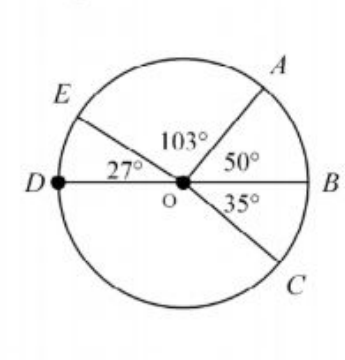
Geometry Semester 2 Final Review

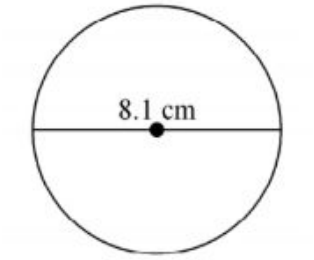
Name:_____

1. Find the measure of $\overset{\frown}{EDC}$.
The figure is not drawn to scale.



a. 182 b. 172 c. 188 d. 162

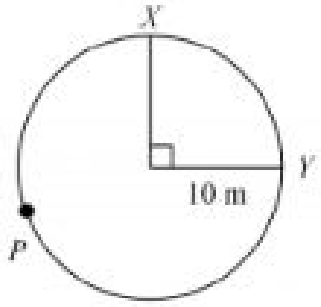
2. **Find the circumference. Leave your answer in terms of π.**



a. 4.05π cm b. 16.2π cm c. 8.1π cm d. 12.15π cm

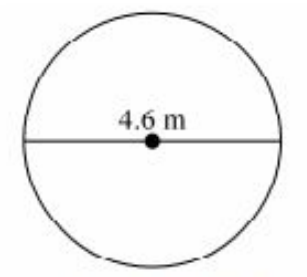
3. The circumference of a circle is 44π cm. Find the diameter, the radius, and the length of an arc of 170°.
a. 22 cm; 44 cm; 10.4π cm b. 44 cm; 22 cm; 20.8π cm c. 44 cm; 88 cm; 10.4π cm d. 88 cm; 22 cm; 175π cm

4. Find the length of $\overset{\frown}{XPY}$. Leave your answer in terms of π.



a. 900π m b. 15π m c. 30π m d. 5π m

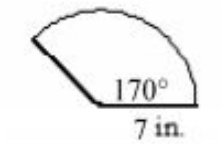
5. **Find the area of the circle. Leave your answer in terms of π.**



a. 12.2π m² b. 10.58π m² c. 5.29π m² d. 21.16π m²

6. A team in science class placed a chalk mark on the side of a wheel and rolled the wheel in a straight line until the chalk mark returned to the same position. The team then measured the distance the wheel had rolled and found it to be 15 cm. To the nearest tenth, what is the area of the wheel?
a. 11.8 cm² b. 71.7 cm² c. 17.9 cm² d. 35.8 cm²

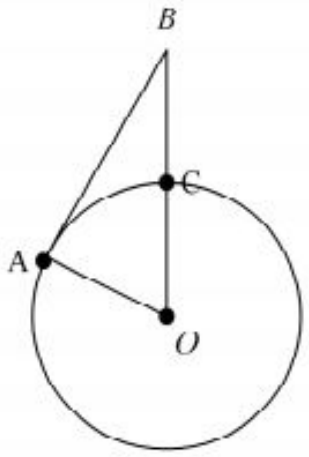
7. Find the area of the figure to the nearest tenth.



a. 72.7 in.² b. 23.1 in.² c. 145.3 in.² d. 10.4 in.²

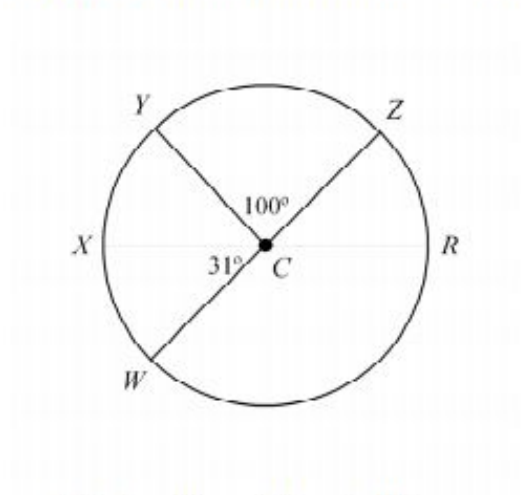
8. Find the area of a sector with a central angle of 170° and a diameter of 6.4 cm. Round to the nearest tenth.
a. 2.4 cm² b. 6 cm² c. 15.2 cm² d. 60.7 cm²

9. $\overline{AB}$ is tangent to $\odot O$. If $AO = 35$ and $BC = 90$, what is AB?
The diagram is not to scale.



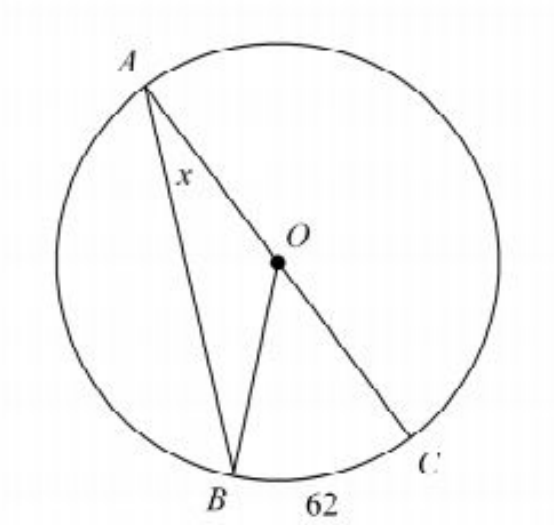
a. 155 b. 120 c. 125 d. 180

10. $\overline{WZ}$ and $\overline{XR}$ are diameters. Find the measure of $\overset{\frown}{ZWX}$. (The figure is not drawn to scale.)



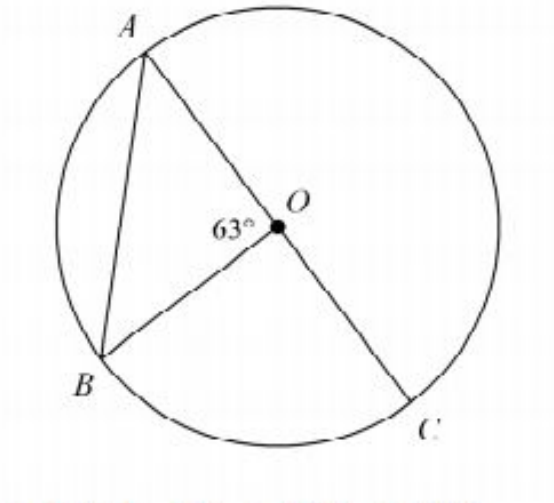
a. 311 b. 49 c. 211 d. 280

11. Find x. (The figure is not drawn to scale.)



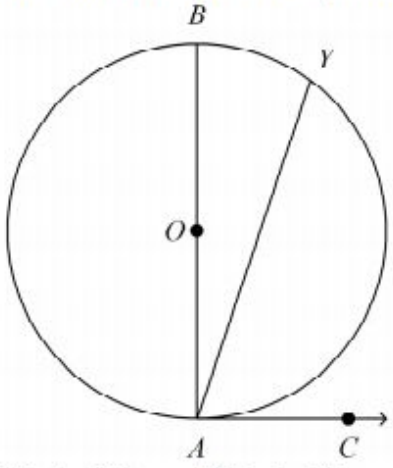
a. 62 b. 28 c. 124 d. 31

12. Find $m\angle BAC$. (The figure is not drawn to scale.)



a. 117 b. 126 c. 31.5 d. 58.5

13. If $m\overset{\frown}{BY} = 39$, what is $m\angle YAC$? (The figure is not drawn to scale.)



a. 78 b. 102 c. 70.5 d. 141

Write the standard equation for the circle.

14. center $(-5, -3)$, $r = 7$

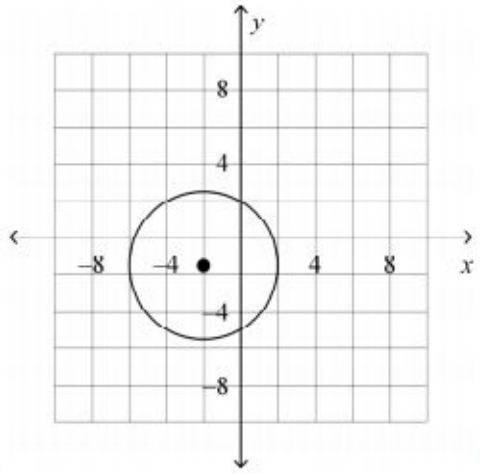
a. $(x-5)^2 + (y-3)^2 = 7$ b. $(x+5)^2 + (y+3)^2 = 49$ c. $(x+5)^2 + (y+3)^2 = 7$ d. $(x+3)^2 + (y+5)^2 = 49$

15. Find the center and radius of the circle with equation $(x-3)^2 + (y-5)^2 = 64$.

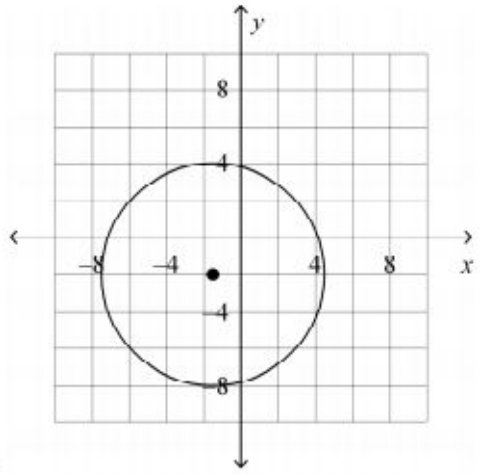
a. center $(3, 5)$; $r = 8$ b. center $(-3, -5)$; $r = 64$ c. center $(3, 5)$; $r = 64$ d. center $(-5, -3)$; $r = 8$

16. A manufacturer is designing a two-wheeled cart that can maneuver through tight spaces. On one test model, the wheel placement (center) and radius is modeled by the equation $(x+1.5)^2 + (y+2)^2 = 16$. What is the graph that shows the position and radius of the wheels?

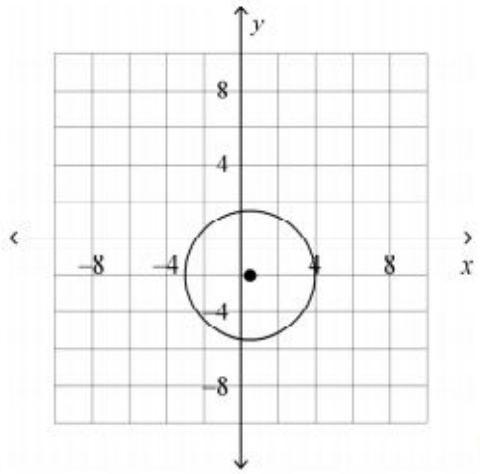
a.



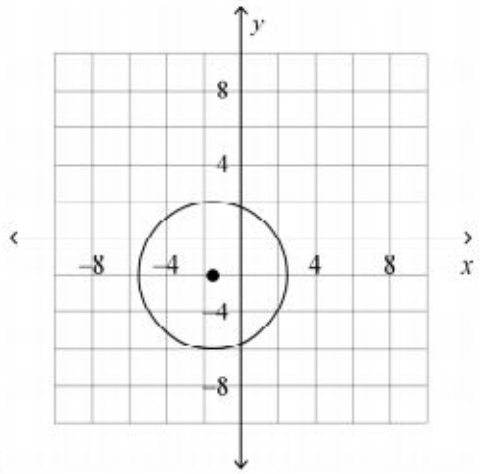
b.



c.

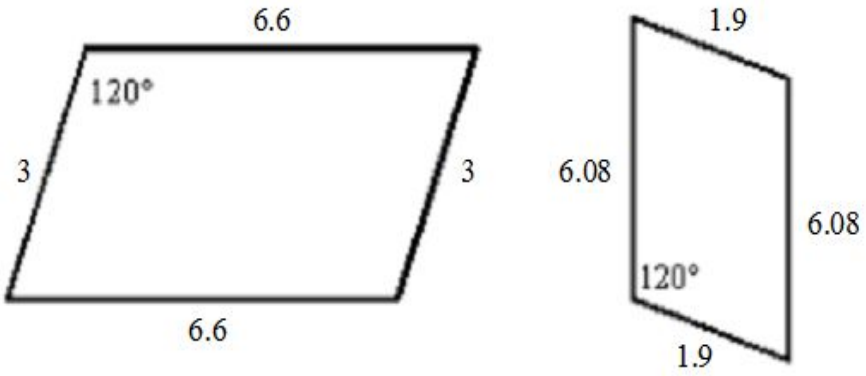


d.



17. A statue is 24 feet tall. A model of the statue is 36 inches tall. What is the ratio of the height of the model to the height of the actual statue?

18. Determine whether the figures are similar.



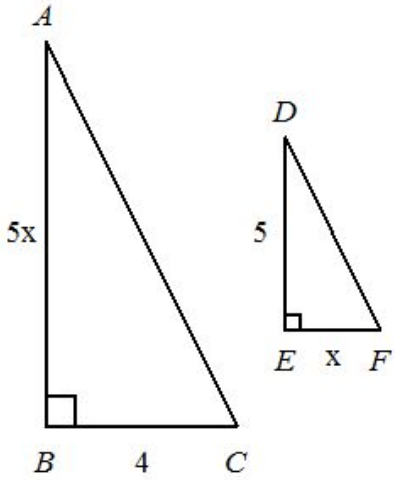
Not drawn to scale

19. **Are the polygons similar? If they are, write a similarity statement and give the similarity ratio.**

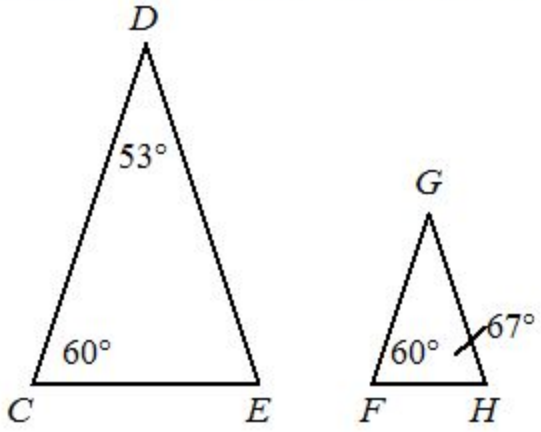
In ΔRST, $RS = 10$, $RT = 15$, and $m\angle R = 32$. In ΔUVW, $UV = 12$, $UW = 18$, and $m\angle U = 32$.

20. **The polygons are similar, but not necessarily drawn to scale. Find the values of x and y.**

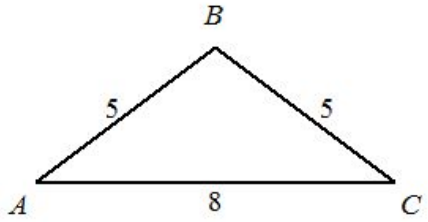
Triangles ABC and DEF are similar. Find the lengths of AB and EF.

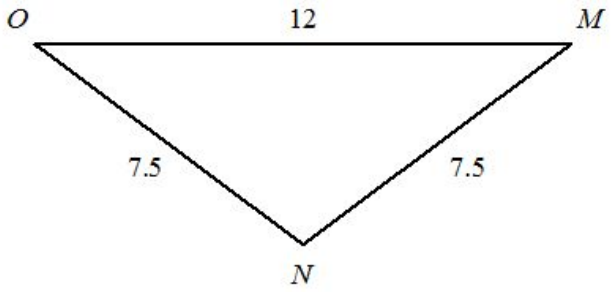


21. Write a similarity statement for the triangles.



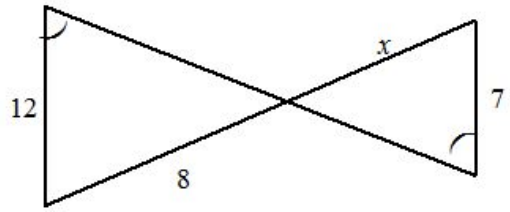
22. **State whether the triangles are similar. If so, write a similarity statement and the postulate or theorem you used.**





Explain why the triangles are similar. Then find the value of x.

23.



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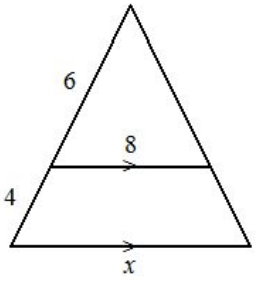
24.



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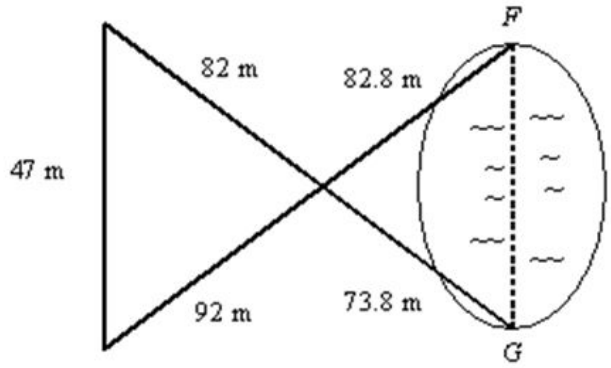
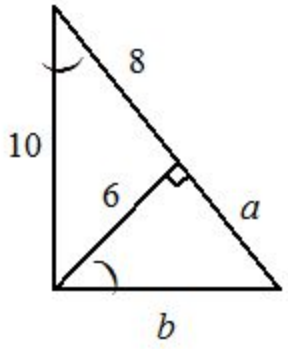
25. Campsites F and G are on opposite sides of a lake. A survey crew made the measurements shown on the diagram. What is the distance between the two campsites? The diagram is not to scale.



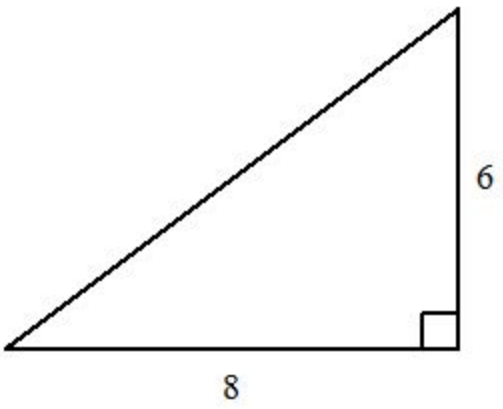
26. **Find the geometric mean of the pair of numbers.**

175 and 7

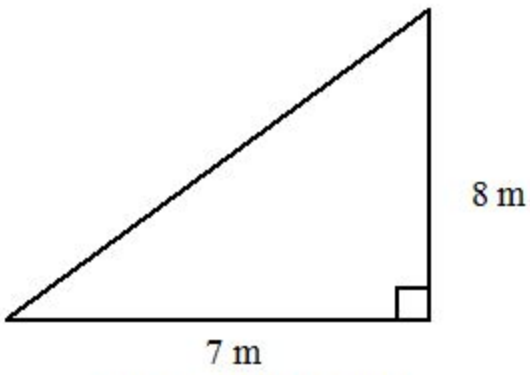
27. **Solve for *a* and *b*.**



28. **Find the length of the missing side. The triangle is not drawn to scale.**



29. **Find the length of the missing side. Leave your answer in simplest radical form.**



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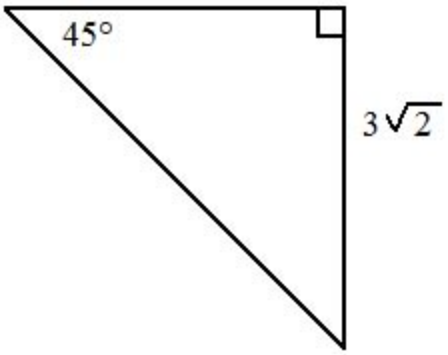
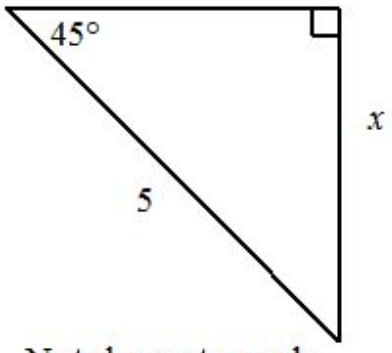
30. A triangle has side lengths of 10 cm, 24 cm, and 34 cm. Is it a right triangle?

Find the length of the hypotenuse.



31. Find the value of the variable. If your answer is not an integer, leave it in simplest radical form.



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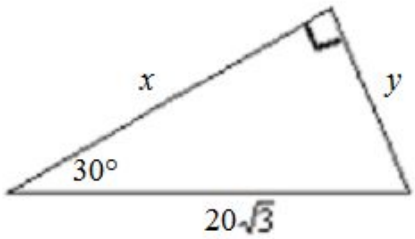
32. **Find the value of the variable(s). If your answer is not an integer, leave it in simplest radical form.**



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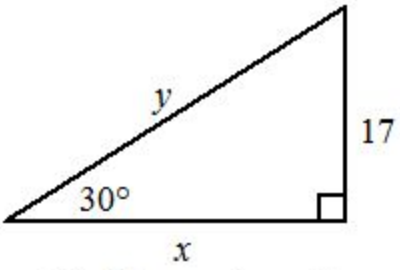

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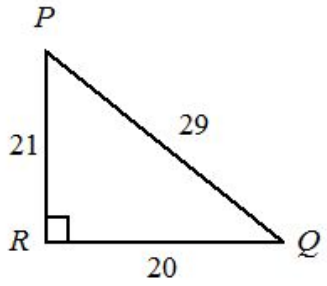
33. Write the tangent ratios for $\angle P$ and $\angle Q$.



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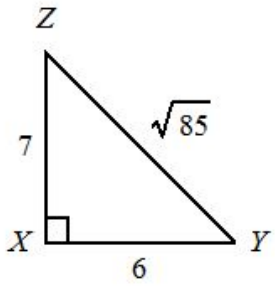
34. Write the tangent ratios for $\angle Y$ and $\angle Z$.



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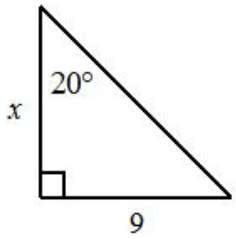
Find the value of x. Round your answer to the nearest tenth.

35.



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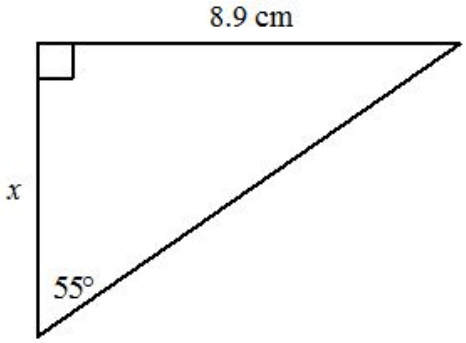
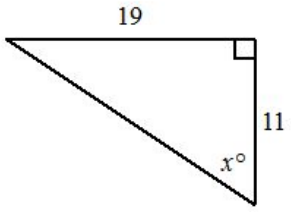
36.



37. **Find the value of x to the nearest degree.**



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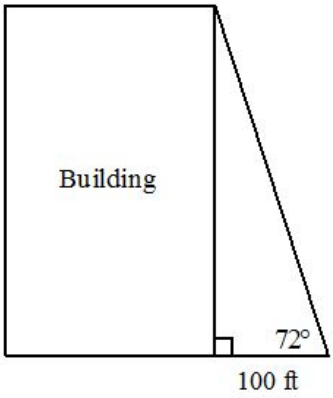
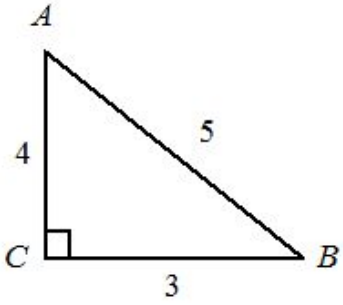
38. The students in Mr. Collin's class used a surveyor's measuring device to find the angle from their location to the top of a building. They also measured their distance from the bottom of the building. The diagram shows the angle measure and the distance. To the nearest foot, find the height of the building.



39. Write the ratios for sin A and cos A.



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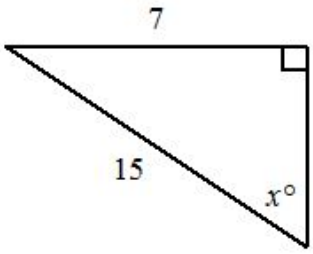
40. **Find the value of x. Round to the nearest degree.**



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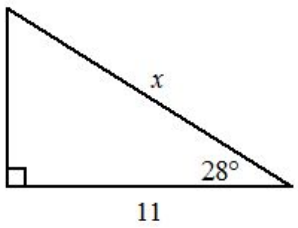
Find the value of x. Round to the nearest tenth.

41.



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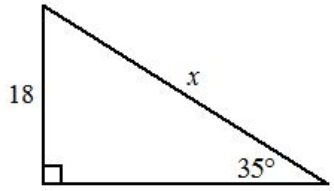
42.



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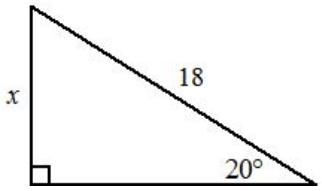
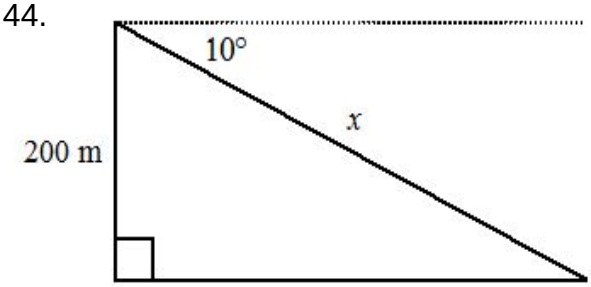


Find the value of x. Round the length to the nearest tenth.

44.



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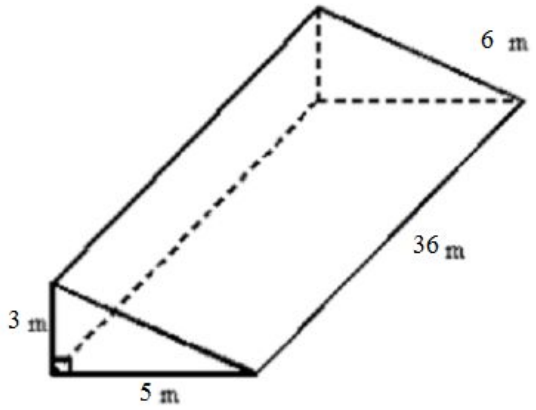
45.

To find the height of a pole, a surveyor moves 210 feet away from the base of the pole and then, with a transit 5 feet tall, measures the angle of elevation to the top of the pole to be 35°. To the nearest foot, what is the height of the pole?

For 46 - 49, Find the surface are and volume. Leave your answers in terms of pi.

46.



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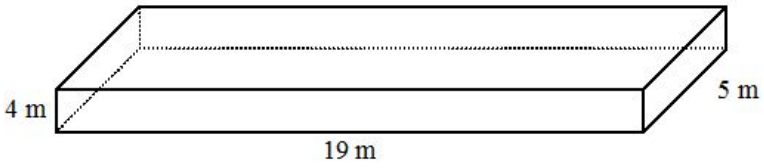

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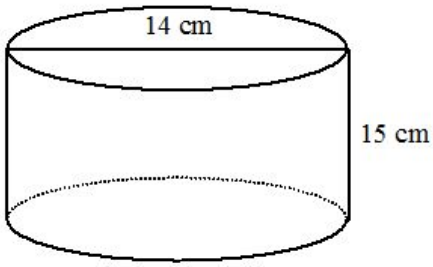

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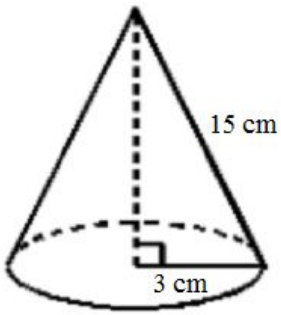
49.



Multiple Choice

Identify the choice that best completes the statement or answers the question.

50. Write a description of the rule $(x, y) \rightarrow (x+10, y+8)$.

(a) translation 10 units to the right and 8 units up

(b) translation 10 units to the left and 8 units down

(c) translation 10 units to the right and 8 units down

(d) translation 10 units to the left and 8 units up

51. Point A (–2, –10) is reflected over the x-axis. Write the coordinates of A'.

(a) $(2,-10)$

(b) $(2,10)$

(c) $(-2,-10)$

(d) $(-2,10)$

52. Point D (2, 4) is rotated 180° about the origin, what is the coordinate of D'?

(a) $(-4,2)$

(b) $(4,-2)$

(c) $(-2,-4)$

(d) $(-4,-2)$

53. Which of the following transformations does not result in a congruent figure?

(a) dilation

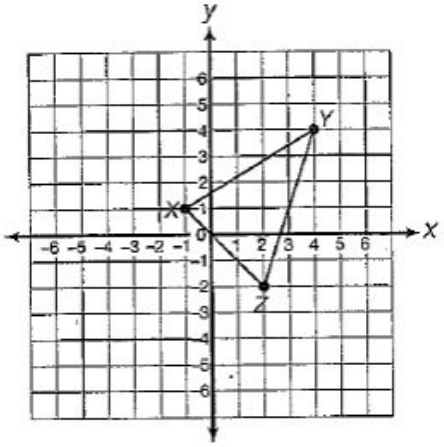
(b) rotation

(c) reflection

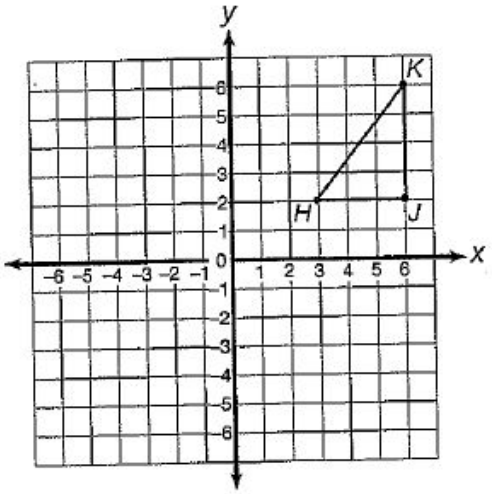
(d) translation

54. What set of coordinates will provide the vertices for the translation of ΔXYZ two units to the left?

(a) $X'(1,1),\ Y'(6,4),\ Z'(4,-2)$
(b) $X'(-3,1),\ Y'(2,4),\ Z'(0,-2)$
(c) $X'(-1,3),\ Y'(4,6),\ Z'(2,0)$
(d) $X'(-3,1),\ Y'(1,4),\ Z'(-2,0)$



55. If this triangle was reflected over the y-axis to form $\Delta H'J'K'$, what would be the coordinates of vertex K'?



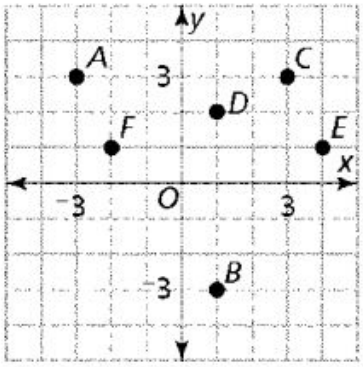
(a) $(6,-6)$

(b) $(6,6)$

(c) $(-6,6)$

(d) $(-6,-6)$

56. Using the graph below, what is the rule for a translation from point A to point D?



(a) $(x,y)\rightarrow(x+4,y-1)$

(b) $(x,y)\rightarrow(x-1,y+4)$

(c) $(x,y)\rightarrow(x-4,y+1)$

(d) $(x,y)\rightarrow(x+1,y-4)$

57. $\overline{CD}$ was dilated around the origin by a scale factor of 2. The endpoints of the image are $C'(4,0)$ and $D'(6,2)$. What are the coordinates of the endpoints of the original line segment?

(a) $C(2,0), D(3,0)$

(b) $C(2,0), D(3,1)$

(c) $C(2,0), D(1,1)$

(d) $C(4,0), D(6,2)$

58. Point X (-3, -2) is translated using the rule $(x, y) \rightarrow (x+3, y+4)$, then reflected over the x-axis. What is the coordinate of X''?

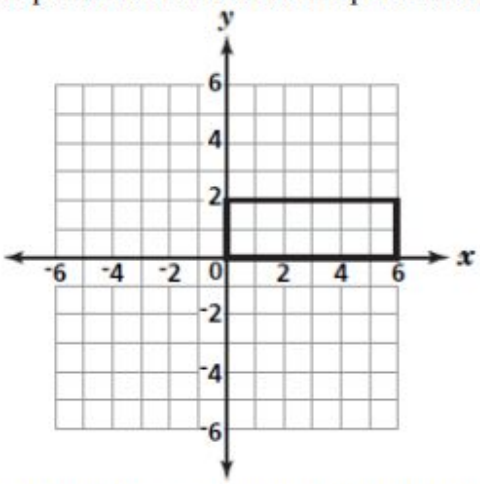
(a) $(0,2)$

(b) $(0,-2)$

(c) $(-2,0)$

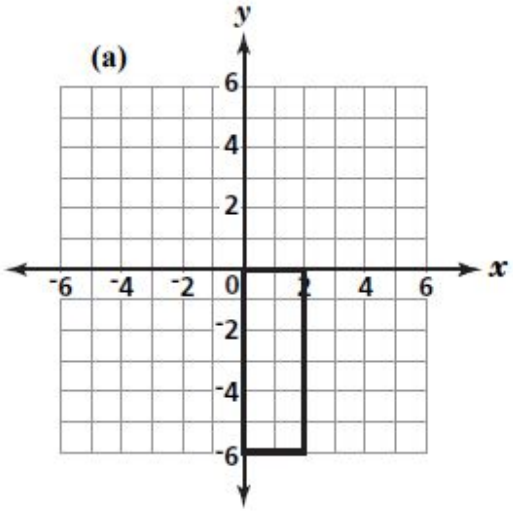
(d) $(2,0)$

59. A rectangle is plotted on the coordinate plane below.

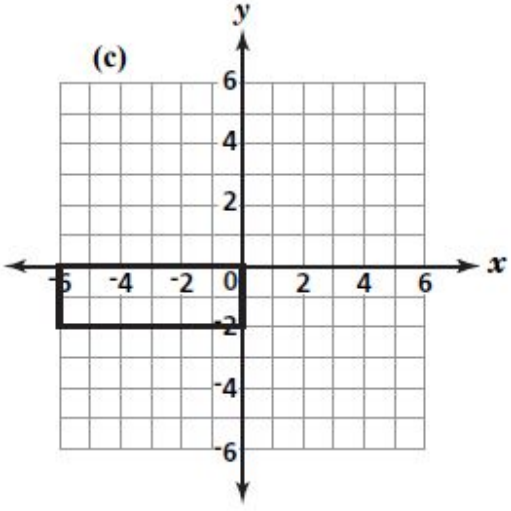


Which image shows a 90° clockwise rotation about the origin?

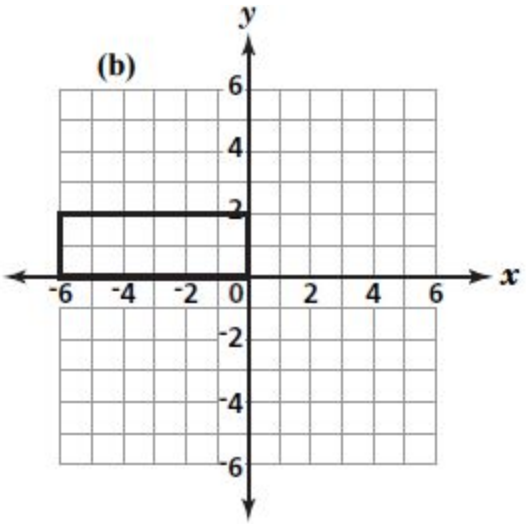
(a)



(c)



(b)



(d)