1 Geometry

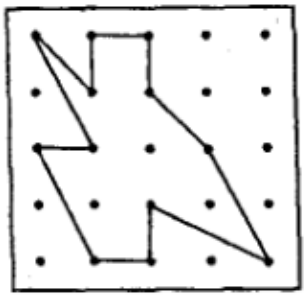
Problems

1. The sides of a triangle are 9 in, 12 in, and 15 in. The triangle is a(n) _____triangle:

2. An isosceles trapezoid has a top base of 8 cm, a bottom base of 14 cm, and a slanted side length of 5 cm. Find the area of the isosceles trapezoid.

3. Rene drew $\triangle ABC$ using the coordinates $(1, 2), (2, -2)$ and $(5, 1)$. Find the area of Rene's triangle.

4. Georg Alexander picks the special figure and places it on a five-peg-by-five-peg geoboard. Find the area enclosed by the figure.

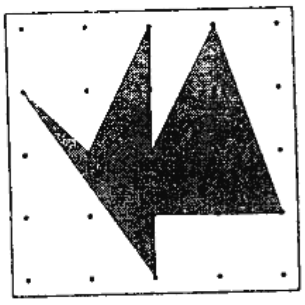


5. $\triangle DEF$ is an obtuse isosceles triangle such that m$\angle DEF$ is 104° and EF is 14 cm. Find the area of $\triangle DEF$ to the nearest integer.

6. Point $P(3, 3)$ is rotated 270° counterclockwise about the origin to point Q. Point Q is reflected across the y-axis to point R. Find the coordinates of point R.

7. Two chords, AC and BD intersect in the interior of a circle at point X such that $m\ \overset{\frown}{BC} = 20°$ and $m\ \overset{\frown}{AD} = 120°$. If points B and C are not on $\overset{\frown}{AD}$ then $m\angle AXD$ is:

8. The adjacent dots on the grid are 1 cm apart when measured vertically and horizontally. Find the area of the shaded figure shown.

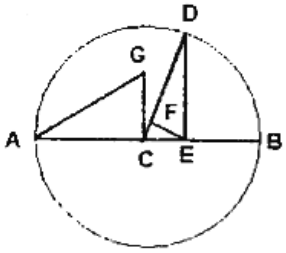


9. One of the base angles of an acute isosceles triangle has a measure of 50° and the length of its base is 6 cm. Find the perimeter of the acute isosceles triangle. (nearest tenth)

10. The square below is divided into 5 congruent rectangles. The perimeter of each of the congruent rectangles is 30 units. What is the perimeter of the square?

11. Simplify: $\frac{n!+(n-1)!}{(n-2)!}$

12. Let AB be the diameter of the circle with center C with $CG \perp AB, DE \perp AB$, and $EF \perp DC$. If $AE = 9$ and $BE = 4$ then $DE =$?

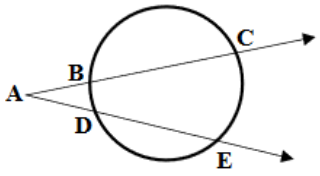


13. Given: $\triangle ABC \sim \triangle DEF, AB = 15, AC = 12, m\angle A = 62°, DE = 10$. $EF =$ _____. (nearest tenth)

14. Points A and B line on a circle with center O. The area of the circle is 531 and $AB = 24$. Find the distance from O to chord $\overline{AB}$. (nearest tenth)

15. Consider a circle circumscribed about a regular pentagon. If the area of the circle is 452.4, then the area of the pentagon is _____. (nearest whole number)

Use the sketch below for problems 16 and 17. The information given in problem 16 does not carry over to problem 17.



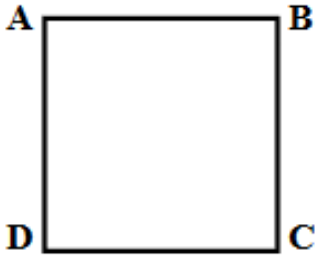
16. If $AB = 6, BC = 15$, and $AD = 8$, then $DE =$ _____. (nearest hundredth)

17. If $mBD = 28°$ and $mCE = 86°$, then $m\angle CAE =$ _____$°$

18. The base of a pyramid is a square with each side equal to three-fifths of the height of the pyramid. If the volume of the pyramid is 700, what is the total area of the pyramid? (nearest whole number)

19. Angles A and B are complementary angles while angles A and C are supplementary angles. If $m\angle A = 6x+1$ and $m\angle B = 9x - 1$, then $m\angle C =$ _____$°$.

20. Quadrilateral $ABCD$ shown below is a square. The midpoint of $\overline{AD}$ is point E and the midpoint of $\overline{AB}$ is point F. If $EF = 18$, then the area of the square is _____.

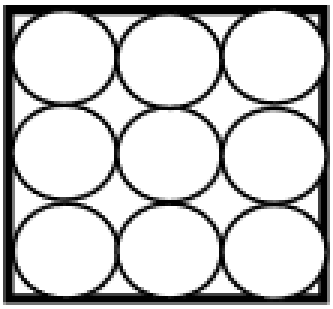


21. Consider a quadrilateral with vertices $A(-6, 4), B(0, -8), C(6, 4)$, and $D(0, 12)$. This quadrilateral can be classified as a _____.

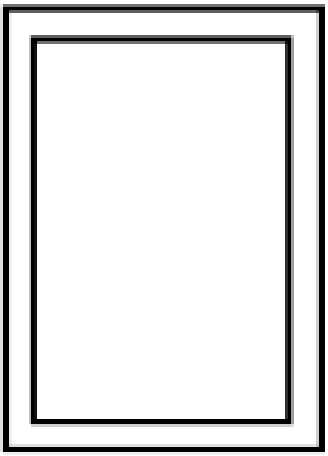
22. Consider $\triangle ABC$ with point D on $\overline{AB}$ such that $\overline{CD} \perp \overline{AB}$. If $m\angle ACB = 78.28°$, $AD = 9$ and $CD = 12$, then $DB =$ _____. (nearest tenth)

23. Find the area of a triangle with vertices $(0, 12), (0, 0)$ and $(12, 0)$.

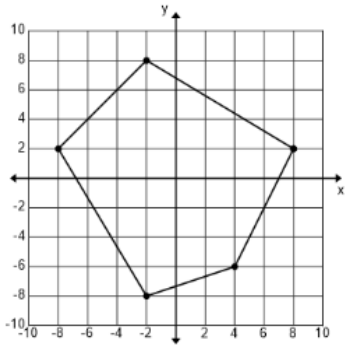
24. If you cut nine circles out of a square piece of cardboard that measures 12 in by 12 in, how much cardboard is discarded? (nearest tenth)



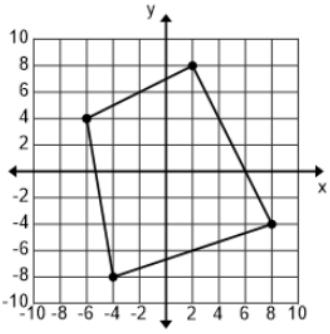
25. Russell's backyard pool is shaped like a rectangle that measures 30 ft by 50 ft. He decides to add a sidewalk that is 3 feet wide around the perimeter. Vedant, Caleb and Curtis will provide free labor, so he only has to pay for the concrete, which cost $6.00 per square foot. What will the sidewalk cost?



26. Find the area of the polygon below. (nearest whole number)



The following polygon is used for problem 27 and 28.

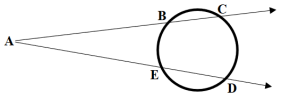


27. Find the perimeter of the polygon shown. (nearest tenth)

28. Find the area of the polygon shown.

29. Consider $\triangle ABC$ with $AB = 18$ and $BC = 14$. Point D lies on $\overline{AC}$ such that $\overline{BD}$ bisects $\angle ABC$. If $AD = 10$, then $DC =$ _____. (nearest tenth)

Use the following sketch for problems 30 and 31.



30. If $m\angle CAD = 19°$, $mCD = 120°$, $mDE = 102°$, then $mBC =$ _____.

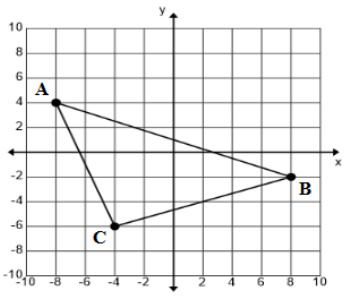
31. If $\overline{BD}$ intersects $\overline{CE}$ at point P (not shown) with $BP = x+1$, $CP = 2x$, $DP = 2x+2$, and $EP = x+4$, then $CE =$ _____. (nearest tenth)

32. Consider a right circular cone with a base perimeter of 75 cm and a lateral area of 490 cm. Find the volume of the cone. (nearest whole number)

33. Consider a circle inscribed in a square with side lengths 44.6 mm. Find the area inside the square but outside the circle. (nearest whole number)

34. Find the perimeter of a regular decagon that can be inscribed in a circle with an area of 254 cm^2. (nearest tenth)

The following diagram is used for problems 35-40.



35. The y-intercept of $\overline{AB}$ is the point $P(a, b)$. $b =$ _____.

36. Point $D(3, d)$ lies on the perpendicular bisector of $\overline{CB}$. $d =$ _____.

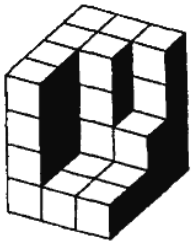
37. The perimeter of $\triangle ABC$ is _____. (nearest tenth)

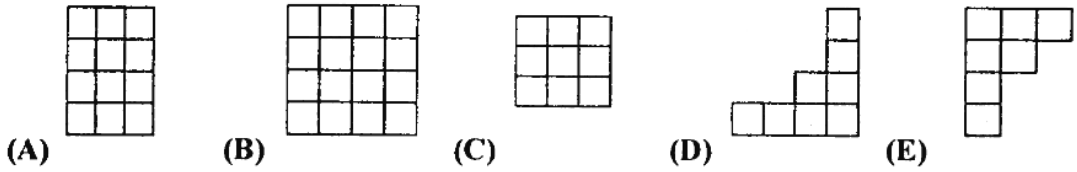
38. The area of $\triangle ABC$ is _____. (nearest tenth)

39. The length of the median from point C to $\overline{AB}$ is _____. (nearest hundredth)

40. $\triangle ABC$ is a/an _____triangle.

41. Which of the following would best represent a two dimensional perspective of the top view of this figure shown?



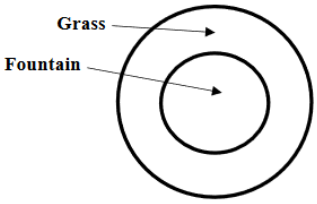


For Problems 42 and 43, consider the regular polygon $ABCDEF$ with $EF = 8$.

42. The area of the polygon is _____. (nearest whole number)

43. The area of $\triangle ACE$ is _____. (nearest whole number)

Consider the following diagram for problems 44 and 45.



Russell entertains a guest in an area of his backyard which has a magnificent fountain surrounded by an area of grass. The fountain area is circular with a radius of 6 feet. The grass area is the outer part of a circle with the same center as the fountain and with a radius of 10 feet.

44. The area of the grass region is _____square feet. (nearest whole number)

45. Russell decided to put up a fence along the outer perimeter of the grass region. If the fence is 6 feet tall and the cost of fencing is \$25/square foot, find the total cost of the fencing.

For problems 46 and 47, consider a circle with center O and diameter $\overline{BD}$. Chord $\overline{AC}$ is perpendicular to $\overline{BD}$. $BD = 50$ and $AC = 40$.

46. Find the area of sector AOD. (nearest whole number)

47. Find the area of the region between chord $\overline{AC}$ and minor arc AC. (nearest whole number)

For problems 48 and 49 consider isosceles trapezoid $PQRS$ with $PQ = RS = 10$. $\overline{QR}$ is parallel to $\overline{PS}$. $QR = 15$ and $PS = 25$.

48. Find the area of $PQRS$. (nearest whole number)

49. $QS =$ _____. (nearest tenth)

50. The lateral area of a cone with a volume of 667 and a diameter of 14 is _____. (nearest hundredth)

For problems 51-54, consider triangle ABC with vertices $A(2, 8), B(6, -2)$, and $C(-4, -4)$.

51. Find the perimeter of triangle ABC. (nearest tenth)

52. The measure of $\angle ABC$ is _____°. (nearest tenth)

53. The area of triangle ABC is _____. (nearest whole number)

54. Given: Triangle ABC is similar to triangle DEF. If $EF = 6.9$, then $DF =$ _____. (nearest tenth)

For problems 55-57, you are given: Circle with center O, diameter $\overline{CD}$, chord $\overline{EF}$ parallel to $\overline{CD}$. $CD = 20$ and $EF = 16$. $m\angle COE < 90°$.

55. If H is the midpoint of $\overline{EF}$, then $OH =$ _____. (nearest tenth)

56. The area of sector COE is _____. (nearest tenth)

57. The arclength of minor arc EF is _____. (nearest tenth)

58. A right circular cylinder has a diameter of 22 and a volume of 10,264. The total surface area of the cylinder is _____. (nearest whole number)

For problems 59 and 60, consider isosceles trapezoid $PQRS$ with $PQ = RS = 13$. $\overline{QR}$ is parallel to $\overline{PS}$. $QR = 16$ and $PS = 26$.

59. The area of trapzeoid $PQRS$ is _____. (nearest whole number)

60. $PR =$ _____. (nearest tenth)

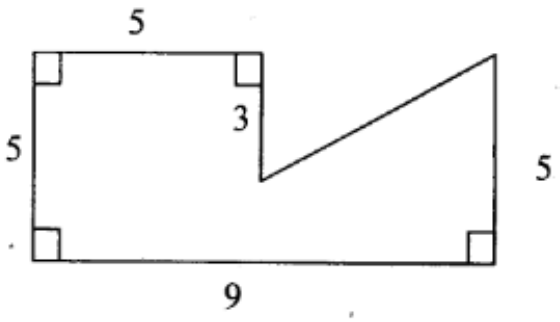
61. The diagonal of a television screen measures 54.12 inches. The width of the rectangularly shaped television screen is 23 inches greater than the height. The area of the television screen is _____in^2. (nearest whole number)

62. $\triangle ABC$ is similar to $\triangle FDE$. $AB = 20, BC = 35, DF = 12$, and $DE = 21$. Which of the following is a false statement?

(A) $\angle B \cong \angle D$ **(B)** $\angle C \cong \angle E$ **(C)** $\angle A \cong \angle D$ **(D)** $\frac{AC}{EF} = \frac{5}{3}$ **(E)** $\frac{DE}{BC} = \frac{3}{5}$

63. If the height of a right cylindrical container is doubled and the diameter is cut in half, then the ratio of the volume of the original container to the volume of the new container is?

64. What is the perimeter of this hexagon? All lengths are in cm.



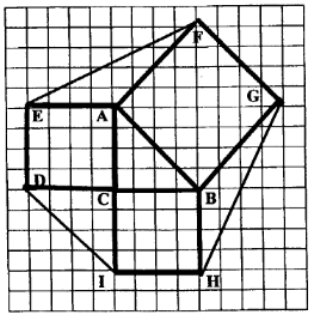
65. The coordinates of the vertices of $\triangle ABC$ are $C(0,7), B(2,5)$, and $A(x,2)$. $\angle ABC$ is a right angle if x equals:

66. The center of a circle inscribed in a triangle is caleld the _____.

67. $\overline{NQ}$ is an altitude of $\triangle MNO$. $NM = 13$ cm, $NO = 15$ cm, and $NQ = 12$ cm. The perimeter of $\triangle MNO$ is

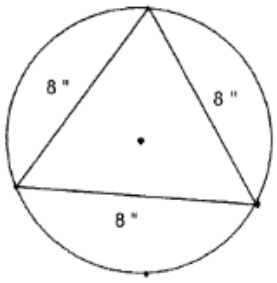
68. If $(6,9)$ and $(10,3)$ are the coordinates of two opposite vertices of a square, which of the following is one of the other vertices of the square?

69. The drawing contains $\triangle ABC$, a right triangle, and three squares attached to $\triangle ABC$. Find the sum of the areas of the four triangles.



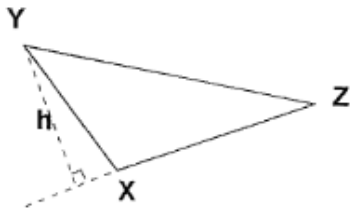
70. The area of a rectangle is 300 cm^2. The ratio of its length to its width is 4:3. The perimeter of the rectangle is:

71. Find the radius of the circle. (nearest tenth)

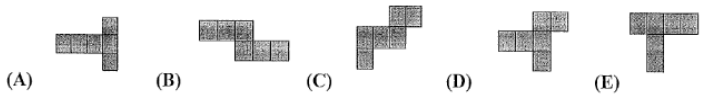


72. $\angle P$ is supplementary to $\angle Q$ and $\angle R$ is complementary to $\angle S$. If $m\angle P = 75°$ and $m\angle Q = 3 \times m\angle R$, then $m\angle S =$?

73. A triangle is drawn as shown. Find the height, h, if $YZ = 18"$, $m\angle YZX = 30°$, and $XZ = 12"$.



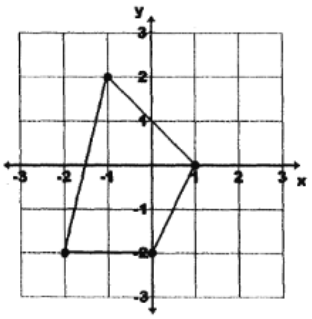
74. Which of the following nets when folded will not form a cube?



75. A tangent and a secant intersect at point A in the exterior of a circle. The measures of the two intercepted arcs are 75° and 50°. What is the measure of angle A formed by the tangent and the secant?

76. Two legs of a triangle have lengths of 10 cm and 15 cm with an included angle of $30°$. Find the area of the triangle.

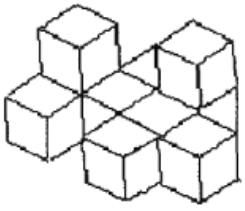
77. Rene drew this quadrilateral on the coordinate plane below. The coordinates of the vertices are integers. What is the area of his quadrilateral?



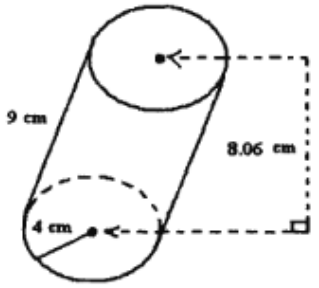
78. If a line in the plane of a circle is perpendicular to a radius at its endpoint on the circle then the line is _____to the circle.

79. $\angle A$ and $\angle B$ are complementary. The ratio of $m\angle A$ to $m\angle B$ is 4:5. Find the ratio of $m\angle B$ to its supplement.

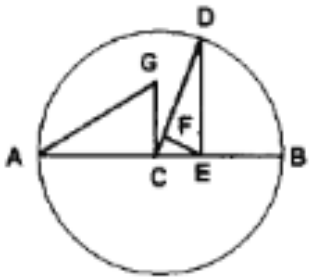
80. The length of the sides of each of the small cubes is 1 cm. How many of the small cubes would need to be added to this figure to make a rectangular prism that is 4 cm long, 3 cm wide, and 2 cm tall?



81. Find the lateral area, nearest square cm, of the oblique cylinder.



82. Let AB be the diameter of the circle with center C with $CG \perp AB$, $DE \perp AB$, and $EF \perp DF$. If $AE = 9$ and $BE = 4$ then $DF =$?



83. Points A, B, C, and D are the vertices of a square. Point E is on the interior of the square such that points A, B, and E form an equilaterial triangle. A line segment connects point D and E. Another line segment connects points C and E. Find $m\angle CED$.

84. The coordinates of the vertices of $\triangle ABC$ are $(-1, 2), (1, 0)$ and $(-2, -2)$. The medians of the $\triangle ABC$ intersect at (x, y). Find $x + y$.

85. Deputy Dawg is building two adjacent rectangular pens to hold his puppies. Each pen has a length 3 times longer than its width and the pens share a common side (width). He has 65 feet of fencing. What will the area of each pen be?

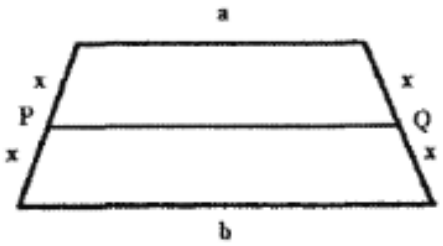
86. If a quadrilateral is inscribed in a circle, then its opposite angles are _____.

87. The coordinates of the vertices of $\triangle ABC$ are $(-2, 0), (1, 4)$, and $(4, 0)$. The coordinates of the incenter is:

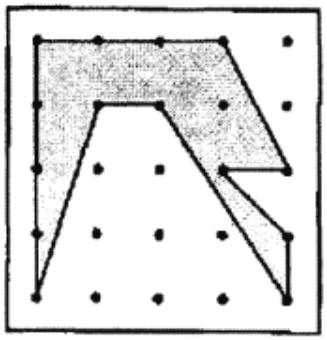
88. Shirley Knott is filling up her circular wading pool. The diameter of the pool is 6 feet and the height of the pool is 1 foot. What is the maximum number of whole gallons of water can she use and not cause the pool to overflow?

89. The vertex angle of an obtuse isosceles triangle has a measure of 100° and the length of one the sides adjacent to the vertex angle is 4 cm. Find the area of the triangle. (nearest tenth)

90. Given the trapezoid shown with bases a and b, the length of segment PQ is the _____mean of a and b.

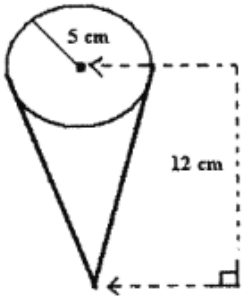


91. Adjacent dots on the grid are 1 cm apart when measured vertically and horizontally. Find the area of the shaded figure shown.

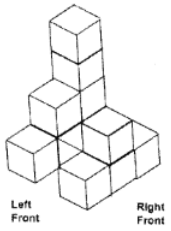


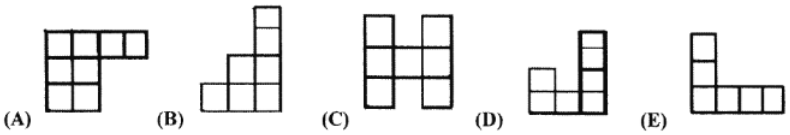
92. Two chords, WY and XZ intersect in the interior of a circle at point P such that $m\angle WPX = 70^\circ$ and $m\,\overset{\frown}{WX} = 120^\circ$. If points X and Y are not on $\overset{\frown}{WZ}$ then $m\,\overset{\frown}{YZ}$ is:

93. Find the lateral area, nearest square cm, of the cone.

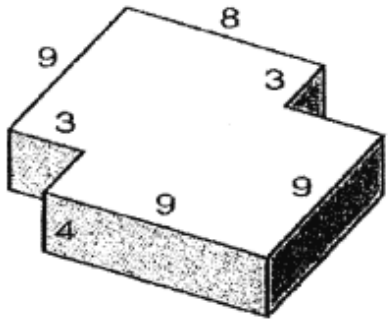


94. Which of the following would best represent a two dimensional perspective of the front right side view of this figure shown?





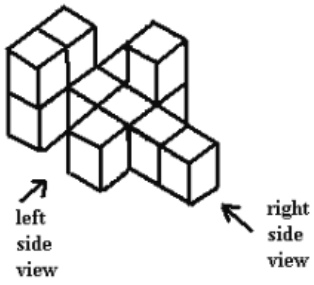
95. Find the lateral surface area of this prism. All angles are right angles.



96. A right cylinder water tank is 6 feet high and has an inside radius of 3 feet. The amount of water in the tank is 75% of its maximum capacity. How much water is in the tank? (nearest gallon)

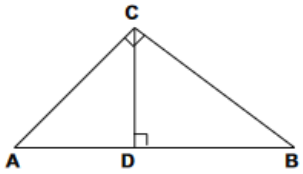
97. The region bounded by two radii of a circle and their intercepted arc is called a:

98. One-centimeter cubes are glued together to form the object in the figure shown. The two-dimensional persepctive of the top view of this figure has a perimeter of:



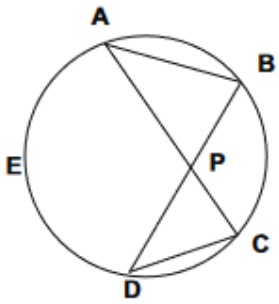
99. $\angle A$ and $\angle B$ are complementary angles. $\angle A$ and $\angle C$ are supplementary angles. Find $m\angle C$ if $m\angle A = 2x-5$ and $m\angle B = x+2$.

100. Find AD if $AB = 90$ cm. and $AC = 50$ cm. (nearest cm)



101. The area of a right isosceles triangle is 12.5 cm^2. Its perimeter is: (nearest tenth).

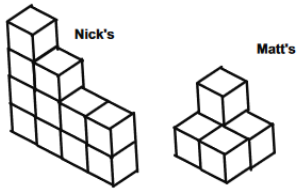
102. $\overline{AB}$, $\overline{AC}$, $\overline{BD}$, and $\overline{CD}$ are chords of circle O and point E lies on circle O. Which of the following is a true statement?



(A) $m\angle ABD = \frac{1}{2} \times m\ \overset{\frown}{AED}$ **(B)** $m\angle BPC = \frac{1}{2} \times m\ \overset{\frown}{CB}$ **(C)** $m\angle ACD = 2 \times m\ \overset{\frown}{AED}$
(D) $m\angle APD = m\angle ABP + m\angle DCP$ **(E)** $m\angle ABP + m\angle BDC$

103. A regular polygon has S sides and D diagonals. If the polygon had one more side, $S+1$, it would have $D+10$ diagonals. The polygon is a:

104. Matt and Nick constructed two buildings using identical cubes. Matt's building weighs 200 g, and Nick's building weighs 600 g. How many of the cubes in Nick's building are hidden and cannot be seen in the figure?

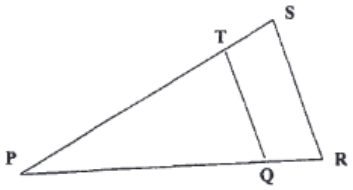


105. Which of the following are the side lengths of a scalene acute triangle?

(A) $9, 40, 41$ **(B)** $4, 7, 11$ **(C)** $9, 10, 11$ **(D)** $5, 5, 8$ **(E)** $8, 7, 14$

106. The point $(6, -6)$ is rotated 60 degrees clockwise about the origin. The coordinates of the point after the rotation is _____. (closest approximation)

107. In $\triangle PRS, QT//RS, RS = 4, QT = 3, ST = x$, and $PT = x + 5$. Find PS.

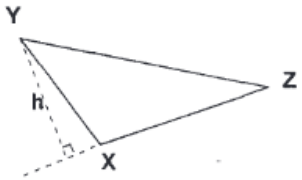


108. If two parallel lines are intersected by a transversal, then the alternate angles are _____.

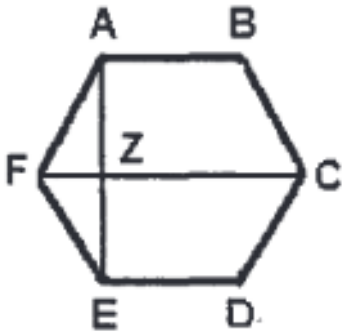
109. $\triangle ABC$ and $\triangle PQR$ exist such that $AB = BC = PQ = PR, m\angle ABC = 2x°, m\angle QPR = x°$, and they have equal areas. Find x.

110. A circle with a center at C has a radius of 9 cm. A chord AB of the circle is 6 cm long. Find the distance from the chord to the center C.

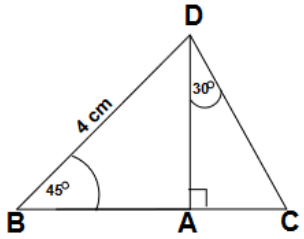
111. Find the perimeter of $\triangle XYZ$ if $XY = 8$", $XZ = 11$" and $m\angle XYZ = 120°$. (nearest tenth)



112. Polygon $ABCDEF$ is a regular hexagon and segments AE and CF intersect at point Z. The ratio of the area of triangle EFZ to the area of the quadrilateral $ABCZ$ is:



113. Find the perimeter of $\triangle BCD$. (nearest tenth)

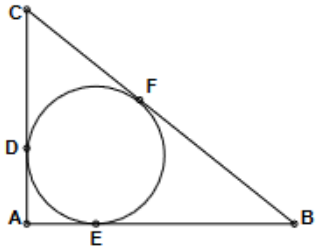


114. Max Space has a rectangular sheet of cardboard that is 4 feet by 6 feet. He is going to cut out a 5 inch square from each of the four corners, then fold up the sides, tape edges, and make a rectangular box without a top. What is the volume of the box? (nearest tenth)

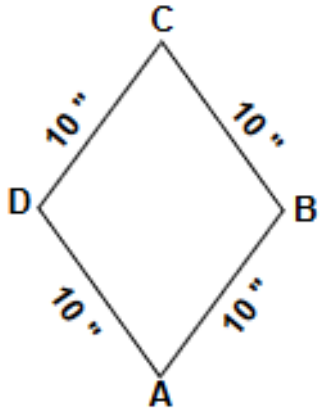
115. Given: $\triangle ABE$ is similar to $\triangle DON$; $\angle A \cong \angle N$; $\angle B \cong \angle D$; $AB = 30$ cm; $DN = 24$ cm; and $NO = 16$ cm. Find AE.

116. $\triangle ABC$ is a scalene triangle. Point P lies on segment AB such that segment CP is the altitude of the triangle, $m\angle CBP = 65°$, $AP = 12"$, $BP = 15"$. Find $m\angle ACP$. (nearest degree)

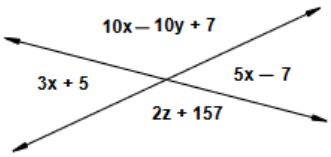
117. Find the radius of the circle inscribed in $\triangle ABC$ with $AC = 3"$, $AB = 4"$, and $BC = 5"$.



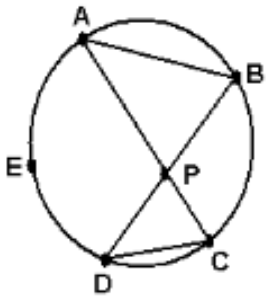
118. Find the area of the rhombus shown given that $AC - BD = 4"$



119. Find the sum of x, y, and z, given the degree measures of the angles shown.

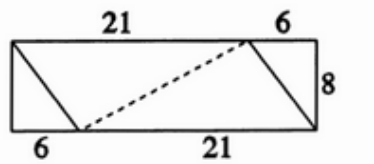


120. $\overline{AB}, \overline{AC}, \overline{BD}$, and $\overline{CD}$ are chords of circle O and point E lies on circle O. Find $m\overset{\frown}{AED}$ given $m\angle BPC = 95^\circ$ and $m\angle BAP = 25^\circ$.

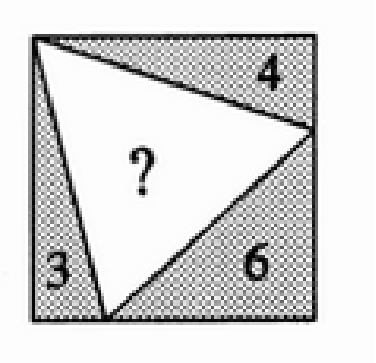


121. $\angle A$ and $\angle B$ are supplementary angles with $m\angle A = 5x - 4$ and $m\angle B = 3x + 2$. Find the absolute value difference in the measures of $\angle A$ and $\angle B$.

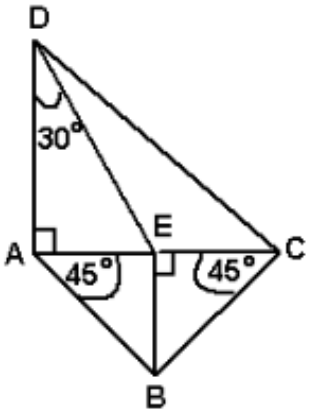
122. An 8×27 rectangle is split into four triangles, as shown below, by three line segments which divide the rectangle's longer sides into segments of lengths 6 and 21. How long is the dotted segment?



123. A square is split into four triangles, and then three of the four triangles are shaded, as shown. If the areas of the shaded triangles are 3, 4, and 6, as shown, what is the area of the unshaded triangle?



124. Find DC if $AE = 3''$.



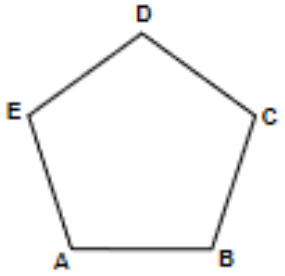
125. Which of the following points of concurrency are always on the exterior of an obtuse triangle

(1) circumcenter (2) centroid (3) incenter (4) orthocenter

126. An elongated square pyramid is a nonahedron. It has 9 faces and 9 vertices. How many edges does it have?

127. Points $P(-1, 1), Q(3, 5), R(17, 1)$, and $S(x, y)$ are the coordinates of the vertices of a parallelogram. How many possible coordinates of S exist for the fourth vertex?

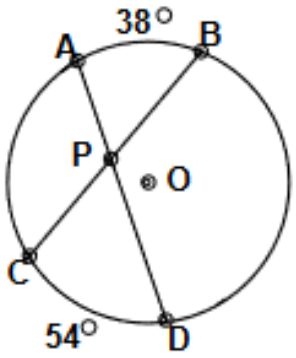
128. Given the regular pentagon shown, find BC with $AC + AD + BE + BD + CE = 44.5''$. (nearest tenth)



129. Leo Oiler drew a polyhedron with 7 faces and 11 edges. How many vertices does it have?

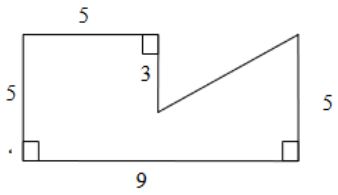
130. Two lines are _____? _____if and only if the product of their slopes is -1.

131. Find $m\angle APB$. (drawing is not to scale)

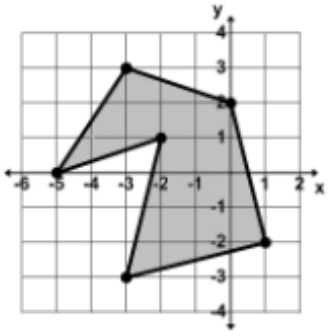


132. A right cylinder can of Papi Spinach has a diameter length of 4" and a height of 5". What is the total surface area of the spinach can? (nearest tenth)

133. Find the perimeter this hexagon? All lengths are in cm.

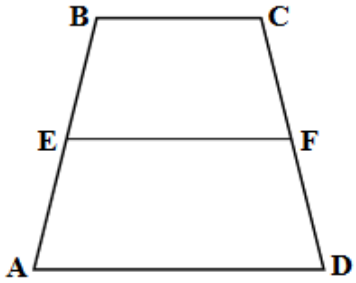


134. Find the area of the shaded figure.



135. The length of the base of $\triangle PQR$ is 40 cm. and the height is 60 cm. $\triangle ICU$ is formed by cutting off 25% of the base of $\triangle PQR$ and adding 20% of the height of $\triangle PQR$. The area of $\triangle ICU$ is what percent of $\triangle PQR$?

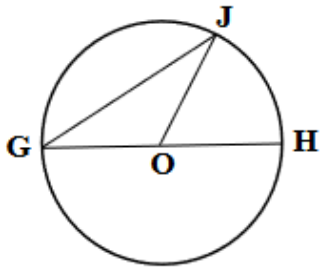
Consider isosceles trapzeoid $ABCD$ for problems 136 and 137. $\overline{EF}$ is the median. $BC = BE = 12$. $m\angle BAD = 80°$.



136. Draw auxiliary line segment $\overline{EC}$. Find the area of triangle EBC. (nearest tenth)

137. Find the area of trapezoid $ABCD$. (nearest whole number)

Consider the circle with center O and diameter $\overline{GH}$ for problems 138 and 139. The measure of minor arc $GJ = 110°$ and $GH = 18$.



138. The area of sector JOH is _____. (nearest tenth)

139. The perimeter of triangle GOJ is _____. (nearest tenth)

140. A regular hexagon is inscribed in a circle. If the area of the circle is 452, then the perimeter of the hexagon is _____. (nearest whole number)

141. The area of the three-quarter circle is 530. Find the perimeter of the three-quarter circle. (nearest whole number)

142. A right circular cone has a radius of 7.75 and a total surface area of 462. Find the volume of the cone. (nearest whole number)

143. Consider right triangle ABC with $m\angle C = 90°$. Point D lies on $\overline{AB}, \overline{CD} \perp \overline{AB}$, $AC = 6$ and $AB = 10$. Find the area of triangle ACD. (nearest hundredth)

144. Find the area of a triangle with vertices $A(6, 4, 2), B(8, 6, 10)$, and $C(6, 2, 8)$. (nearest tenth)

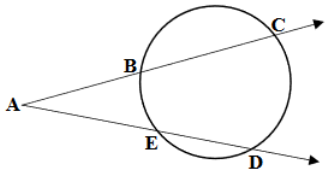
For problems 145-147 consider the points $A(-6, 2), B(8, 4), C(2, -6)$ and $D(-10, -4)$.

145. Find the distance from point A to the midpoint of $\overline{BC}$ (nearest tenth).

146. Given: $\overleftrightarrow{AC}$ is parallel to $\overleftrightarrow{DE}$. If the coordinates of point E are $(a, 2)$, then $a =$ _____.

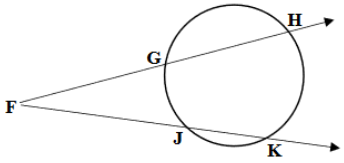
147. Given: $\overleftrightarrow{FG}$ is the perpendicular bisector of $\overleftrightarrow{AB}$. If the coordinates of F are $(3, b)$, then $b =$ _____.

148. Consider the circle below. If $AB = 14$, $BC = 18$, and $AE = 16$, then $DE =$ _____.



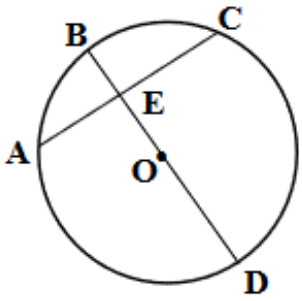
149. Consider equilateral triangle PQR with a circumscribed circle. If the area of the circle is 339, then the area of triangle PQR is _____. (nearest whole number)

150. Consider the circle below. If the measure of minor arc $HK = 128°$ and the measure of $\angle GFJ = 33°$, then the measure of minor arc $GJ =$ _____.



151. The total area of a cylinder with a radius of 14 cm is 3343 cm^2. The volume of the cylinder is _____ cm^3. (nearest whole number)

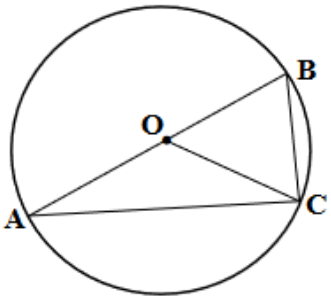
152. Consider the circle below with center O. Chord $\overline{AC}$ intersects diameter $\overline{BD}$ at point E. $\overline{AC} \perp \overline{BD}, BD = 18$, and $AC = 14$. $BE =$ _____. (nearest tenth)



153. Given: $\triangle ABC$ is inscribed in a circle with $m\angle C = 90°$, $AC = 7$, and the perimeter of the triangle is 56. The area of the circle = _____. (nearest whole number)

154. Consider $\triangle ABC$ with $m\angle ABC = 90°$. Point D lies on $\overline{AC}$ such that $m\angle ABD = 90°$. If $AD = 6$ and $CD = 13$, then the perimeter of $\triangle ABC =$ _____. (nearest tenth)

Use the following circle for problems 155 and 156. The circle shown has an area of 707. The measure of $\angle BAC = 30°$. Point O is the center of the circle.



155. Find the area of $\triangle AOC$. (nearest tenth)

156. Find the area of the region bounded by chord $\overline{BC}$ and minor arc BC. (nearest tenth)

For problems 157-159, use the given: $\triangle ABC$ is similar to $\triangle DEF$, $AB = 36, BC = 39, AC = 42$, and $DF = 28$.

157. Point G is the midpoint of $\overline{DF}$. $EG =$ _____. (nearest tenth)

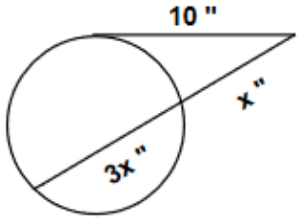
158. Point H lines on $\overline{AC}$ and ray $\overrightarrow{BH}$ bisects $\angle ABC$. $AH =$ _____. (nearest hundredth)

159. The area of $\triangle BHC =$ _____. (nearest whole number)

160. Consider $\overleftrightarrow{AB}$ such that every point on $\overleftrightarrow{AB}$ is the same distance from point $P(-6,4)$ as the distance from point $Q(8,-2)$. If point $R(13,c)$ lies on $\overleftrightarrow{AB}$, then $c =$ _____. (nearest tenth)

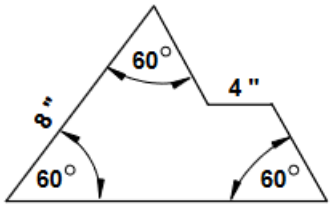
161. If two parallel lines are cut by a transversal, then each pair of consecutive interior angles is/are:

162. Given the tangent and secant shown, find x. (nearest tenth)



163. Horace Troff bought a water tank for his cattle. The tank was in the shape of a rectangular prism without the top. It was 3 feet deep, 2 feet wide, and 8 feet long. How many gallons of water would it take to fill it to the top without spilling over?

164. Find the perimeter of this pentagon.

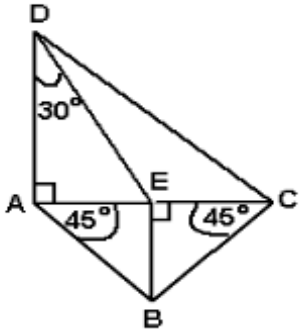


165. Which of the following are the side lengths of an obtuse triangle?

(A) $6,8,9$ **(B)** $5,6,7$ **(C)** $4,4,4\sqrt{2}$ **(D)** $3,3\sqrt{3},6$ **(E)** $8,8,12$

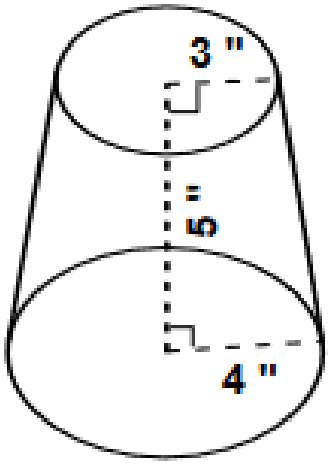
166. Which of the following points of concurrency is on a side of a right triangle but not a vertex point, on the interior of an acute triangle, and on the exterior of an obtuse triangle?

167. Find DC if $CE = 5''$.



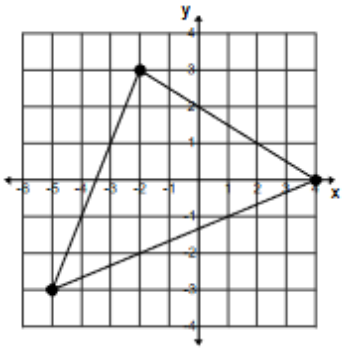
168. Points P and R are on a circle with center C such that $m\angle PCR = 94°$. Point Q lies outside of the circle such that QP and QR are tangent to the circle. Find $m\angle PQR$.

169. Find the volume of the figure shown. (nearest tenth)

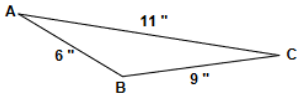


170. Which of these trapezoidal means are used for finding the volume of a frustum of a cone?

171. The triangle shown is considered to be which of the following types of triangles?



172. Find the area of $\triangle ABC$. (nearest tenth)



173. If the square of the length of the longest side of a triangle is less than the sum of the squares of the lengths of the other two sides, then the triangle is a(n) _____triangle.

174. Sir Cal Puhl is pouring a rectangular concrete patio to put his circular hot tub on. The diameter of the hot tub is 10 feet. The dimensions of the patio is 14 feet by 18 feet. What percent of the area of the patio is covered by the tub? (nearest whole percent)

Solutions

1. Right

2. 44 cm^2

3. 7.5 $units^2$

4. 8 $units^2$

5. 95 cm^2

6. $(-3, -3)$

7. 70°

8. 6 cm^2

9. 15.3 cm

10. 50 units

11. $n^2 - 1$

12. 6

13. 9.4

14. 5.0

15. 342

16. 7.75

17. 29°

18. 523

19. 143

20. 648

21. kite

22. 10.6

23. 72

24. 30.9 in^2

25. $3096.00

26. 148

27. 47.2

28. 136

29. 7.8

30. 56°

31. 5.5

32. 793 cm^3

33. 427 mm^2

34. 55.6 cm

35. 1

36. -7

37. 40.5

38. 68.0

39. 8.06

40. obtuse

41. A

42. 166

43. 83

44. 201

45. $9,424.78

46. 692

47. 280

48. 173

49. 21.8

50. 324.67

51. 34.4

52. 79.5

53. 54

54. 9.1

55. 6.0

56. 32.2

57. 18.5

58. 2626

59. 252

60. 24.2

61. 1200

62. C

63. 2:1

64. 32 cm

65. -1

66. Incenter

67. 42 cm

68. $(5, 4)$

69. 32 sq. units

70. 70 cm

71. 4.6"

72. 55°

73. 9"

74. E

75. 12.5°

76. 37.5 cm^2

77. 7 $units^2$

78. tangent

79. 2:7

80. 14

81. 226 cm^2

82. $5\frac{7}{13}$

83. $\frac{5\pi}{6}$

84. $-\frac{2}{3}$

85. $56\frac{1}{3}$ sq. ft.

86. supplementary

87. $(1, 1\frac{1}{2})$

88. 211

89. 7.9 cm^2

90. arithmetic

91. 7 cm^2

92. $20°$

93. 204 cm^2

94. B

95. 192 units^2

96. 952 gal

97. sector

98. 18 cm

99. $123°$

100. 28 cm

101. 17.1 cm

102. A

103. undecagon

104. 4

105. B

106. $(5.1, -8.2)$

107. 10

108. supplementary

109. 30

110. $6\sqrt{2}$ cm

111. 22.7"

112. 1:3

113. 11.7 cm

114. 6.8 cu. ft.

115. 20 cm

116. $20°$

117. 1"

118. 96 in^2

119. -3

120. $140°$

121. $39.5°$

122. 17

123. 11

124. $3\sqrt{7}$ in

125. 1 & 4

126. 16

127. 3

128. 5.5"

129. 6

130. perpendicular

131. $46°$

132. 88.0 in^2

133. 32 cm

134. 18 units^2

135. 90%

136. 70.9

137. 382

138. 49.5

139. 32.7

140. 72

141. 101

142. 511

143. 8.64

144. 15.4

145. 11.4

146. -16

147. -11

148. 12

149. 140

150. $62°$

151. 14,780

152. 3.3

153. 491

154. 45.4

155. 97.4

156. 20.4

157. 20.7

158. 20.16

159. 338

160. 29.0

161. supplementary

162. 5.0"

163. 359 gal

164. 32"

165. E

166. circumcenter

167. $5\sqrt{7}$ in

168. $86°$

169. 193.7 in^3

170. Heronian

171. Right and Isosceles

172. 27.0 in^2

173. acute

174. 31%