner of the store with perpendicular walls. The radius of the aquarium is 32 inches, and its height is 33 inches as shown in the diagram below.



Part A: Determine the capacity of the tank in cubic inches. Round your answer to the nearest tenth of a cubic inch.

26,540.2

Part B: The fish tank underneath can support a maximum of 900 pounds and the store owner is wondering if the stand will safely support the weight of the tank once is filled with water. If the density of water is approximately 0.0361 pounds per cubic inch, will the stand be able to safely support the weight of the tank when full?

Note: The weight of the empty tank is not significant, so it can be ignored.

- A. Yes, the Fish Tank Stand will be able to support the Fish Tank when full because the Fish Tank weights approximately 58 pounds less than the maximum weight that the stand can safely hold.
 - B. Yes, the Fish Tank Stand will be able to support the Fish Tank when full because the Fish Tank weights approximately 958 pounds less than the maximum weight that the stand can safely hold.
 - C. No, the Fish Tank Stand will not be able to support the Fish Tank when full because the Fish Tank weights approximately 58 pounds more than the maximum weight that the stand can safely hold.
– correct
 - D. No, the Fish Tank Stand will not be able to support the Fish Tank when full because the Fish Tank weights approximately 958 pounds more than the maximum weight that the stand can safely hold.
48. Given the equation of circle O .

$$x^2 - 6x + y^2 + 2y + 6 = 0$$

Which of these represents the center and radius of circle O ?

- A. center: $(3, -1)$, radius: 4
- B. center: $(-3, 1)$, radius: 4
- C. center: $(3, -1)$, radius: 2 – correct
- D. center: $(-3, 1)$, radius: 2

Geometry
Measurement and Coordinate Geometry

49. Two stores are located along a highway, the first one at mile marker 20 and the second one at mile marker 50. A shipping company makes $\frac{7}{10}$ of its deliveries to the first store and $\frac{3}{10}$ to the second. To reduce driving time, they want to place a warehouse at the weighted average location of the two stores.

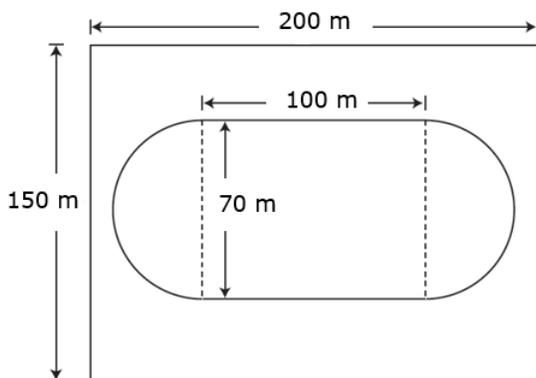
Part A: At what mile marker should the shipping company place the warehouse?

- A. 26
- B. 29 - correct
- C. 33
- D. 41

Part B: Due to a change in the number of orders received from the stores, the shipping company changed its delivery distribution, now making $\frac{6}{10}$ of its deliveries to the first store and $\frac{4}{10}$ to the second store. How will this change affect the location of the warehouse?

- A. The new location will be 1 mile closer to the first store.
- B. The new location will be 1 mile closer to the second store.
- C. The new location will be 3 miles closer to the first store.
- D. The new location will be 3 miles closer to the second store. - correct

50. A rectangular field measuring 150 meters (m) by 200 meters (m) contains a running track. The area enclosed by the running track is in the shape of a rectangle with semicircles on each end, as shown below.



Part A: Determine the area enclosed by the running track. Round your answer to the nearest square meter.

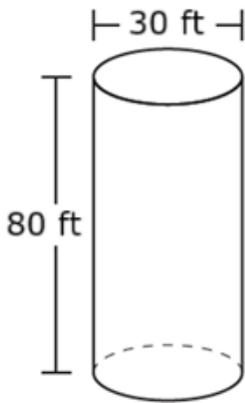
10,848

Part B: The area outside the running track needs to be covered with sod. Sod is sold in rectangular patches (also called slabs). Each sod patch measures 41 centimeters (cm) by 61 centimeters (cm). Determine how many sod patches are needed to fully cover the area of the field outside the running track.

- A. 4,790 sod patches
- B. 76,578 sod patches - correct
- C. 190,000 sod patches
- D. 47,899,152 sod patches

Geometry
Measurement and Coordinate Geometry

51. A manufacturing company is currently using cylindrical storage tanks with a diameter of 30 ft and a height of 80 ft, as shown below.



Part A: What is the volume of each of the storage tanks? Round your answer to the nearest cubic foot.

56,549.00

Part B: If the manufacturing company doubles the diameter of the storage tanks and keeps the height the same, what is the new volume of each tank? Round your answer to the nearest cubic foot.

Correct Answers: 226,195 if the student calculated the new volume by doubling the radius or 226,196 if the student multiplied the volume founded in Part A by 4.

Part C: What should the diameter of the storage tank be if the manufacturing company wants the volume of the storage tank to be 16 times as great as the original volume and the height remains the same?

- A. 60
- B. 120 – correct
- C. 240
- D. 480

Part D: The storage tanks currently in use are filled with a liquid that has a density of 55 pounds per cubic foot (lb/ft^3). Which of the following is the closest value to the weight of the liquid in the storage tank?

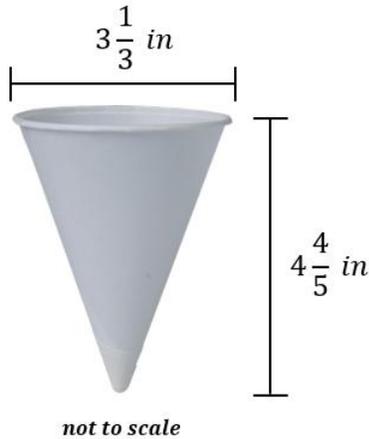
- A. 3.00×10^6 lbs
- B. 3.11×10^6 lbs – correct
- C. 3.25×10^6 lbs
- D. 3.50×10^6 lbs

52. A polygon graphed on a coordinate plane has the coordinates (2, 2), (4, 8), (8, 8), and (11, 2). What type of polygon is graphed?

- A. isosceles triangle
- B. parallelogram
- C. trapezoid – correct
- D. square

Geometry
Measurement and Coordinate Geometry

53. You are serving 12 gallons of fruit punch at an event. The paper cups being used are shaped like cones with the dimensions shown below.



Part A: How many ounces of fruit punch can one paper cup hold? Round your answer to the nearest tenth.

Consider: $1 \text{ in}^3 \approx 0.55 \text{ fluid ounces}$

- A. 5.3
- B. 7.7 – correct
- C. 10.5
- D. 11.2

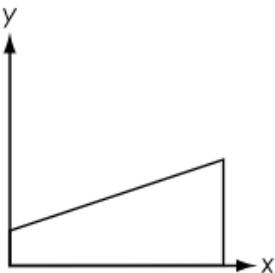
Part B: If the cups are sold in packages of 150, how many packages are needed to serve all 12 gallons of punch?

- A. 1
- B. 2 – correct
- C. 3
- D. 4

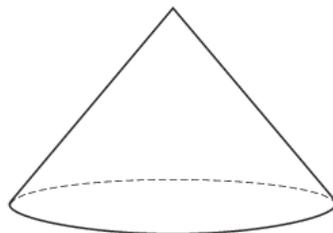
Part C: A larger version of the same cup is available with a diameter that is 1.5 times bigger. If you choose to use this larger cup instead, how many of them would you need to serve all 12 gallons of fruit punch?

- A. 56
- B. 89 – correct
- C. 134
- D. 200

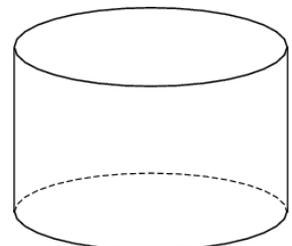
54. A trapezoid is shown on a coordinate grid. The trapezoid is rotated about the x-axis. What is the resulting shape?



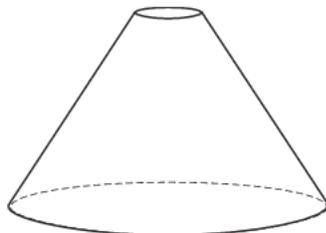
A.



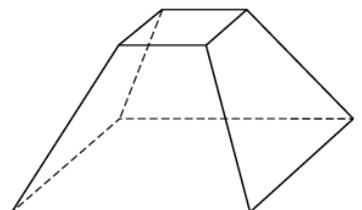
B.



C. – correct



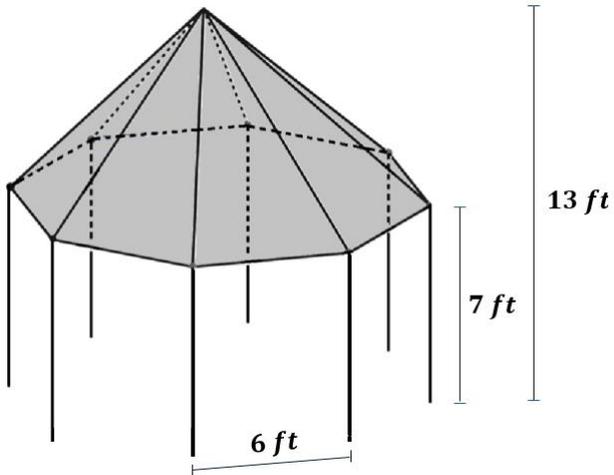
D.



Geometry

Measurement and Coordinate Geometry

55. A community park has a gazebo with a roof in the shape of a right octagonal pyramid, as shown in the diagram. The beams supporting the roof are 7 feet high and are positioned at each vertex of the regular octagonal base, with side lengths of 6 feet. The total height of the gazebo, from the ground to the peak, is 13 feet.



Not to scale

Part A: The park maintenance team wants to paint the exterior of the gazebo's roof with a heat-reflective coating. If the radius of the octagonal base is approximately 7.8 feet, what is the total surface area that needs to be covered? Round your answer to the nearest square foot.

236 ft^2

Part B: According to the paint manufacturer, the recommended coverage rate is no more than 75 square feet per gallon. What is the minimum number of gallons needed to fully coat the roof?

4 gallons