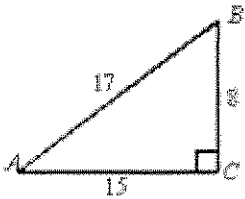


CHAPTER 7: RIGHT TRIANGLES AND TRIGONOMETRY

1. Find $m\angle A$ for the right triangle below.



2. Do the following side lengths create a right triangle?

a) 9m, 12m, and 16m

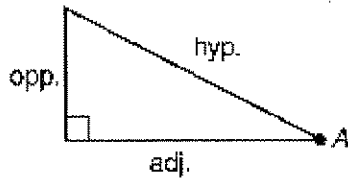
b) 3 cm, 4 cm, and 5 cm

3. Find each ratio of $\angle A$.

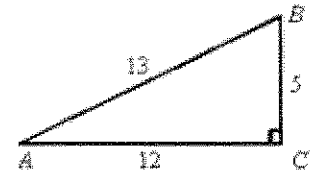
a) $\sin \angle A$

b) $\cos \angle A$

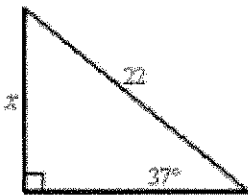
c) $\tan \angle A$



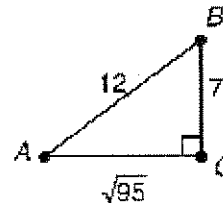
4. Write $\cos B$ in ratio form.



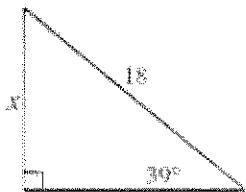
5. What is x to the nearest hundredth? (not drawn to scale)



6. The tangent of $\angle B$ is _____.

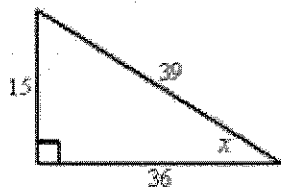


7. Find x . Round the result to the nearest hundredth.



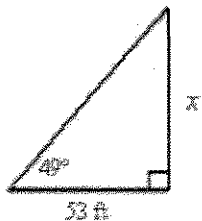
8. An equilateral triangle has side lengths of 10. The length of its altitude (height) is _____.

9. Use the diagram to find $\cos x$ as a fraction in simplest form.



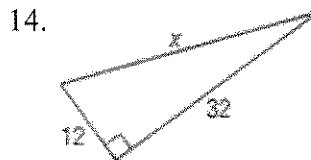
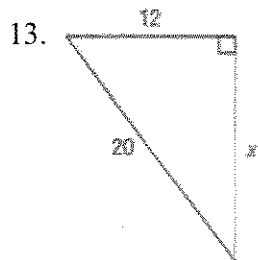
10. How long is a string reaching from the top of a 16 foot pole to a point on the ground 6 feet away from the base of the pole?

11. A photographer shines a camera light at a particular painting forming an angle of 49° with the camera platform. If the light is 53 feet from the wall where the painting hangs, how high above the platform is the painting?



12. The length of a diagonal of a square is 32 inches. What is the perimeter?

Solve for x . Round your answer to the nearest tenth.



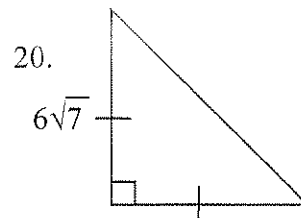
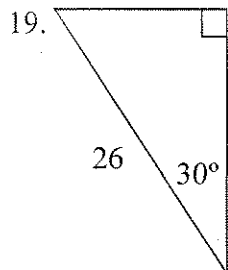
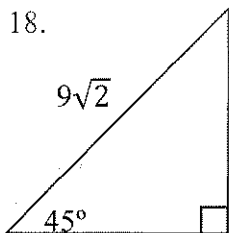
The side lengths of triangles are given. Classify the triangle as Right, Obtuse, or Acute.

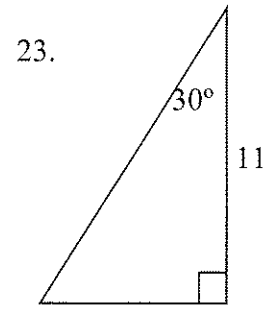
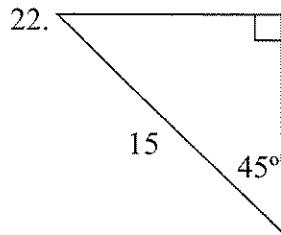
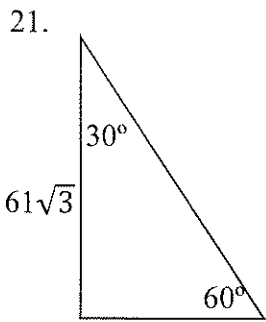
15. 3, 4, 5

16. 6, 8, 12

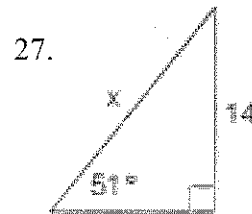
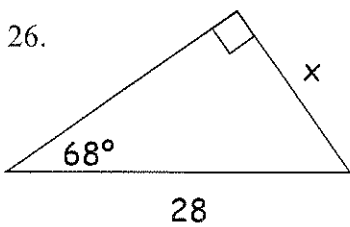
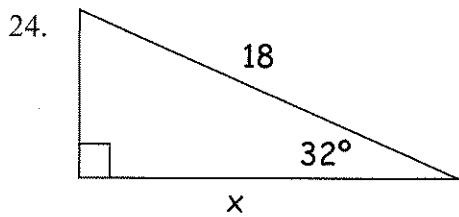
17. 8, 10, 14

Find the measures of the angles, legs, and hypotenuse of each special right triangle. Write your answers in simplest radical form.





Use a sine, cosine, or tangent ratio to find x in the triangles below. Round your answer to the nearest tenth.



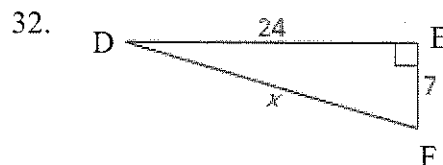
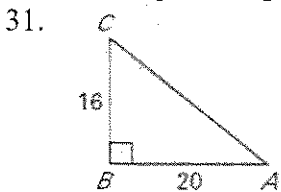
Let $\angle A$ be an acute angle in a right triangle. Use a calculator to approximate the measures of $\angle A$ to the nearest tenth of a degree.

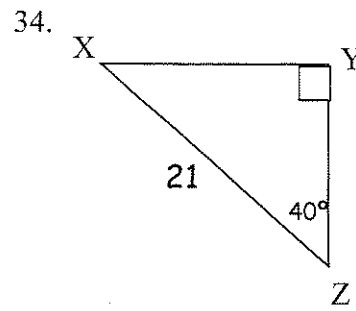
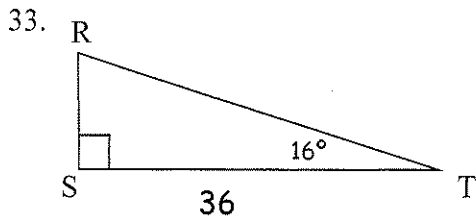
28. $\sin A = 0.9634$

29. $\cos A = 0.3657$

30. $\tan A = 0.1562$

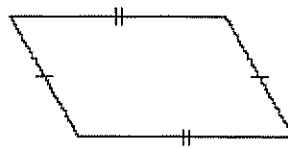
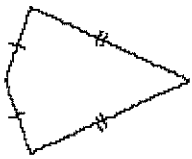
Solve the right triangles below. Round your answer to the nearest tenth.





CHAPTER 8: QUADRILATERALS

35. What name best describes the quadrilateral and define its characteristics.



36. Which type of quadrilateral has no parallel sides?

37. The sum of the measures of the interior angles of a convex quadrilateral is _____.

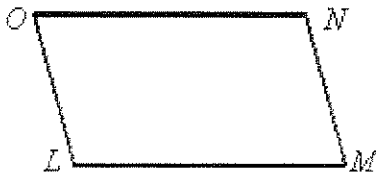
38. The diagonals of a parallelogram always _____.

39. What characteristic defines a rhombus?

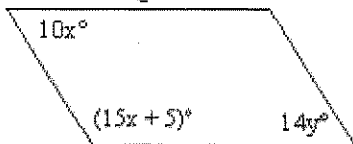
40. What makes a trapezoid an isosceles trapezoid?

41. Consecutive angles in a parallelogram are always _____.

42. If $ON = 6x - 6$, $LM = 5x + 2$, $NM = x + 5$, and $OL = 3y + 7$, find the values of x and y given that $LMNO$ is a parallelogram.



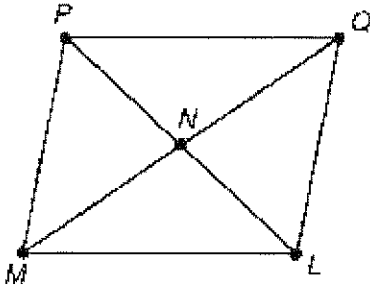
43. Use the diagram below to solve for x and y .



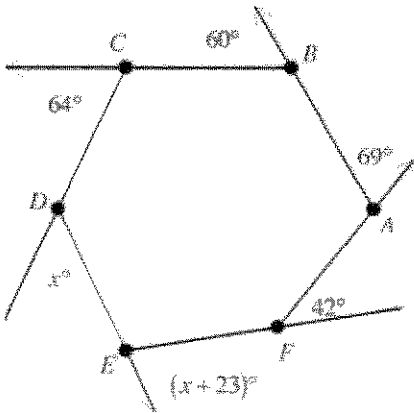
44. For parallelogram $PQLM$ below, if $m\angle PML = 83^\circ$, then

$m\angle PQL = \underline{\hspace{2cm}}$ and

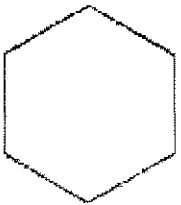
$m\angle QLM = \underline{\hspace{2cm}}$



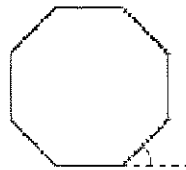
45. Find the value of x . (The figure may not be drawn to scale.)



46. The measure of each interior angle of a regular hexagon is $\underline{\hspace{2cm}}$.

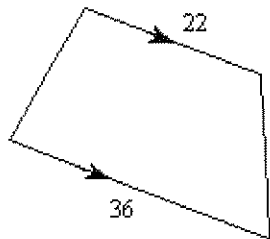


47. The measure of each exterior angle of a regular octagon is $\underline{\hspace{2cm}}$.



48. A regular polygon has an interior angle with a measure of 108° . How many sides does the polygon have?

49. For the trapezoid shown below, the measure of the midsegment is _____.



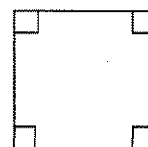
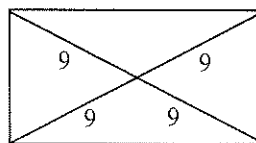
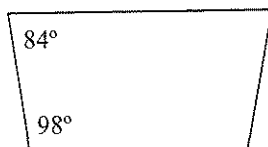
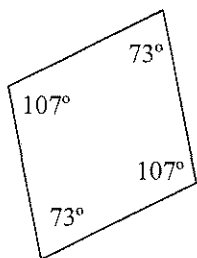
50. Decide if each figure below is the given type of quadrilateral. Explain your reasoning.

a. A rhombus?

b. A trapezoid?

c. A rectangle?

d. A square?



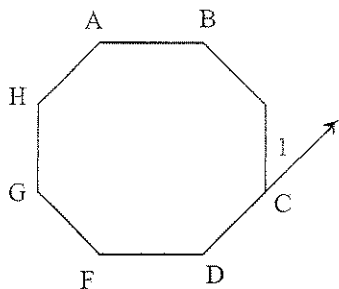
51. a. Find the sum of the interior angles of a 30-gon.

b. If it is a regular 30-gon, what are its interior and exterior angle measures?

52. The sum of the interior angles of a polygon is 1800° . Identify this polygon!

53. The measure of an interior angle of a regular polygon is 174° . Identify this polygon!

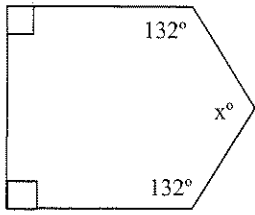
54. ABCDEFGH is a regular polygon.



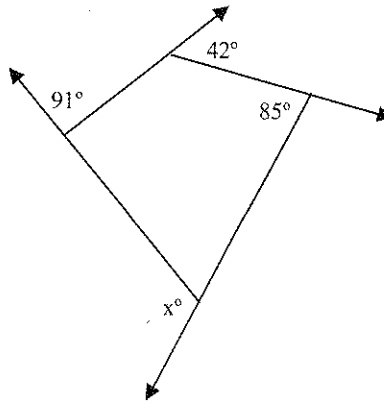
- What is the sum of the measures of the interior angles?
- What is the measure of $\angle A$?
- What is the sum of the exterior angles?
- What is the measure of $\angle 1$?

55. Find x .

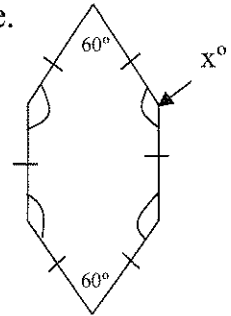
a.



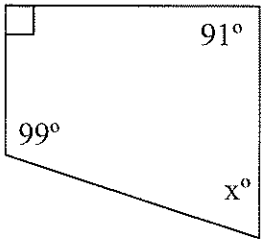
b.



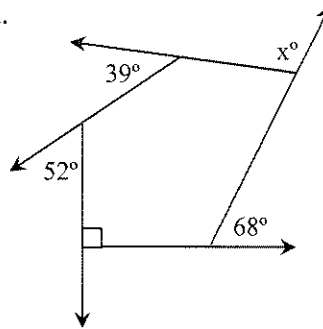
e.



c.

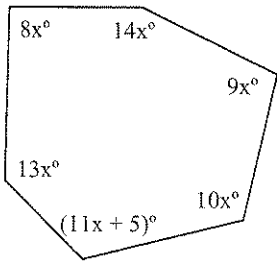


d.

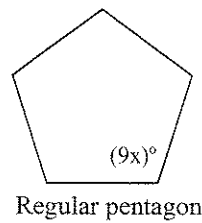


56. Find x and the angle measures.

a.

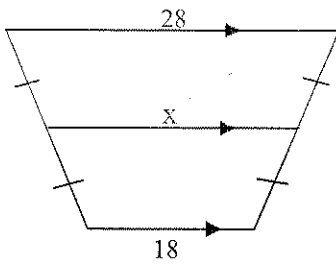


b.

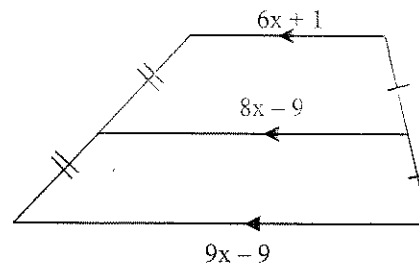


Regular pentagon

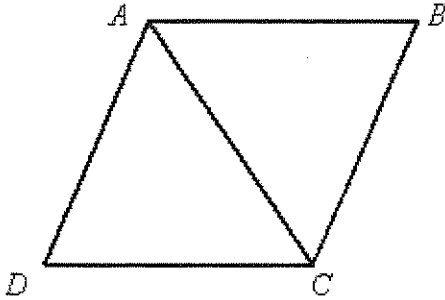
57. Find x .



58. Find x and the length of the bases and midsegment.



59. Given: $ABCD$ is a rhombus.
 Prove: $\triangle ACB \cong \triangle CAD$



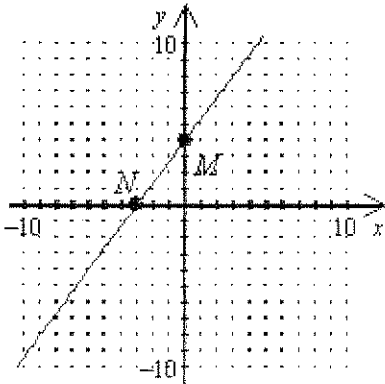
- | | |
|--|----|
| 1. | 1. |
| 2. $ABCD$ is a parallelogram. | 2. |
| 3. $\overline{AB} \cong \overline{CD}$, $\overline{BC} \cong \overline{AD}$ | 3. |
| 4. $\overline{AC} \cong \overline{AC}$ | 4. |
| 5. | 5. |

Complete the proof using the following reasons (do not forget to fill in statements 1 and 5, too):

- A. Opposite sides of a parallelogram are congruent
- B. SSS
- C. Definition of a parallelogram
- D. Reflexive Property
- E. Given

CHAPTER 9: PROPERTIES OF TRANSFORMATIONS

60. The graph of \overleftrightarrow{MN} below represents the equation $y = \frac{4}{3}x + 4$. If \overleftrightarrow{MN} is rotated counterclockwise 270° around the origin, what will be the new coordinates of point N ?

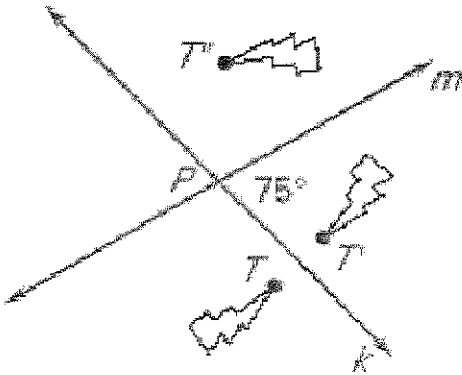


61. The point $A(-7, 3)$ is translated onto A' by the vector $\vec{u} = \langle 5, -4 \rangle$. The coordinates of A' are _____.
62. Point $A(-2, 8)$ is translated by $(x, y) \rightarrow (x - 2, y + 6)$. Find the coordinates of A' .
63. The coordinates of the image are eight times the corresponding coordinates of the original. What type of transformation is this?

64. Given point $P(6, -2)$ give the coordinates of P' when....

- a) reflected in the x -axis
- b) reflected in the y -axis
- c) reflected in the line $y = x$
- d) reflected in the line $y = -x$
- e) rotated 90°
- f) rotated 180°
- g) rotated 270°
- h) rotated 360°

65. Point T is rotated counterclockwise creating the image T'' . What is the angle of rotation based on a reflection of Point T over line k and then reflected over line m .



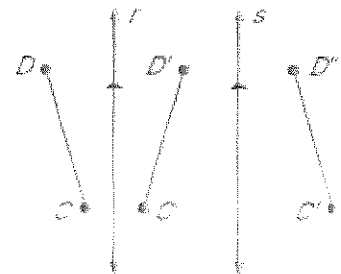
In the diagram, $r \parallel s$.

66. What *two* transformations were performed to map \overline{CD} to $\overline{C''D''}$?

67. A *single* transformation that maps \overline{CD} to $\overline{C''D''}$ is called a...

68. Name a segment congruent to $\overline{CC''} \cong$ _____.

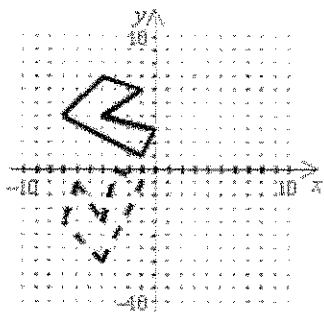
69. If the distance between r and s is 4.2 inches, what is the length of $\overline{CC''}$?



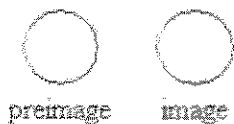
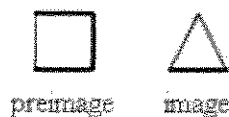
70. Which figure has more than 1 line of symmetry?

- a.
- b.
- c.
- d.

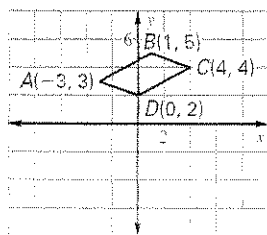
71. The change in position from the solid figure to the dotted figure is best described as a _____.



72. Which of the following transformations represents an isometry?



73. What are the coordinates of the vertices when the figure is reflected in line $y = -2$.



$A' (\quad , \quad)$

$B' (\quad , \quad)$

$C' (\quad , \quad)$

$D' (\quad , \quad)$

Find the coordinates of the image without using a coordinate plane.

74. $M(3, 4)$ reflected in the line $y = x$.

75. $N(-2, 2)$ reflected over the x -axis.

Use the translation vector $\vec{u} = \langle 5, -2 \rangle$.

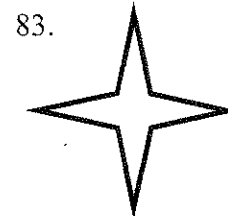
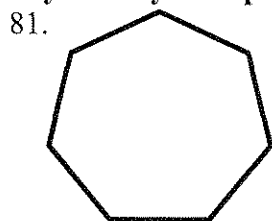
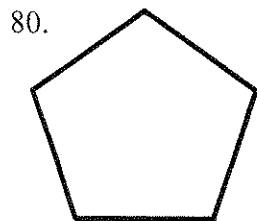
76. What is the image of $A(1, 6)$.

77. What is the image of $B(-2, 8)$.

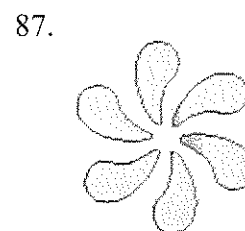
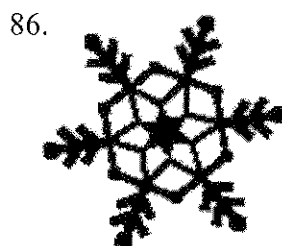
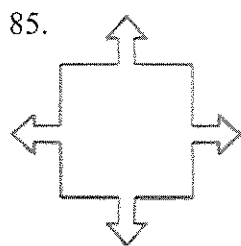
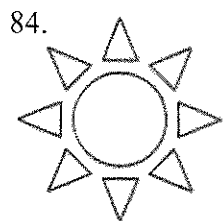
78. What is the preimage of $C'(0, -3)$.

79. What is the preimage of $D'(-5, -10)$.

Determine how many lines of symmetry each polygon has.

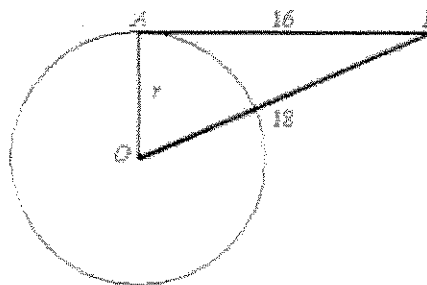


Determine whether the figure has rotational symmetry. If so, describe the rotations that map the figure onto itself.

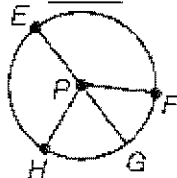


CHAPTER 10: PROPERTIES OF CIRCLES

88. You are standing at point B . Point B is 18 feet from the center of the circular water storage tank and 16 feet from point A . \overline{AB} is tangent to $\odot O$ at A . Find the radius of the tank.



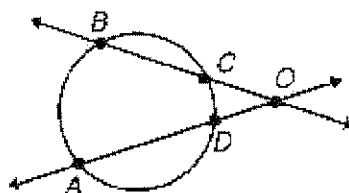
89. A minor arc of $\odot P$ is _____



90. Write the standard equation of a circle with center $(2, -5)$ and radius 7.

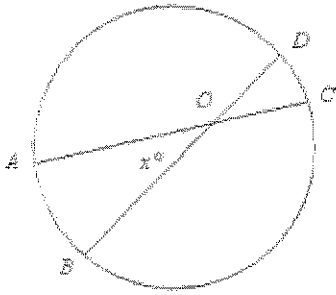
91. Write the standard equation of a circle with its center at the origin and radius 3.

92. $m\widehat{AB} = 100^\circ$, $m\widehat{CD} = 38^\circ$. Find $m\angle DOC$.

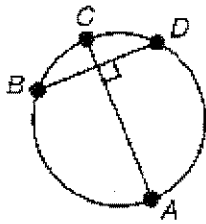


Not drawn to scale

93. Find the value of x if $m\widehat{AB} = 38^\circ$ and $m\widehat{CD} = 23^\circ$.

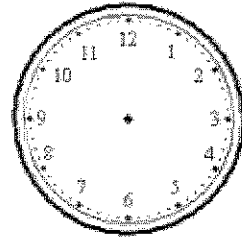


94. Given \overline{AC} bisects \overline{BD} , choose the true statement that refers to the figure.

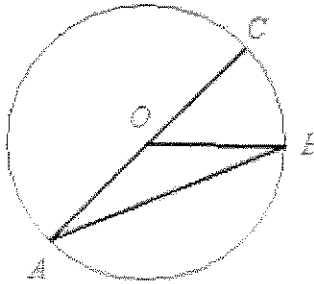


- a. \widehat{BCD} is a major arc. b. $\widehat{CD} = \widehat{BA}$ c. \widehat{BAD} is a minor arc. d. \overline{AC} is a diameter.

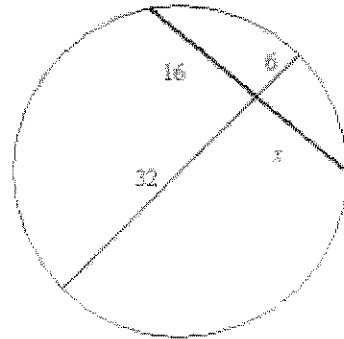
95. How many degrees does a minute hand move in 40 minutes?



96. Given: In $\odot O$, $m\widehat{BAC} = 314^\circ$. Find $m\angle A$.



97. Find the value of x .



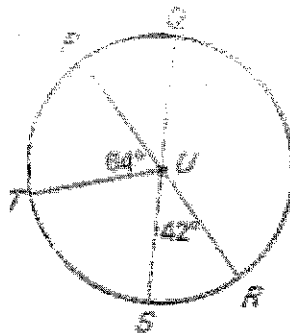
98. Find the measure of the arcs:

\widehat{PQS}

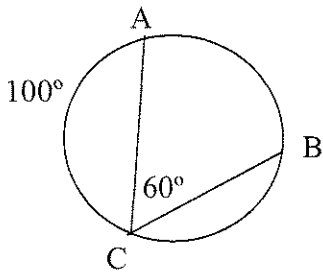
\widehat{TOR}

\widehat{PS}

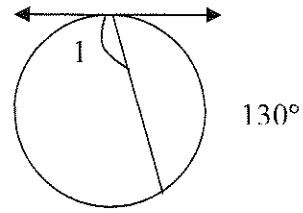
\widehat{PTR}



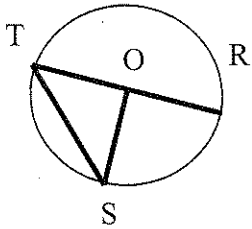
99. Find $m\widehat{CB}$.



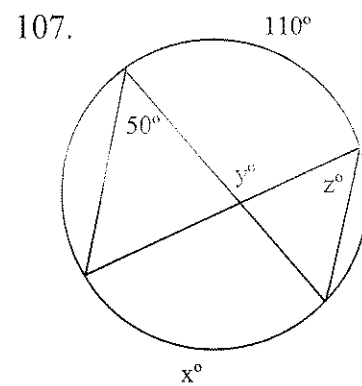
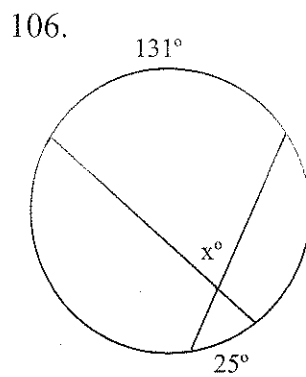
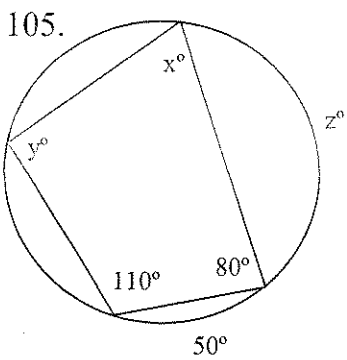
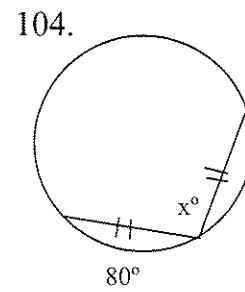
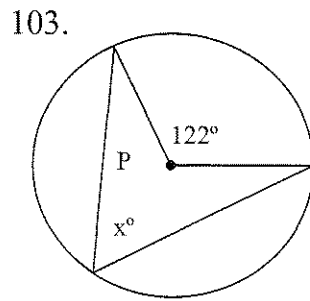
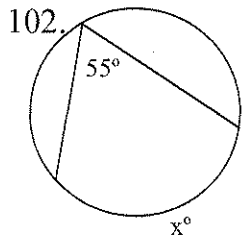
100. Find the measure of $\angle 1$.



101. In $\odot O$, given $m\widehat{STR} = 280^\circ$, Find $m\angle T$.

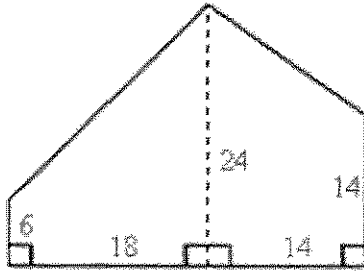


Find x , y , and/or z in each figure. P is the center if present.



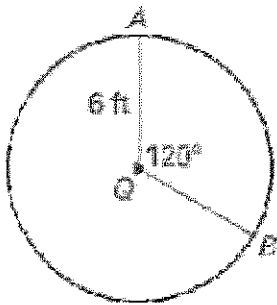
CHAPTER 11: MEASURING LENGTH AND AREA

108. Find the area of the region shown by dividing it into two trapezoids.

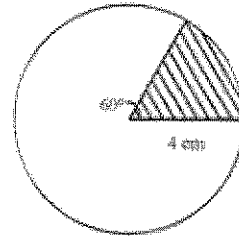


109. Find the length of

\widehat{AB}



110. Find the area of the shaded region.



111. A circle has a circumference of 40 meters. Find its radius.

112. Find the area of an equilateral triangle with side length 6.

113. If a circle has a diameter of 12, then it has a radius of _____.

114. An automobile has 20-inch diameter wheels. If the wheels revolved three times after the brakes were applied, the stopping distance was approximately _____.

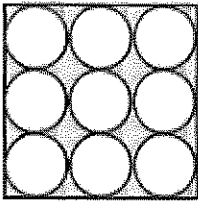
115. The area of a trapezoid is 70m^2 . If the height is 5 m and the shorter base is 7 m, what is the length of the longer base?

116. A rectangular field is 150 m by 430 m. A rectangular barn 24 m by 41 m is built in the field. How much area is left over?

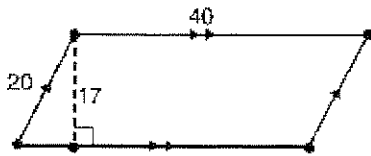
117. If a circle has a diameter of 6 inches, what is the circumference rounded to the nearest whole number?

118. A park has a circular swimming pool. The diameter of the pool is 24. What is the distance traveled if you swim around the edge of the pool once?

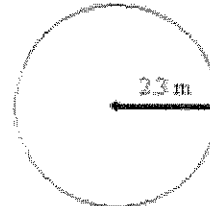
119. In this figure, each circle has a radius of 2 inches. What is the area of the portion outside the circles but inside the square? Express your answer in terms of π .



120. The area of the parallelogram is _____.



121. Find the area:



Answer Key:

1. 28.07°
2. a. No b. Yes
3. a. Opp./Hyp.
b. Adj./Hyp.
c. Opp./Adj.
4. $5/13$
5. 13.24
6. $\sqrt{95}/7$
7. 11.33
8. 8.66
9. $12/13$
10. 17.1
11. 60.97 ft.
12. 90.5
13. 16
14. 34.18
15. Right
16. Obtuse
17. Obtuse
18. 45° ; 9, 9
19. 60° ; 13, $13\sqrt{3}$
20. 45° , 45° ; $6\sqrt{7}$, $6\sqrt{14}$
21. 90° ; 61, 122
22. 45° ; $\frac{15\sqrt{2}}{2}$, $\frac{15\sqrt{2}}{2}$
23. 60° ; $\frac{11\sqrt{3}}{3}$, $\frac{22\sqrt{3}}{3}$
24. 15.3
25. 19.4
26. 26
27. 18
28. 74.5°
29. 68.6°
30. 8.9°
31. $\overline{CA}=25.6$, $\sphericalangle A=38.7^\circ$, $\sphericalangle C=51.3^\circ$
32. $\overline{DF}=25$, $\sphericalangle D=16.3^\circ$, $\sphericalangle F=73.7^\circ$
33. $\overline{RS}=10.3$, $\overline{RT}=37.5$, $\sphericalangle R=74^\circ$
34. $\overline{XY}=13.5$, $\overline{YZ}=16.1$, $\sphericalangle X=50^\circ$
35. Kite/Parallelogram
36. Kite
37. 360°
38. Bisect each other
39. $4 \cong$ sides
40. Trapezoid with \cong legs
41. Supplementary
42. $x = 8$, $y = 2$
43. $x = 7$, $y = 5$

70. A
71. Rotation
72. C
73. $A'(-3, -7)$ $B'(1, -9)$ $C'(4, -8)$ $D'(0, -6)$
74. $(4, 3)$
75. $(-2, -2)$
76. $A'(6, 4)$
77. $B'(3, 6)$
78. $C(-5, -1)$
79. $D(-10, -8)$
80. 5
81. 7
82. 7
83. 4
84. Yes; $45^\circ, 90^\circ, 135^\circ, 180^\circ$
85. Yes; $90^\circ, 180^\circ$
86. Yes; $60^\circ, 120^\circ, 180^\circ$
87. Yes; $60^\circ, 120^\circ, 180^\circ$
88. $r = 8.2$
89. FG, GH, FH, FE, EH
90. $(x - 2)^2 + (y + 5)^2 = 49$
91. $x^2 + y^2 = 9$
92. 31°
93. 30.5
94. D
95. 240°
96. 23°
97. 12
98. $222^\circ, 244^\circ, 138^\circ, 180^\circ$
99. 140°
100. 115°
101. 40°
102. 110°
103. 61°
104. 100°
105. $x = 70^\circ, y = 100^\circ, z = 150^\circ$
106. 78°
107. $x = 100^\circ, y = 110^\circ, z = 50^\circ$
108. 536
109. 12.56 ft.
110. 8.37 cm^2
111. 6.37 m
112. 15.6
113. 6
114. 188.4 in
115. 21
116. 63,516

117. 18.84

118. 75.36 ft.

119. $144 - 36\pi$

120. 680

121. 16.61 m^2