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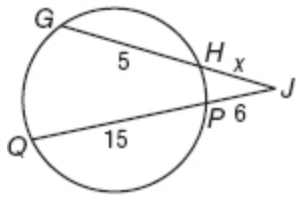
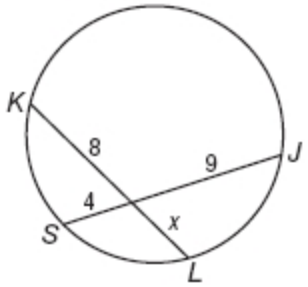
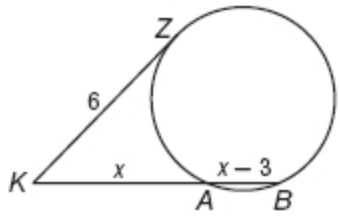
Objective Short Answer

Find *x*. Assume that segments that appear to be tangent are tangent. Round to the nearest tenth if necessary.

1. 

2. 

3. 

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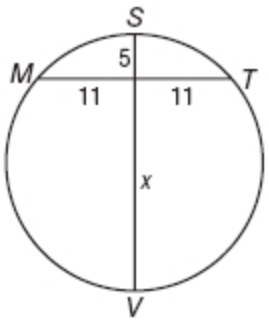
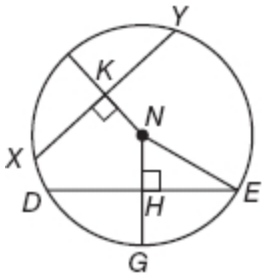
4.



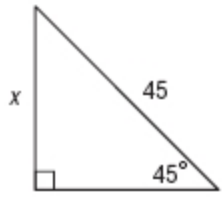
The radius of $\odot N$ is 18, $NK = 9$, and $m\widehat{DE} = 120$. Find each measure.



5. $m\angle HNE$

Find *x*.

6.



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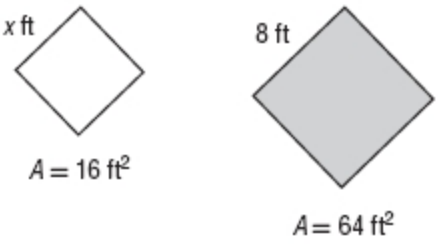
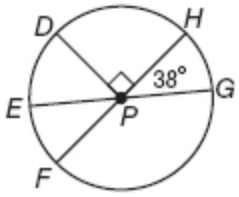
For each pair of similar figures, use the given areas to find *x*.

7. 

Solve each proportion.

8. $\frac{3x-5}{4} = \frac{-5}{7}$

$\overline{FH}$ and $\overline{EG}$ are diameters of $\odot P$. Find each measure.



9. $m\widehat{DHG}$

10. $m\widehat{DE}$

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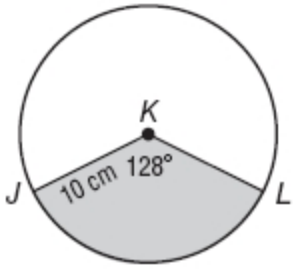
11. $m\widehat{EF}$

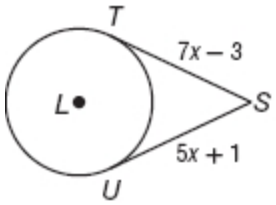
Find the area of the shaded sector. Round to the nearest tenth.

12.



Find *x*. Assume that segments that appear to be tangent are tangent. Round to the nearest tenth if necessary.

13.



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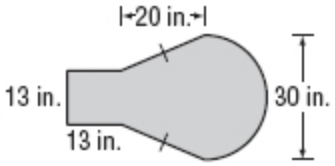
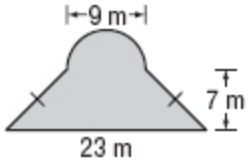
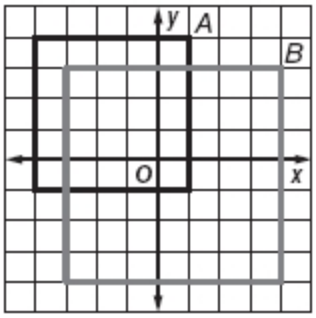
Find the area of the composite figures. Round to the nearest tenth if necessary.

14. 

15. 

Determine whether the dilation from *A* to *B* is an *enlargement* or a *reduction*. Then find the scale factor of the dilation.

16. 

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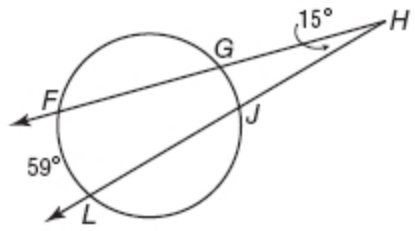
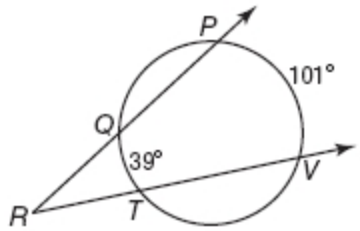
Find each measure. Assume that any segments that appear to be tangent are tangent.

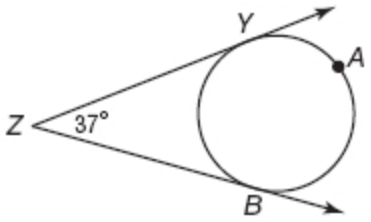
17. $m\widehat{GJ}$



18. $m\angle R$



19. $m\widehat{YAB}$



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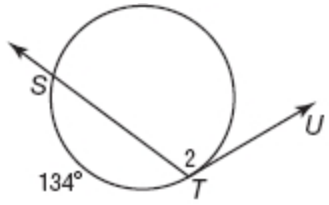
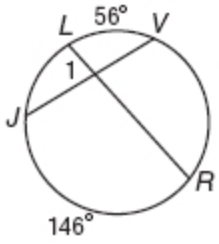
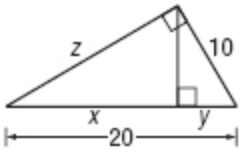
20. $m\angle 2$



21. $m\angle 1$



Find x, y, and z.

22. 

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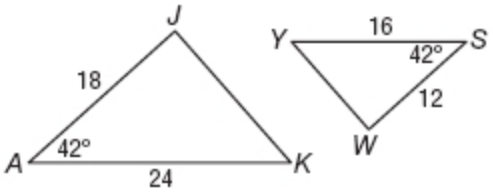
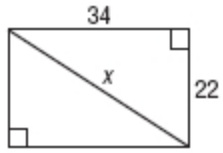
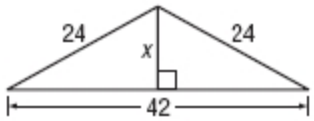
Semester 2 Final Review

Determine whether the triangles are similar. If so, write a similarity statement. If not, what would be sufficient to prove the triangles similar? Explain your reasoning.

23. 

Find *x*.

24. 

25. 

Triangle *ABC* has vertices *A*(1, 3), *B*(–2, –1) and *C*(3, –2). Graph $\triangle ABC$ and its image after the indicated glide reflection.

26. Translation: along $\langle -1, 2 \rangle$

Reflection: in $x = y$

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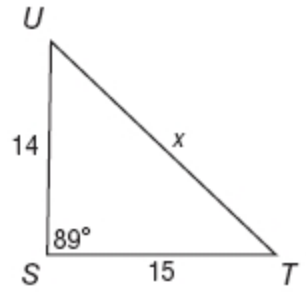
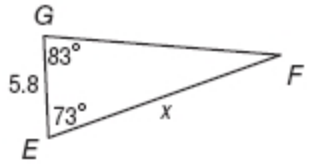
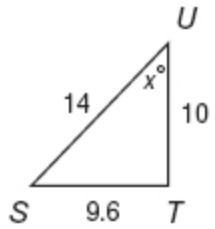
Find *x*. Round angle measures to the nearest degree and side lengths to the nearest tenth.

27. 

28. 

29. 

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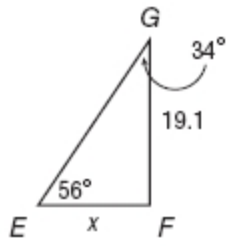
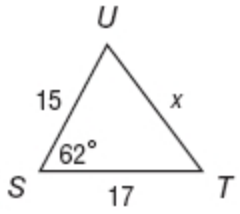
30. 

31. 

State whether the figure has line symmetry. Write *yes* or *no*. If so, draw all lines of symmetry and state their number.

32. 

33. A ceiling fan has five equally spaced blades. Find the angle of rotation that maps one blade onto the adjacent blade.

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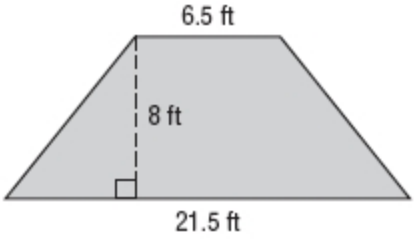
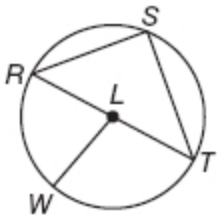
Find the area of the trapezoid.

34.



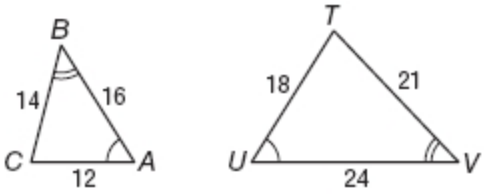
Refer to $\odot L$.



35. Suppose the radius of the circle is 3.5 yards. Find the diameter.

Determine whether each pair of figures is similar. If so, write the similarity statement and scale factor. If not, explain your reasoning.

36.



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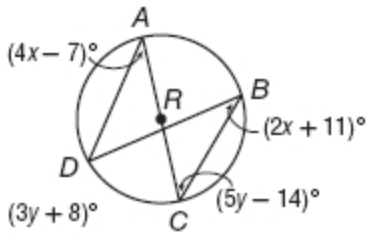
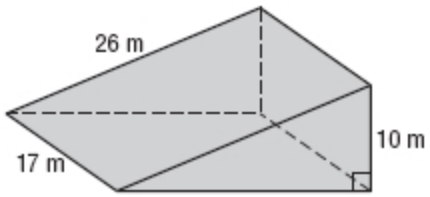
ALGEBRA Find each measure.

37. $m\angle A$

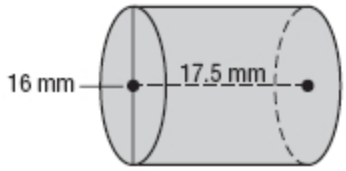


Find the volume of each prism or cylinder. Round to the nearest tenth if necessary.

38.



39.



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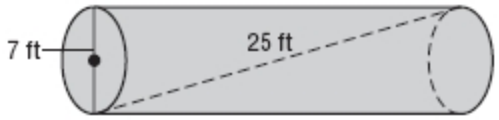
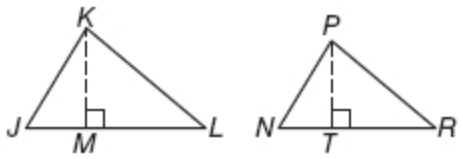
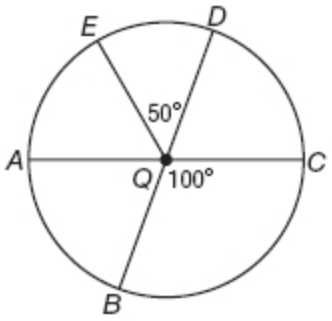
40. 

41. $\triangle JKL \sim \triangle NPR$, $\overline{KM}$ is an altitude of $\triangle JKL$, $\overline{PT}$ is an altitude of $\triangle NPR$, $KL = 28$, $KM = 18$, and $PT = 15.75$, find PR.



$\overline{AC}$ and $\overline{DB}$ are diameters of $\odot Q$. Identify each arc as a *major arc*, *minor arc*, or *semicircle* of the circle. Then find its measure.



42. $m\overset{\frown}{BC}$

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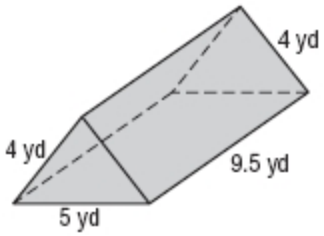
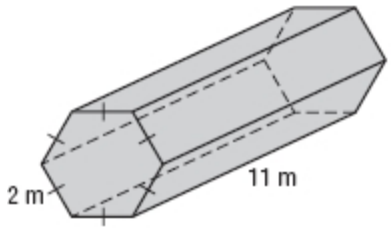
43. $m\widehat{EDC}$

Find the lateral and surface area of each prism. Round to the nearest tenth if necessary.

44.

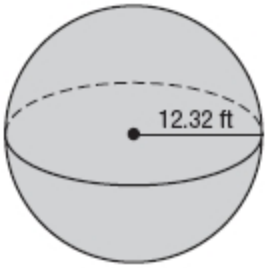


45.



Find the volume of each sphere or hemisphere. Round to the nearest tenth.

46.



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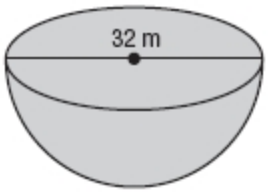
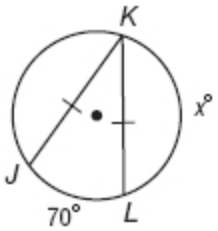
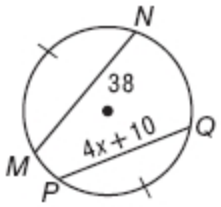
47. 

48. sphere: circumference ≈ 36 yd

ALGEBRA Find the value of *x* in each circle.

49. 

50. 

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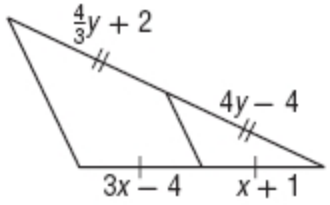
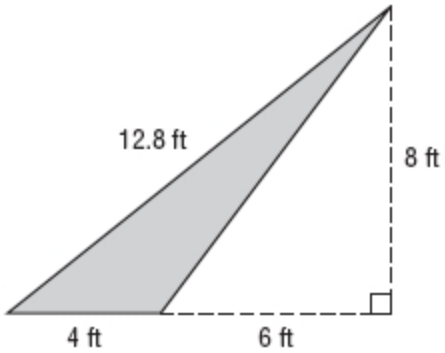
51. Find x and y.

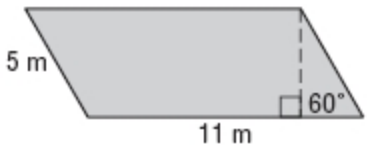


Find the area of the figures below. Round to the nearest tenth if necessary.

52.



53.



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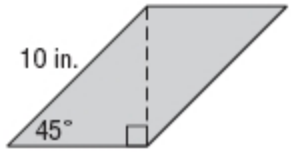
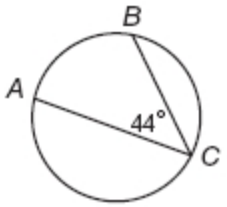
54. 

55. The ratio of the measures of the three angles is 5:7:8. Find the measure of each angle of the triangle.

Find each measure.

56. $m\overset{\frown}{AB}$



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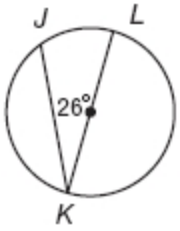
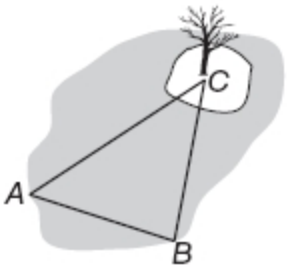
57. $m\widehat{JK}$



58. **INDIRECT MEASUREMENT** To find the distance from the edge of the lake to the tree on the island in the lake, Hannah set up a triangular configuration as shown in the diagram. The distance from location *A* to location *B* is 85 meters. The measures of the angles at *A* and *B* are 51° and 83°, respectively. What is the distance from the edge of the lake at *B* to the tree on the island at *C*?



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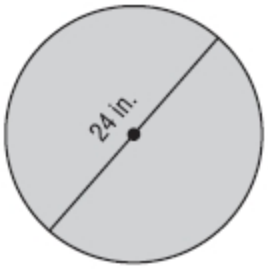
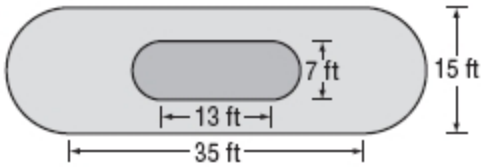
Find the area of the circle. Round to the nearest tenth.

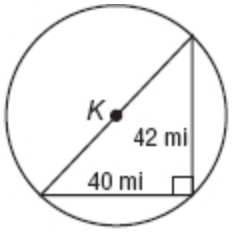
59. 

60. **LANDSCAPING** One of the displays at a botanical garden is a koi pond with a walkway around it. The figure shows the dimensions of the pond and the walkway.



Find the area of the pond to the nearest tenth. Then find the area of the walkway to the nearest tenth.

Find the exact circumference of each circle using the given inscribed or circumscribed polygon.

61. 

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62. **HATS** Cuong bought a conical hat on a recent trip to central Vietnam. The basic frame of the hat is 16 hoops of bamboo that gradually diminish in size. The hat is covered in palm leaves. If the hat has a diameter of 50 centimeters and a slant height of 32 centimeters, what is the lateral area of the conical hat?

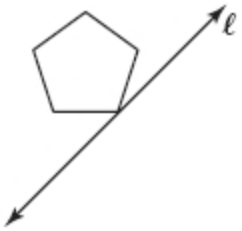
Write the equation of each circle.

63. center at (–1, 8), passes through (9, 3)

64. center at (0, 0), diameter 18

Use the figure and given line of reflection. Then draw the reflected image in this line using a ruler.

65.



Find the indicated measure. Round to the nearest tenth.

66. The area of a circle is 201.1 square inches. Find the radius.

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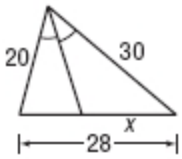
Find the diameter and radius of a circle with the given circumference. Round to the nearest hundredth.

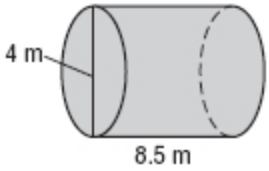
67. $C = 5.9$ m

ALGEBRA Find *x*.

68. 

69. 

Find the lateral area and surface area of each cylinder. Round to the nearest tenth.

70. 

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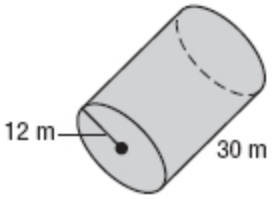
71.



72. **GAZEBOS** The roof of a gazebo is a regular octagonal pyramid. If the base of the pyramid has sides of 0.5 meter and the slant height of the roof is 1.9 meters, find the area of the roof.

PHOTOGRAPHY Francine has a camera in which the distance from the lens to the film is 24 millimeters.

73. Suppose the height of the image on the film of her friend is 15 millimeters. If Francine took a full-length shot, what was the distance between the camera and her friend?

74. In $\odot K$, $\overline{JL} \cong \overline{LM}$, $KN = 3x - 2$, and $KP = 2x + 1$. What is x?

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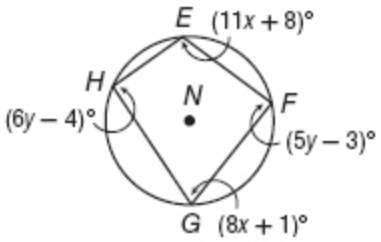
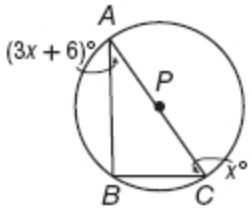
ALGEBRA Find each measure.

75. $m\angle H$

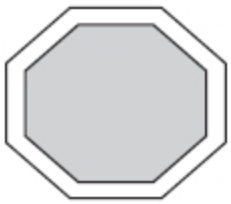


2

76. $m\angle C$



77. **ARCHERY** A target consists of two concentric similar octagons. The outside octagon has a side length of 2 feet and an area of 19.28 square feet. If the inside octagon has a side length of 1.5 feet, what is the area of the inside octagon?



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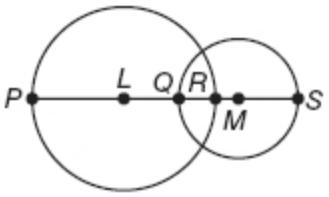
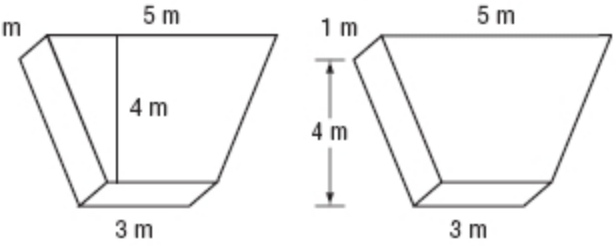
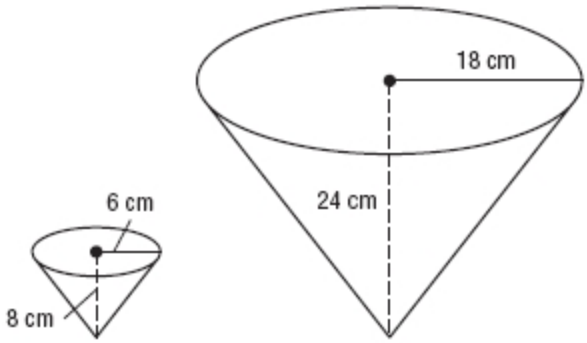
The diameters of $\odot L$ and $\odot M$ are 20 and 13 units, respectively, and $QR = 4$. Find each measure.



78. LQ

Determine whether the pair of solids is *similar*, *congruent*, or *neither*. If the solids are similar, state the scale factor.

79. 

80. 

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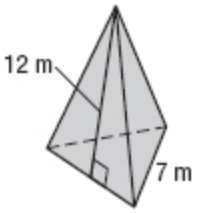
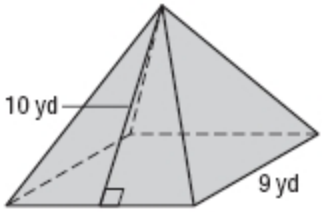
Find the lateral area and surface area of each regular pyramid. Round to the nearest tenth if necessary.

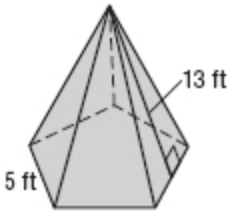
81.



82.



83.



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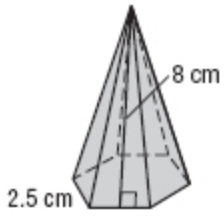
84. 

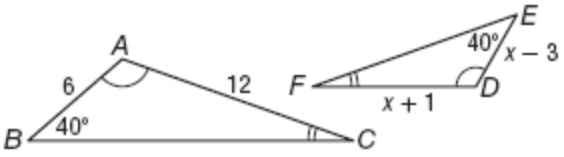
Write an equation of a circle that contains each set of points. Then graph the circle.

85. $A(-2, 2)$, $B(2, -2)$, $C(6, 2)$

Graph each figure and its image after the specified rotation about the origin.

86. trapezoid $FGHI$ with vertices $F(8, 7)$, $G(5, 8)$, $H(-7, -2)$ and $I(-3, -7)$; 90°

Each pair of polygons is similar. Find the value of *x*.

87. 

88. **CLOCK** Sadie wants to draw a clock face on a circular piece of cardboard. If the clock face has a diameter of 20 centimeters and is divided into congruent pieces so that each sector is 30°, what is the area of each piece?

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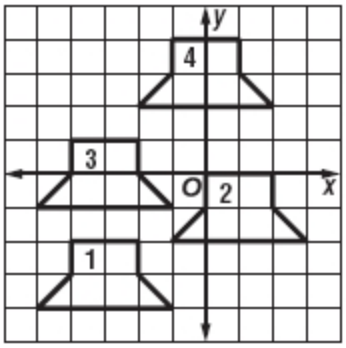
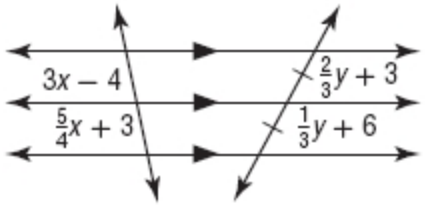
89. **WATER TOWERS** A student can see a water tower from the closest point of the soccer field at San Lobos High School. The edge of the soccer field is about 110 feet from the water tower and the water tower stands at a height of 32.5 feet. What is the angle of elevation if the eye level of the student viewing the tower from the edge of the soccer field is 6 feet above the ground? Round to the nearest degree.

ANIMATION Find the translation that moves the figure on the coordinate plane.



90. figure 3 → figure 4

91. Find x and y.



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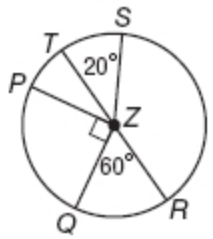
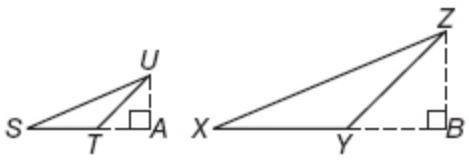
Use $\odot Z$ to find each arc length. Round to the nearest hundredth.



92. $\overset{\frown}{QR}$, if $PZ = 12$ feet

93. $\overset{\frown}{QPT}$, if $QZ = 10$ inches

94. If $\triangle STU \sim \triangle XYZ$, $\overline{UA}$ is an altitude of $\triangle STU$, $\overline{ZB}$ is an altitude of $\triangle XYZ$, $UT = 8.5$, $UA = 6$, and $ZB = 11.4$, find ZY.



Find x. Round to the nearest tenth.

95.

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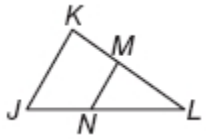
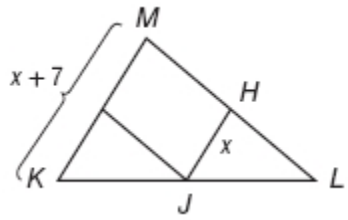
Determine whether $\overline{JK} \parallel \overline{NM}$. Justify your answer.



96. $KM = 24$, $KL = 44$, and $NL = \frac{5}{6} JN$

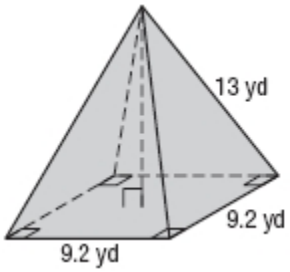
$\overline{JH}$ is a midsegment of $\triangle KLM$. Find the value of x.

97.



Find the volume of each pyramid or cone. Round to the nearest tenth if necessary.

98.



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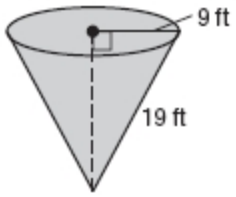
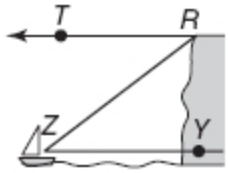
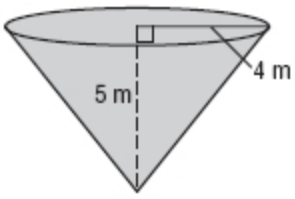
99. 

Name the angle of depression and then the angle of elevation in each figure.

100. 

101. The height of a parallelogram is 5 feet more than its base. If the area of the parallelogram is 204 square feet, find its base and height.

Find the lateral area and surface area of each cone. Round to the nearest tenth if necessary.

102. 

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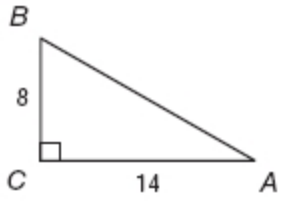
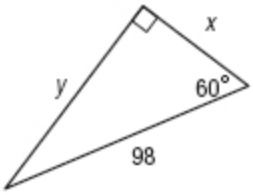
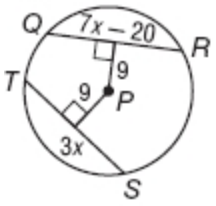
Use a calculator to find the measure of $\angle B$ to the nearest degree.

103. 

Find x and y.

104. 

105. In $\odot P$, $QR = 7x - 20$ and $TS = 3x$. What is x?



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ALGEBRA Find each missing length.

106. A trapezoid has base lengths of 19.5 and 24.5 centimeters with an area of 154 cm^2. What is the height of the trapezoid?

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Answer Key

1. 9

2. 4.5

3. 5.1

4. 24.2

5. 60

6. $22.5\sqrt{2}$ or $\frac{45\sqrt{2}}{2}$

7. $k = \frac{1}{2}$; $x = 4$ ft

8. $\frac{5}{7}$

9. 128

10. 52

11. 38

12. 111.7 cm^2

13. 2

14. 952.4 in^2

15. 143.8 m^2

16. enlargement; $\frac{7}{5}$

17. 29

18. 31

19. 217

20. 113

21. 79

22. $x = 15$;
$y = 5$;
$z = 10\sqrt{3}$

23. yes; $\triangle JAK \sim \triangle WSY$ by SAS Similarity

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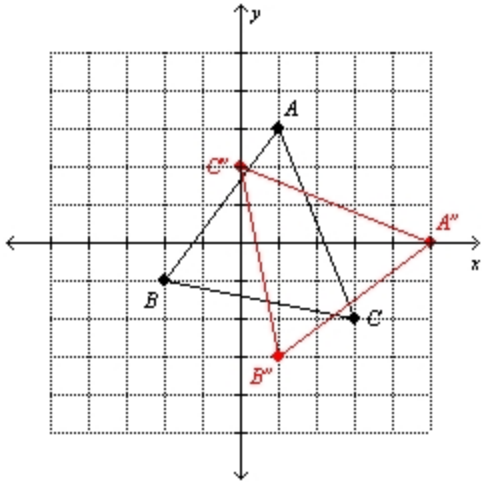
24. $\sqrt{1640} \approx 40.5$

25. $\sqrt{135} \approx 11.6$

26.



27. 20.3

28. 14.2

29. 43

30. 12.9

31. 16.6

32. no

33. 72°

34. 112 ft^2

35. 7 yd

36. $\triangle ABC \sim \triangle UVT$; $\frac{2}{3}$

37. 29

38. 2040 m^3

39. 3518.6 mm^3

40. 923.6 ft^3

41. 24.5

42. minor arc; 100

43. minor arc; 130

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44. $L = 123.5 \text{ yd}^2$; $S \approx 139.1 \text{ yd}^2$

45. $L = 132 \text{ m}^2$; $S \approx 152.8 \text{ m}^2$

46. 7832.9 ft^3

47. 8578.6 m^3

48. 787.9 yd^3

49. 145

50. 7

51. $x = \frac{5}{2}, y = \frac{9}{4}$

52. 16 ft^2

53. 32 m; 47.6 m^2

54. 50 in^2

55. 45°, 63°, 72°

56. 88

57. 128

58. about 91.8 m

59. 452.4 in^2

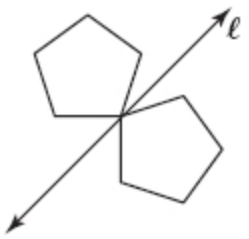
60. 129.5 ft^2; 572.2 ft^2

61. 58π mi

62. about 2513.3 cm^2

63. $(x + 1)^2 + (y - 8)^2 = 125$

64. $x^2 + y^2 = 81$

65. 

66. 8.0 in.

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67. $d = 1.88$ m; $r = 0.94$ m

68. $16\frac{2}{3}$

69. 16.8

70. $L \approx 106.8$ m^2; $S \approx 131.9$ m^2

71. $L \approx 2261.9$ m^2; $S \approx 3166.7$ m^2

72. 3.8 m^2

73. 2.24 m

74. 3

75. 98

76. 21

77. 10.8 ft^2

78. 6

79. congruent

80. similar, 1:3

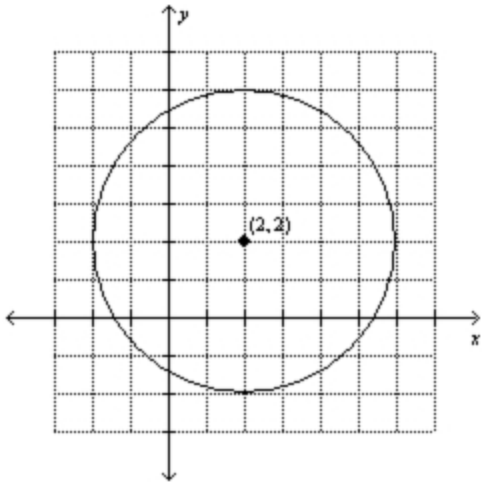
81. $L = 126$ m^2; $S \approx 147.2$ m^2

82. $L = 180$ yd^2; $S = 261$ yd^2

83. $L = 162.5$ ft^2; $S \approx 205.5$ ft^2

84. $L \approx 60$ cm^2; $S \approx 76.2$ cm^2

85. $(x - 2)^2 + (y - 2)^2 = 16$



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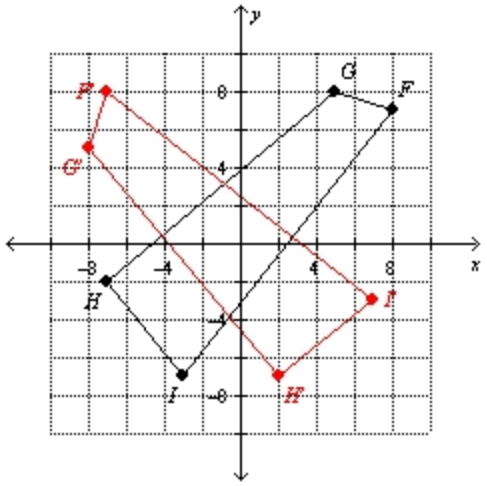
86.



87. 7

88. 26.2 cm^2

89. about 14°

90. $(x + 3, y + 3)$

91. $x = 4, y = 9$

92. 12.57 ft

93. 20.94 in.

94. 16.15

95. 22.55

96. yes; $\frac{24}{20} = \frac{6}{5}$

97. 7

98. 317.5 yd^3

99. 1419.4 ft^3

100. $\angle TRZ$; $\angle YZR$

101. $b = 12$ ft, $h = 17$ ft

102. $L \approx 80.5$ m^2; $S \approx 130.7$ m^2

103. 60.3°

104. $x = 49$; $y = 49\sqrt{3}$

105. 5

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106. 7 cm