

Geometry EOC Item Specs Practice Test

_____ 1. Which of the following is the **converse** of the following statement?

“If today is Sunday, then tomorrow is Monday.”

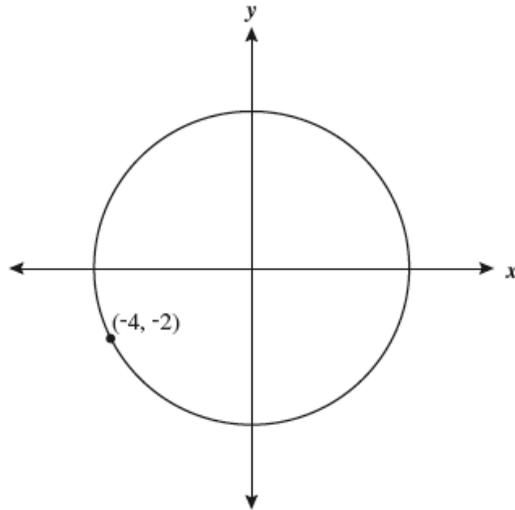
- a. If tomorrow is Monday, then today is Sunday.
- b. If tomorrow is not Monday, then today is Sunday.
- c. today is not Sunday, then tomorrow is not Monday.
- d. If tomorrow is not Monday, then today is not Sunday.

_____ 2. Which of the following is logically equivalent to the following statement?

“If you are a single man, then you are a bachelor.”

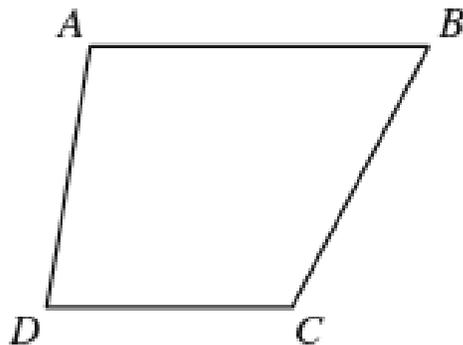
- a. If you are a bachelor, then you are a single man.
- b. If you are not a bachelor, then you are a single man.
- c. If you are not a single man, then you are not a bachelor.
- d. If you are not a bachelor, then you are not a single man.

- _____ 3. The circle shown below is centered at the origin and contains the point $(-4, -2)$.



Which of the following is closest to the length of the diameter of the circle?

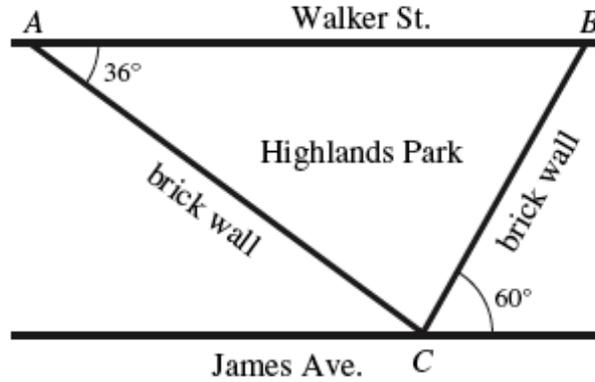
- a. 13.41 b. 11.66 c. 8.94 d. 4.47
4. On a coordinate grid, \overline{AB} has end point B at $(24, 16)$. The midpoint of \overline{AB} is $P(4, -3)$. What is the y -coordinate of Point A ?
- _____ 5. In the figure below, \overline{AB} is parallel to \overline{DC} .



Which of the following statements about the figure must be true?

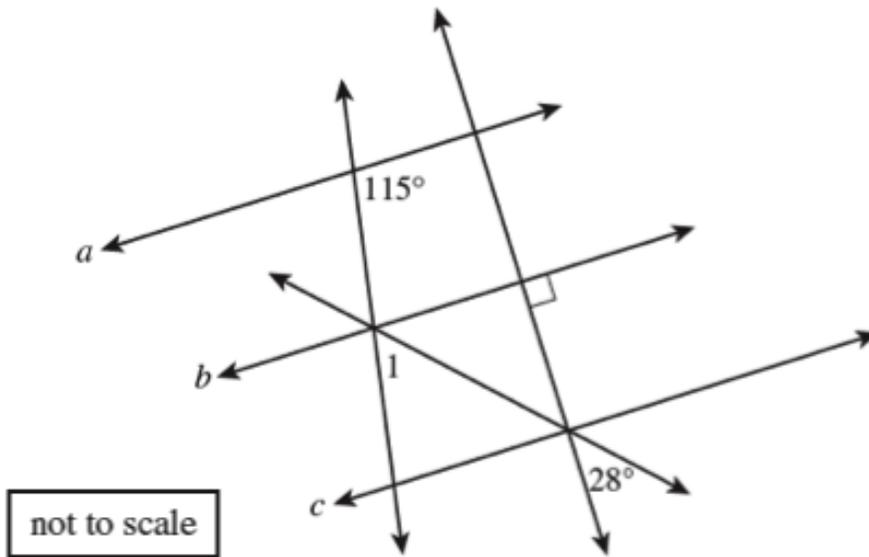
- a. $m\angle DAB + m\angle ABC = 180^\circ$ c. $\angle DAB \cong \angle ADC$
 b. $m\angle DAB + m\angle CDA = 180^\circ$ d. $\angle ADC \cong \angle ABC$

6. Highlands Park is located between two parallel streets, Walker Street and James Avenue. The park faces Walker Street and is bordered by two brick walls that intersect James Avenue at point C, as shown below.



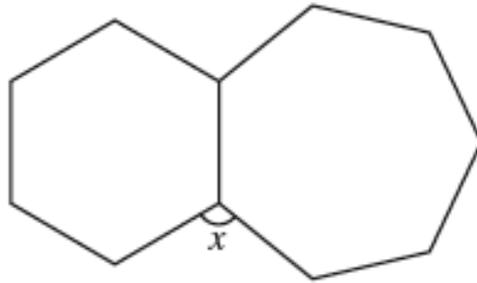
What is the measure, in degrees, of $\angle ACB$, the angle formed by the park's two brick walls?

7. In the figure shown below, $a \parallel b \parallel c$. What is the measure of $\angle 1$?



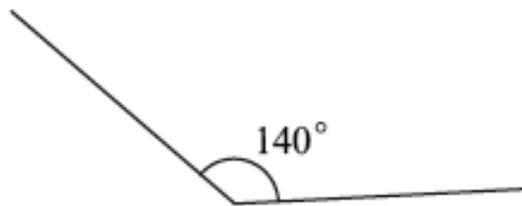
- a. 53° b. 87° c. 115° d. 143°

8. A regular hexagon and a regular heptagon share one side, as shown in the diagram below.



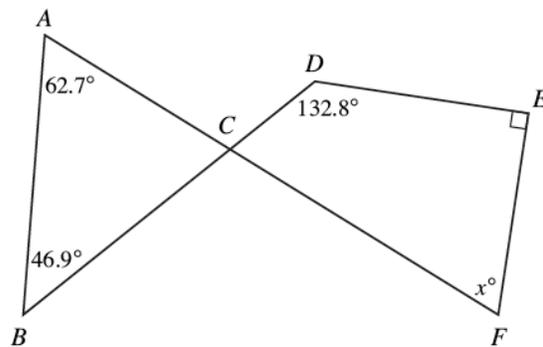
Which of the following is closest to the measure of x , the angle formed by one side of the hexagon and one side of the heptagon?

- a. 102.9° b. 111.4° c. 120.0° d. 124.5°
9. Claire is drawing a regular polygon. She has drawn two of the sides with an interior angle of 140° , as shown below.



When Claire completes the regular polygon, what should be **the sum**, in degrees, of the measures of the interior angles?

10. In the figure below, BD and AF intersect at point C . What is the value of x ?

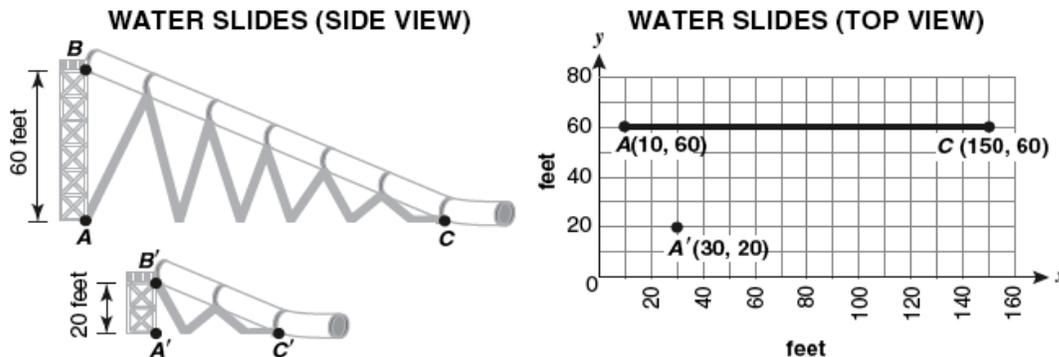


11. The diagram below shows the intersections of several roads. Each of the roads is straight. The roads First Avenue (Ave.), Second Ave., and Third Ave. are parallel.



Marisa drives from point A to point B along Broad St. and then from point B to point C along Third Ave. What distance, to the nearest meter, did she drive?

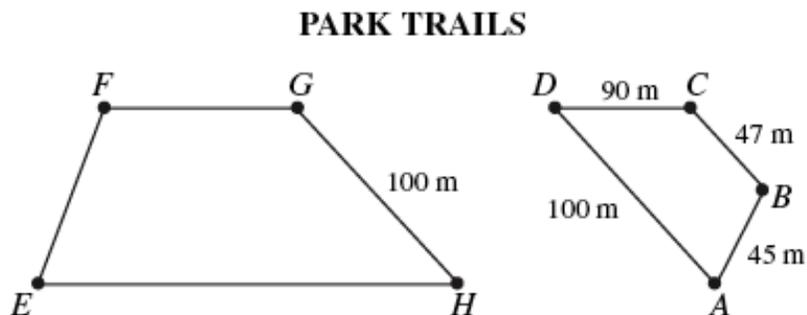
12. The owners of a water park want to build a scaled-down version of a popular tubular water slide for the children's section of the park. The side view of the water slide, labeled ABC, is shown below.



Points A', B' and C', shown above, are the corresponding points of the scaled-down slide. Which of the following would be closest to the coordinates of a new point C' that will make slide A'B'C' similar to slide ABC?

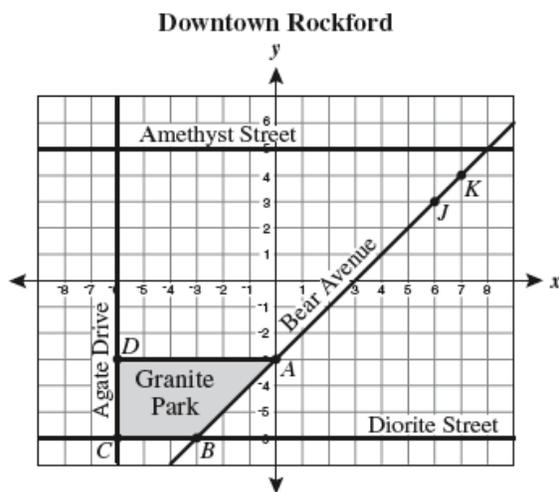
- a. (90, 20) b. (77, 20) c. (50, 20) d. (47, 20)

13. Malik runs on the trails in the park. He normally runs 1 complete lap around trail $ABCD$. The length of each side of trail $ABCD$ is shown in meters (m) in the diagram below.



If trail $EFGH$ is similar in shape to trail $ABCD$, what is the minimum distance, to the nearest whole meter, Malik would have to run to complete one lap around trail $EFGH$?

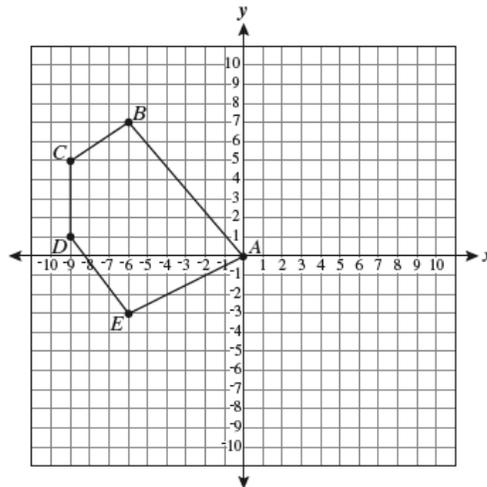
14. A top view of downtown Rockford is shown on the grid below, with Granite Park represented by quadrilateral $ABCD$. The shape of a new park, Mica Park, will be similar to the shape of Granite Park. Vertices L and M will be plotted on the grid to form quadrilateral $JKLM$, representing Mica Park.



Which of the following coordinates for L and M could be vertices of $JKLM$ so that the shape of Mica Park is similar to the shape of Granite Park?

- | | |
|-----------------------|-----------------------|
| a. $L(4, 4), M(4, 3)$ | c. $L(7, 6), M(6, 6)$ |
| b. $L(7, 1), M(6, 1)$ | d. $L(8, 4), M(8, 3)$ |

15. Pentagon $ABCDE$ is shown below on a coordinate grid. The coordinates of A , B , C , D , and E all have integer values.



If pentagon $ABCDE$ is rotated 90° clockwise about point A to create pentagon $A'B'C'D'E'$, what will be the x-coordinate of E' ?

16. A square with an area of 144 square centimeters was increased in length, but not in width, until the resulting rectangle had a perimeter that was 4 times the perimeter of the original square. By how many square centimeters did the area of the figure increase?
17. A package shaped like a rectangular prism needs to be mailed. For this package to be mailed at the standard parcel-post rate, the sum of the length of the longest side and the girth (the perimeter around its other two dimensions) must be less than or equal to 108 inches (in.). Figure 1 shows how to measure the girth of a package.

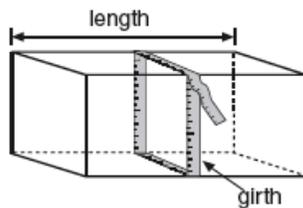


Figure 1

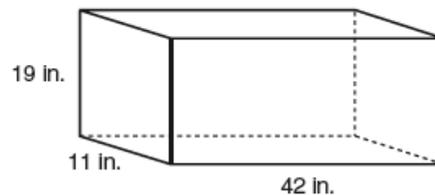
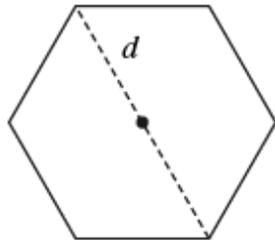


Figure 2

What is the sum of the length, in inches, of the longest side and the girth of the package shown in Figure 2?

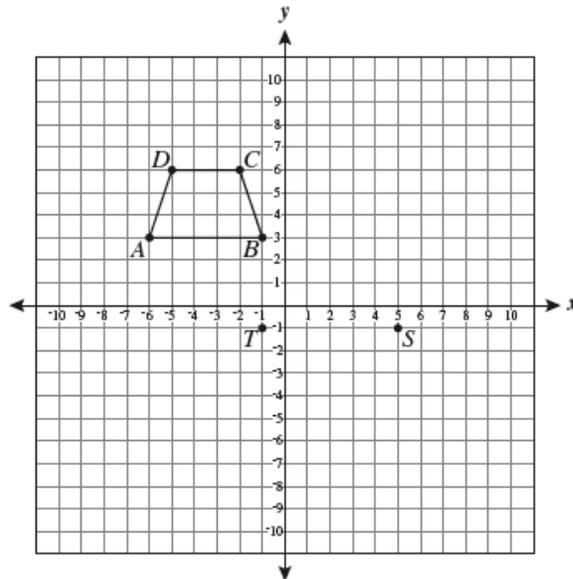
- _____ 18. Marisol is creating a custom window frame that is in the shape of a regular hexagon. She wants to find the area of the hexagon to determine the amount of glass needed. She measured diagonal d and determined it was 40 inches. A diagram of the window frame is shown below.

Custom Window Frame



Which of the following is closest to the area, in square inches, of the hexagon?

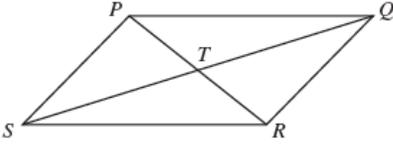
- a. 600 b. 849 c. 1,039 d. 1,200
- _____ 19. On the coordinate grid below, quadrilateral $ABCD$ has vertices with integer coordinates.



Quadrilateral $QRST$ is similar to quadrilateral $ABCD$ with point S located at $(5, -1)$ and point T located at $(-1, -1)$. Which of the following could be possible coordinates for point Q ?

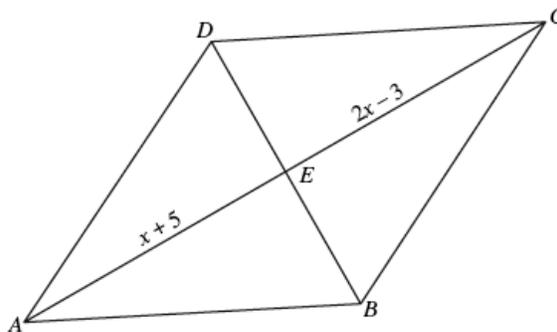
- a. $(6, -4)$ b. $(7, -7)$ c. $(-3, -7)$ d. $(-2, -4)$

_____ 20. Mrs. Linder gave her students the following proof to complete. Which is the correct statement 6 for this proof ?

Given: $\overline{ST} \cong \overline{TQ}$ $\overline{PS} \cong \overline{QR}$ $\angle TSR \cong \angle TQP$ Prove: $PQRS$ is a parallelogram	
Statement	Reason
1. $\overline{PS} \cong \overline{QR}$	1. Given
2. $\overline{ST} \cong \overline{TQ}$	2. Given
3. $\angle TSR \cong \angle TQP$	3. Given
4. $\angle QTP \cong \angle RTS$	4.
5. $\triangle QTP \cong \triangle STR$	5.
6.	6. Corresponding parts of congruent triangles are congruent.
7. $PQRS$ is a parallelogram.	7. If both pairs of opposite sides of a quadrilateral are congruent then the quadrilateral is a parallelogram.

- a. $\overline{PQ} \cong \overline{SR}$ b. $\overline{ST} \cong \overline{TR}$ c. $\overline{PT} \cong \overline{TR}$ d. $\overline{PR} \cong \overline{QS}$

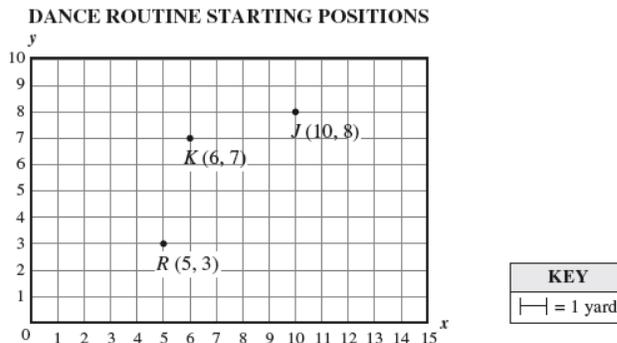
_____ 21. Figure $ABCD$ is a rhombus. The length of \overline{AE} is $(x + 5)$ units, and the length of \overline{EC} is $(2x - 3)$ units.



Which statement best explains why the equation $x + 5 = 2x - 3$ can be used to solve for x ?

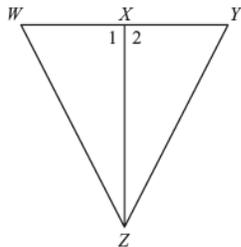
- a. All four sides of a rhombus are congruent.
- b. Opposite sides of a rhombus are parallel.
- c. Diagonals of a rhombus are perpendicular.
- d. Diagonals of a rhombus bisect each other.

22. Four students are choreographing their dance routine for the high school talent show. The stage is rectangular and measures 15 yards by 10 yards. The stage is represented by the coordinate grid below. Three of the students—Riley (R), Krista (K), and Julian (J)—graphed their starting positions, as shown below.

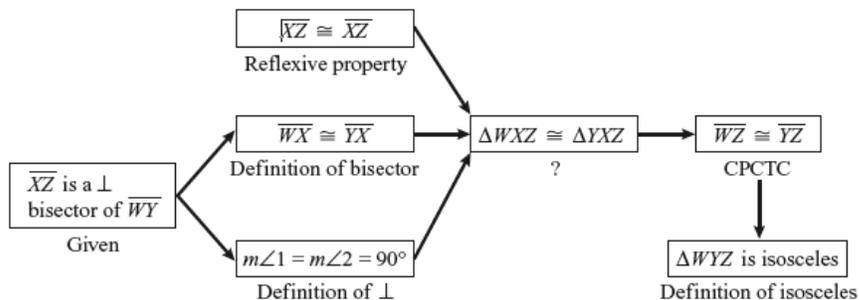


Let H represent Hannah's starting position on the stage. What should be the x -coordinate of point H so that $RKJH$ is a parallelogram?

23. Nancy wrote a proof about the figure shown below.



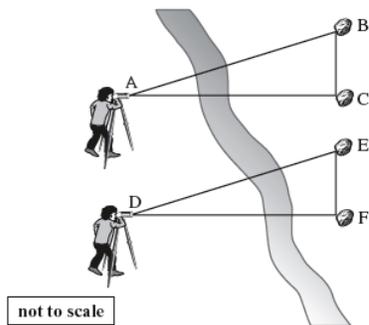
In the proof below, Nancy started with the fact that \overline{XZ} is a perpendicular bisector of \overline{WY} and proved that $\triangle WYZ$ is isosceles.



Which of the following correctly replaces the question mark in Nancy's proof?

- a. ASA
- b. SAA
- c. SAS
- d. SSS

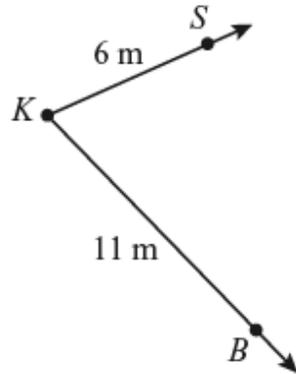
24. A surveyor took some measurements across a river, as shown below. In the diagram, $AC = DF$ and $AB = DE$.



The surveyor determined that $m\angle BAC = 29^\circ$ and $m\angle EDF = 32^\circ$. Which of the following can he conclude?

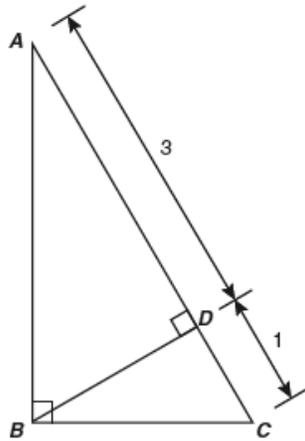
- a. $BC > EF$
- b. $BC < EF$
- c. $AC > DE$
- d. $AC < DF$

- _____ 25. Kristin has two dogs, Buddy and Socks. She stands at point K in the diagram and throws two disks. Buddy catches one at point B , which is 11 meters (m) from Kristin. Socks catches the other at point S , which is 6 m from Kristin.



If KSB forms a triangle, which could be the length, in meters, of segment SB ?

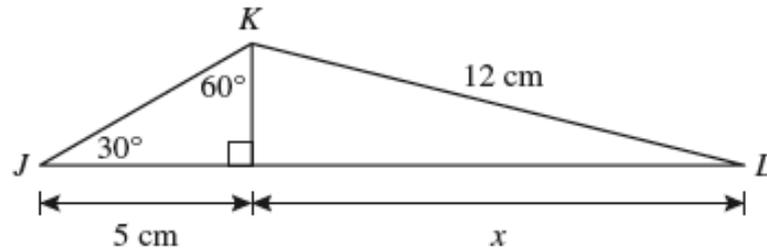
- a. 5 m b. 8 m c. 17 m d. 22 m
- _____ 26. In $\triangle ABC$, \overline{BD} is an altitude.



What is the length, in units, of \overline{BD} ?

- a. 1 b. 2 c. $\sqrt{3}$ d. $2\sqrt{3}$

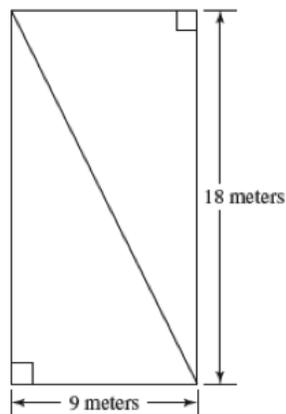
27. Nara created two right triangles. She started with $\triangle JKL$ and drew an altitude from point K to side JL . The diagram below shows $\triangle JKL$ and some of its measurements, in centimeters (cm).



Based on the information in the diagram, what is the measure of x to the nearest tenth of a centimeter?

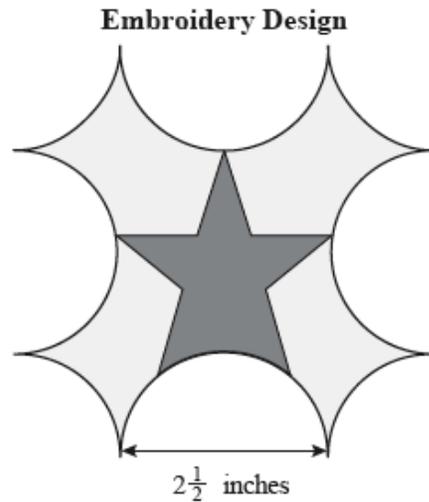
.

- _____ 28. The dimensions and shape of a rectangular volleyball court are shown in this picture. What is the approximate distance of a serve that is hit diagonally from one corner of the court to the other?



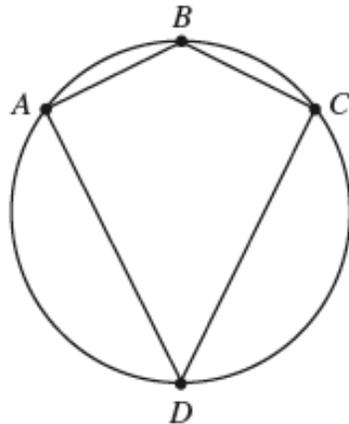
- a. 27 meters
b. 20.1 meters
c. 15.6 meters
d. 12.7 meters

29. Allison created an embroidery design of a stylized star emblem. The perimeter of the design is made by alternating semicircle and quarter-circle arcs. Each arc is formed from a circle with a $2\frac{1}{2}$ -inch diameter. There are 4 semicircle and 4 quarter-circle arcs, as shown in the diagram below.



To the nearest whole inch, what is the **perimeter** of Allison's design?

- a. 15 inches b. 20 inches c. 24 inches d. 31 inches
30. Kayla inscribed kite $ABCD$ in a circle, as shown below.

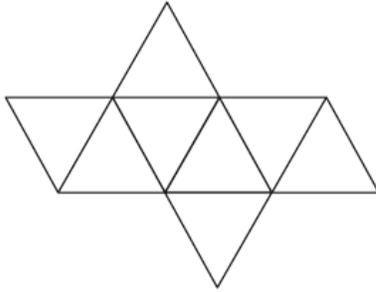


If the measure of arc ADC is 255° in Kayla's design, what is the measure, in degrees, of $\angle ADC$?

_____ 31. Circle Q has a radius of 5 units with center Q (3.7, -2). Which of the following equations defines circle Q?

- a. $(x + 3.7)^2 + (y - 2)^2 = 5$ c. $(x - 3.7)^2 + (y + 2)^2 = 5$
 b. $(x + 3.7)^2 + (y - 2)^2 = 25$ d. $(x - 3.7)^2 + (y + 2)^2 = 25$

_____ 32. Below is a net of a polyhedron. How many edges does the polyhedron have?

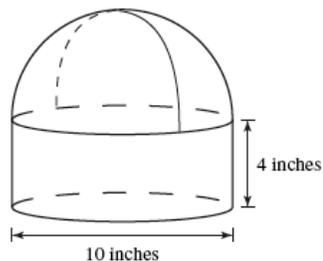


- a. 6 b. 8 c. 12 d. 24

33. How many faces does a dodecahedron have?

_____ 34. Abraham works at the Delicious Cake Factory and packages cakes in cardboard containers shaped like right circular cylinders with hemispheres on top, as shown in the diagram below.

CAKE CONTAINER

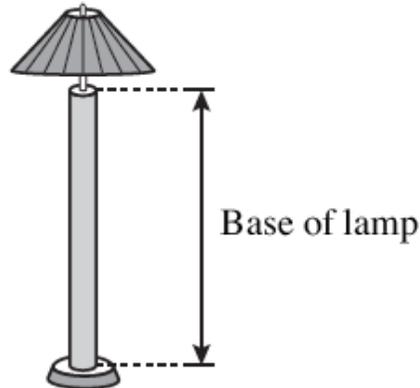


Abraham wants to wrap the cake containers completely in colored plastic wrap and needs to know how much wrap he will need. What is the total exterior surface area of the container?

- a. $90\pi \text{ in}^2$ b. $115\pi \text{ in}^2$ c. $190\pi \text{ in}^2$ d. $308\pi \text{ in}^2$

35. Tobias is restoring an antique lamp like the one pictured below. The base of the lamp is cylindrical with a height of $19\frac{1}{2}$ inches and a diameter of $1\frac{1}{4}$ inches. He will use gold leaf to cover the lateral surface area of the base of the lamp.

TOBIAS'S LAMP

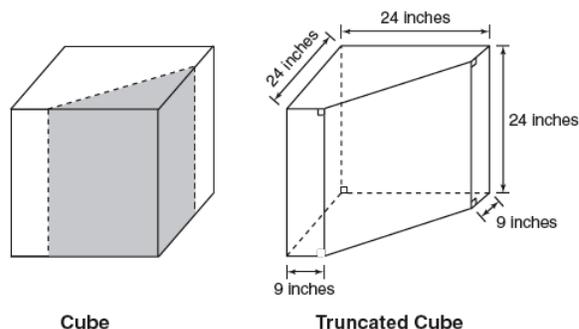


The gold-leaf material Tobias will use comes in square pieces that measure $3\frac{3}{8}$ inches by $3\frac{3}{8}$ inches.

What is **the least number** of these pieces of gold-leaf material Tobias will need to completely cover the lateral surface area of the lamp's base?

36. At a garage sale, Jason bought an aquarium shaped like a truncated cube. A truncated cube can be made by slicing a cube with a plane perpendicular to the base of the cube and removing the resulting triangular prism, as shown in the cube diagram below.

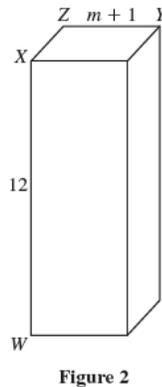
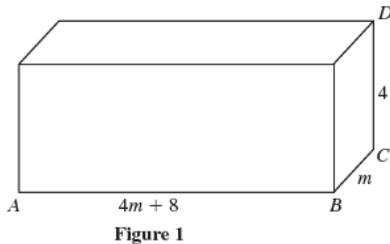
Jason's Aquarium



What is the capacity, **in cubic inches**, of this truncated cube aquarium?

37. The two rectangular prisms shown below are similar to each other.
Side AB corresponds to side WX and side CD corresponds to side YZ .

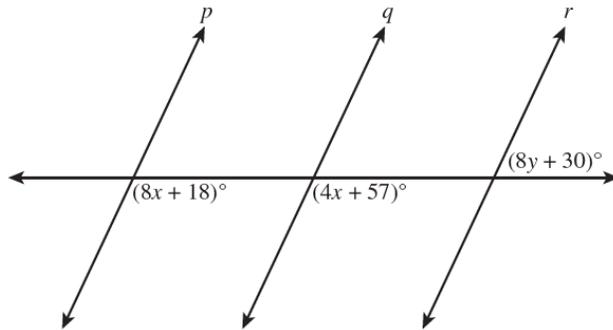
What is the surface area of Figure 1, in square units?



38. Kendra has a compost box that has the shape of a cube. She wants to increase the size of the box by extending every edge of the box by half of its original length. After the box is increased in size, which of the following statements is true?
- The volume of the new compost box is exactly 112.5% of the volume of the original box.
 - The volume of the new compost box is exactly 150% of the volume of the original box.
 - The volume of the new compost box is exactly 337.5% of the volume of the original box.
 - The volume of the new compost box is exactly 450% of the volume of the original box.

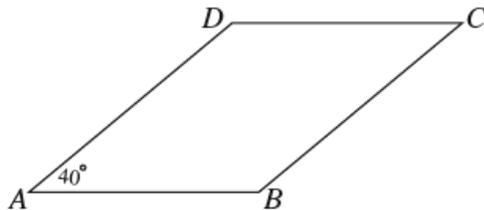
39. A city is planning to replace one of its water storage tanks with a larger one. The city's old tank is a right circular cylinder with a radius of 12 feet and a volume of 10,000 cubic feet. The new tank is a right circular cylinder with a radius of 15 feet and the same height as the old tank. What is the maximum number of cubic feet of water the new storage tank will hold?

- _____ 40. In the figure below, line p is parallel to line q . Janet makes the conjecture that line p is also parallel to line r . What must the value of y be for her conjecture to be correct?



- a. 6.75 b. 7.25 c. 8.25 d. 8.75

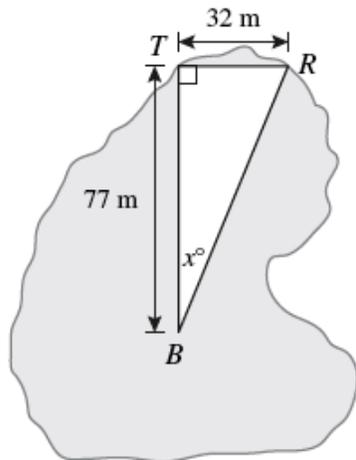
- _____ 41. For his mathematics assignment, Armando must determine the conditions that will make quadrilateral $ABCD$, shown below, a parallelogram.



Given that the $m\angle DAB = 40^\circ$, which of the following statements will guarantee that $ABCD$ is a parallelogram?

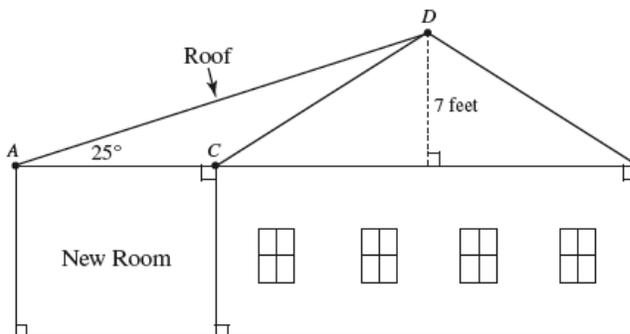
- a. $m\angle ADC + m\angle DCB + m\angle ABC + 40^\circ = 360^\circ$
 b. $m\angle DCB = 40^\circ$; $m\angle ABC = 140^\circ$
 c. $m\angle ABC + 40^\circ = 180^\circ$
 d. $m\angle DCB = 40^\circ$

42. A tackle shop and restaurant are located on the shore of a lake and are 32 meters (m) apart. A boat on the lake heading toward the tackle shop is a distance of 77 meters from the tackle shop. This situation is shown in the diagram below, where point T represents the location of the tackle shop, point R represents the location of the restaurant, and point B represents the location of the boat.



The driver of the boat wants to change direction to sail toward the restaurant. Which of the following is closest to the value of x ?

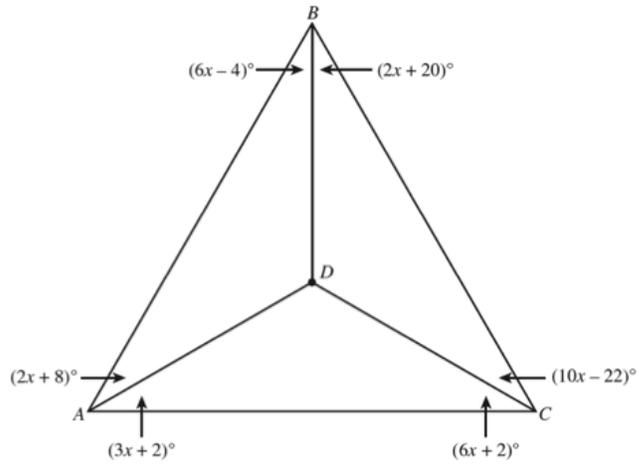
- a. 23 b. 25 c. 65 d. 67
43. Mr. Rose is remodeling his house by adding a room to one side, as shown in the diagram below. In order to determine the length of the boards he needs for the roof of the room, he must calculate the distance from point A to point D .



What is the length, to the nearest tenth of a foot, of \overline{AD} ?

Point D is in the interior of $\triangle ABC$ with some angle measures given in terms of x . This triangle is shown below.

_____ 44. Using the given information, which term best describes point D ?



- a. Centroid
- b. Circumcenter
- c. Incenter
- d. Orthocenter

Geometry EOC Item Specs Practice Test Answer Section

1. ANS: A PTS: 1 REF: MA.912.D.6.2
STA: MA.912.D.6.2
2. ANS: D PTS: 1 REF: MA.912.D.6.2
STA: MA.912.D.6.2
3. ANS: C PTS: 1 REF: MA.912.G.1.1
STA: MA.912.G.1.1
4. ANS: **-22**
- PTS: 1 REF: MA.912.G.1.1 STA: MA.912.G.1.1
5. ANS: B PTS: 1 REF: MA.912.G.1.3
STA: MA.912.G.1.3
6. ANS: 84
- PTS: 1 REF: MA.912.G.1.3 STA: MA.912.G.1.3
7. ANS: A PTS: 1 REF: MA.912.G.1.3
STA: MA.912.G.1.3
8. ANS: B PTS: 1 REF: MA.912.G.2.2
STA: MA.912.G.2.2
9. ANS: 1260
- PTS: 1 REF: MA.912.G.2.2 STA: MA.912.G.2.2
10. ANS: 66.8
- PTS: 1 REF: MA.912.G.2.2 STA: MA.912.G.2.2
11. ANS: 1058
- PTS: 1 REF: MA.912.G.2.3 STA: MA.912.G.2.3
12. ANS: B PTS: 1 REF: MA.912.G.2.3
STA: MA.912.G.2.3
13. ANS: **313**
- PTS: 1 REF: MA.912.G.2.3 STA: MA.912.G.2.3
14. ANS: D PTS: 1 REF: MA.912.G.2.4
STA: MA.912.G.2.4
15. ANS: -3
- PTS: 1 REF: MA.912.G.2.4 STA: MA.912.G.2.4
16. ANS: 864
- PTS: 1 REF: MA.912.G.2.5 STA: MA.912.G.2.5
17. ANS: **102**
- PTS: 1 REF: MA.912.G.2.5 STA: MA.912.G.2.5

18. ANS: C PTS: 1 REF: MA.912.G.2.5
STA: MA.912.G.2.5
19. ANS: C PTS: 1 REF: MA.912.G.3.3
STA: MA.912.G.3.3
20. ANS: A PTS: 1 REF: MA.912.G.3.4
STA: MA.912.G.3.4
21. ANS: D PTS: 1 REF: MA.912.G.3.4
STA: MA.912.G.3.4
22. ANS: 9

PTS: 1 REF: MA.912.G.3.4 STA: MA.912.G.3.4
23. ANS: C PTS: 1 REF: MA.912.G.4.6
STA: MA.912.G.4.6
24. ANS: B PTS: 1 REF: MA.912.G.4.7
STA: MA.912.G.4.7
25. ANS: B PTS: 1 REF: MA.912.G.4.7
STA: MA.912.G.4.7
26. ANS: C PTS: 1 REF: MA.912.G.5.4
STA: MA.912.G.5.4
27. ANS: 11.6

PTS: 1 REF: MA.912.G.5.4 STA: MA.912.G.5.4
28. ANS: B PTS: 1 REF: MA.912.G.5.4
STA: MA.912.G.5.4
29. ANS: C PTS: 1 REF: MA.912.G.6.5
STA: MA.912.G.6.5
30. ANS: 52.5

PTS: 1 REF: MA.912.G.6.5 STA: MA.912.G.6.5
31. ANS: D PTS: 1 REF: MA.912.G.6.6
STA: MA.912.G.6.6
32. ANS: C PTS: 1 REF: MA.912.G.7.1
STA: MA.912.G.7.1
33. ANS: 12

PTS: 1 REF: MA.912.G.7.1 STA: MA.912.G.7.1
34. ANS: B PTS: 1 REF: MA.912.G.7.5
STA: MA.912.G.7.5
35. ANS: 7

PTS: 1 REF: MA.912.G.7.5 STA: MA.912.G.7.5
36. ANS: 11124

PTS: 1 REF: MA.912.G.7.5 STA: MA.912.G.7.5
37. ANS: 208

PTS: 1 REF: MA.912.G.7.5 STA: MA.912.G.7.5

38. ANS: C PTS: 1 REF: MA.912.G.7.7
STA: MA.912.G.7.7
39. ANS: **15625**
- PTS: 1 REF: MA.912.G.7.7 STA: MA.912.G.7.7
40. ANS: A PTS: 1 REF: MA.912.G.8.4
STA: MA.912.G.8.4
41. ANS: B PTS: 1 REF: MA.912.G.8.4
STA: MA.912.G.8.4
42. ANS: A PTS: 1 REF: MA.912.T.2.1
STA: MA.912.T.2.1
43. ANS: **16.6**
- PTS: 1 REF: MA.912.T.2.1 STA: MA.912.T.2.1
44. ANS: C PTS: 1 REF: MA.912.G.2.3
STA: MA.912.G.2.3