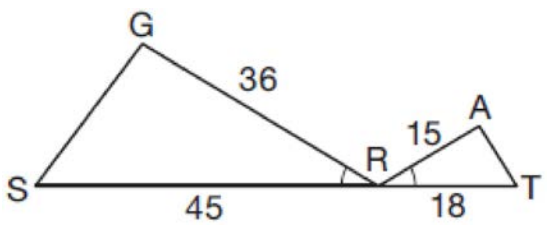


Geometry Common Core State Standards Regents Bimodal Worksheets

1 A designer needs to create perfectly circular necklaces. The necklaces each need to have a radius of 10 cm. What is the largest number of necklaces that can be made from 1000 cm of wire?

2 A man who is 5 feet 9 inches tall casts a shadow of 8 feet 6 inches. Assuming that the man is standing perpendicular to the ground, what is the angle of elevation from the end of the shadow to the top of the man's head, to the nearest tenth of a degree?

3 In the diagram below, $\angle GRS \cong \angle ART$, $GR = 36$, $SR = 45$, $AR = 15$, and $RT = 18$.



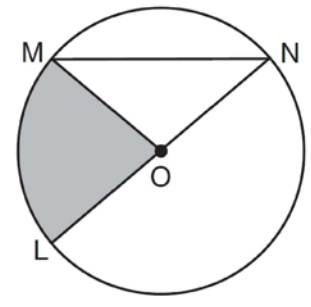
Which triangle similarity statement is correct?

4 A student has a rectangular postcard that he folds in half lengthwise. Next, he rotates it continuously about the folded edge. Which three-dimensional object below is generated by this rotation?

5 A 20-foot support post leans against a wall, making a 70° angle with the ground. To the nearest tenth of a foot, how far up the wall will the support post reach?

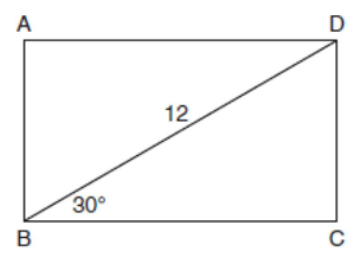
6 Line $y = 3x - 1$ is transformed by a dilation with a scale factor of 2 and centered at $(3, 8)$. The line's image is

7 In the diagram below of circle O , the area of the shaded sector LOM is $2\pi \text{ cm}^2$.



If the length of \overline{NL} is 6 cm, what is $m\angle N$?

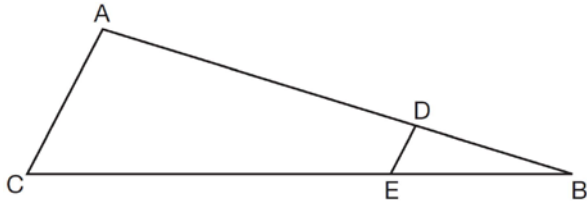
8 The diagram shows rectangle $ABCD$, with diagonal \overline{BD} .



What is the perimeter of rectangle $ABCD$, to the nearest tenth?

- 9 What is an equation of a line that is perpendicular to the line whose equation is $2y = 3x - 10$ and passes through $(-6, 1)$?

- 10 In the diagram of $\triangle ABC$, points D and E are on \overline{AB} and \overline{CB} , respectively, such that $\overline{AC} \parallel \overline{DE}$.



If $AD = 24$, $DB = 12$, and $DE = 4$, what is the length of AC ?

- 11 Triangle $A'B'C'$ is the image of $\triangle ABC$ after a dilation followed by a translation. Which statement(s) would always be true with respect to this sequence of transformations?
- I. $\triangle ABC \cong \triangle A'B'C'$
 - II. $\triangle ABC \sim \triangle A'B'C'$
 - III. $\overline{AB} \parallel \overline{A'B'}$
 - IV. $AA' = BB'$

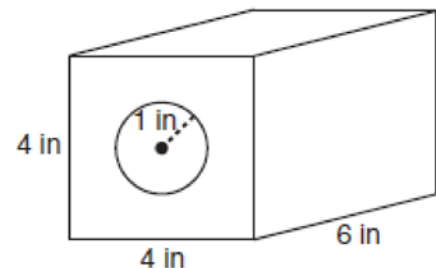
- 12 If an equilateral triangle is continuously rotated around one of its medians, which 3-dimensional object is generated?

- 13 The Great Pyramid of Giza was constructed as a regular pyramid with a square base. It was built with an approximate volume of 2,592,276 cubic meters and a height of 146.5 meters. What was the length of one side of its base, to the nearest meter?

- 14 In a right triangle, $\sin(40 - x)^\circ = \cos(3x)^\circ$. What is the value of x ?

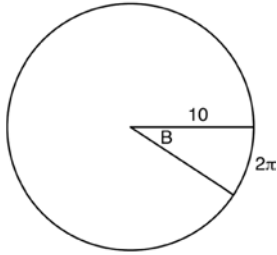
- 15 The vertices of square $RSTV$ have coordinates $R(-1, 5)$, $S(-3, 1)$, $T(-7, 3)$, and $V(-5, 7)$. What is the perimeter of $RSTV$?

- 16 A solid metal prism has a rectangular base with sides of 4 inches and 6 inches, and a height of 4 inches. A hole in the shape of a cylinder, with a radius of 1 inch, is drilled through the entire length of the rectangular prism.



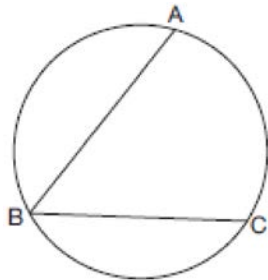
What is the approximate volume of the remaining solid, in cubic inches?

- 17 In the diagram below, the circle shown has radius 10. Angle B intercepts an arc with a length of 2π .



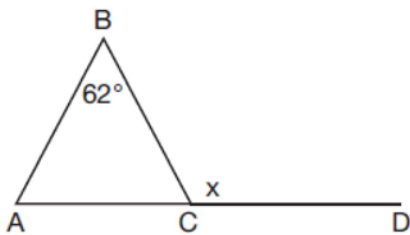
What is the measure of angle B , in radians?

- 18 In the diagram below, $m\widehat{ABC} = 268^\circ$.



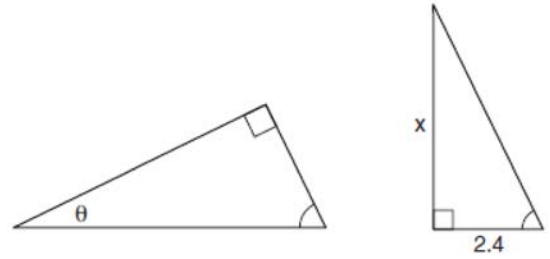
What is the number of degrees in the measure of $\angle ABC$?

- 19 Given $\triangle ABC$ with $m\angle B = 62^\circ$ and side \overline{AC} extended to D , as shown below.



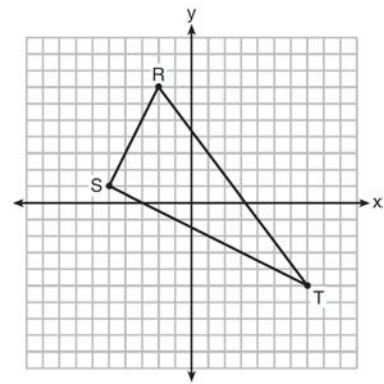
Which value of x makes $\overline{AB} \cong \overline{CB}$?

- 20 The diagram below shows two similar triangles.



If $\tan \theta = \frac{3}{7}$, what is the value of x , to the *nearest tenth*?

- 21 Triangle RST is graphed on the set of axes below.

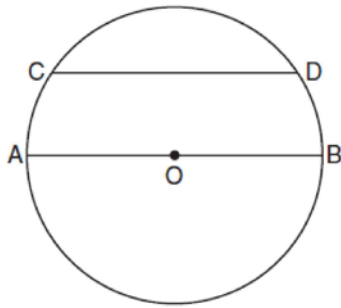


How many square units are in the area of $\triangle RST$?

- 22 Linda is designing a circular piece of stained glass with a diameter of 7 inches. She is going to sketch a square inside the circular region. To the *nearest tenth of an inch*, the largest possible length of a side of the square is

- 23 A hemispherical water tank has an inside diameter of 10 feet. If water has a density of 62.4 pounds per cubic foot, what is the weight of the water in a full tank, to the *nearest pound*?

- 24 In the diagram below of circle O , chord \overline{CD} is parallel to diameter \overline{AOB} and $m\widehat{CD} = 130$.



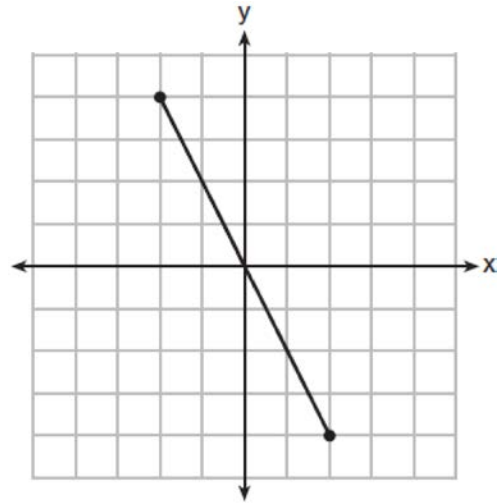
What is $m\widehat{AC}$?

- 25 In a circle with a diameter of 32, the area of a sector is $\frac{512\pi}{3}$. The measure of the angle of the sector, in radians, is

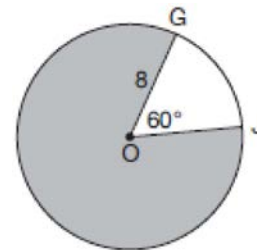
- 26 In circle O , secants \overline{ADB} and \overline{AEC} are drawn from external point A such that points $D, B, E,$ and C are on circle O . If $AD = 8$, $AE = 6$, and EC is 12 more than BD , the length of \overline{BD} is

- 27 If $x^2 + 4x + y^2 - 6y - 12 = 0$ is the equation of a circle, the length of the radius is

- 28 What is an equation of the perpendicular bisector of the line segment shown in the diagram below?



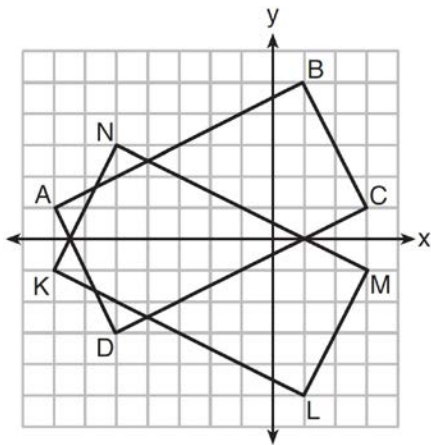
- 29 In the diagram below of circle O , $GO = 8$ and $m\angle GOJ = 60^\circ$.



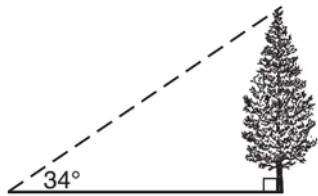
What is the area, in terms of π , of the shaded region?

- 30 The equation of a circle is $x^2 + y^2 - 12y + 20 = 0$. What are the coordinates of the center and the length of the radius of the circle?

- 31 On the set of axes below, rectangle $ABCD$ can be proven congruent to rectangle $KLMN$ using which transformation?



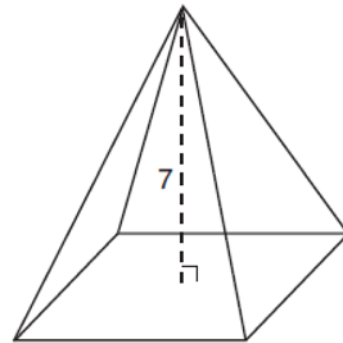
- 32 As shown in the diagram below, the angle of elevation from a point on the ground to the top of the tree is 34° .



If the point is 20 feet from the base of the tree, what is the height of the tree, to the *nearest tenth of a foot*?

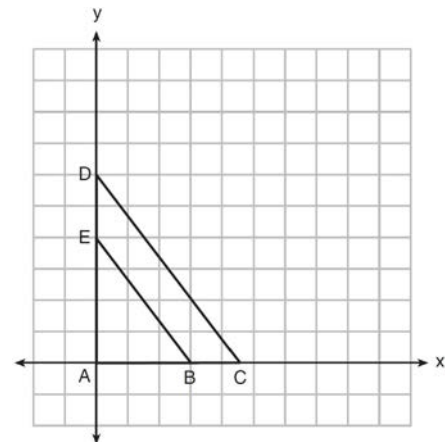
- 33 A company is creating an object from a wooden cube with an edge length of 8.5 cm. A right circular cone with a diameter of 8 cm and an altitude of 8 cm will be cut out of the cube. Which expression represents the volume of the remaining wood?

- 34 The pyramid shown below has a square base, a height of 7, and a volume of 84.



What is the length of the side of the base?

- 35 In the diagram below, $\triangle ABE$ is the image of $\triangle ACD$ after a dilation centered at the origin. The coordinates of the vertices are $A(0,0)$, $B(3,0)$, $C(4.5,0)$, $D(0,6)$, and $E(0,4)$.

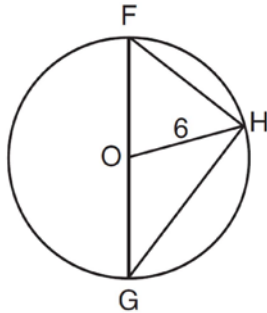


The ratio of the lengths of \overline{BE} to \overline{CD} is

- 36 Which transformation would *not* always produce an image that would be congruent to the original figure?

- 37 The diagonals of rhombus $TEAM$ intersect at $P(2, 1)$. If the equation of the line that contains diagonal \overline{TA} is $y = -x + 3$, what is the equation of a line that contains diagonal \overline{EM} ?

- 38 Triangle FGH is inscribed in circle O , the length of radius \overline{OH} is 6, and $\overline{FH} \cong \overline{OG}$.



What is the area of the sector formed by angle FOH ?

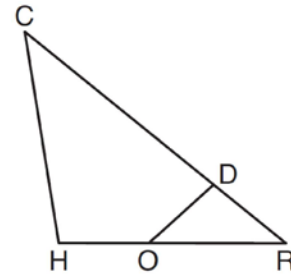
- 39 The equation of a circle is $x^2 + y^2 - 6y + 1 = 0$. What are the coordinates of the center and the length of the radius of this circle?

- 40 A shipping container is in the shape of a right rectangular prism with a length of 12 feet, a width of 8.5 feet, and a height of 4 feet. The container is completely filled with contents that weigh, on average, 0.25 pound per cubic foot. What is the weight, in pounds, of the contents in the container?

- 41 The coordinates of the endpoints of \overline{AB} are $A(-8, -2)$ and $B(16, 6)$. Point P is on \overline{AB} . What are the coordinates of point P , such that $AP:PB$ is 3:5?

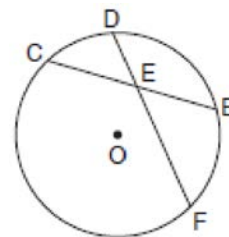
- 42 An equation of a line perpendicular to the line represented by the equation $y = -\frac{1}{2}x - 5$ and passing through $(6, -4)$ is

- 43 In triangle CHR , O is on \overline{HR} , and D is on \overline{CR} so that $\angle H \cong \angle RDO$.



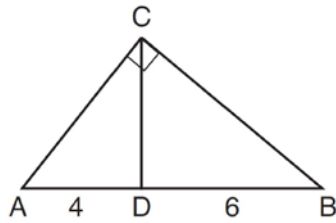
If $\overline{RD} = 4$, $\overline{RO} = 6$, and $\overline{OH} = 4$, what is the length of \overline{CD} ?

- 44 In the diagram below of circle O , chord \overline{DF} bisects chord \overline{BC} at E .



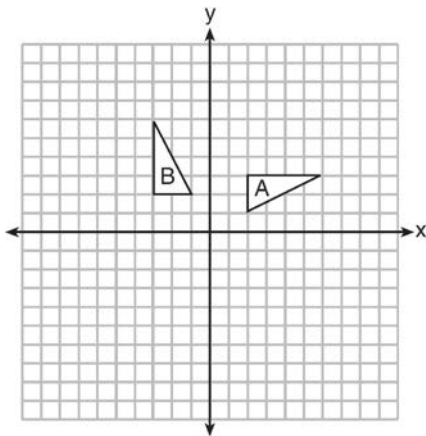
If $BC = 12$ and FE is 5 more than DE , then FE is

- 45 In the diagram of right triangle ABC , \overline{CD} intersects hypotenuse \overline{AB} at D .



If $AD = 4$ and $DB = 6$, which length of \overline{AC} makes $\overline{CD} \perp \overline{AB}$?

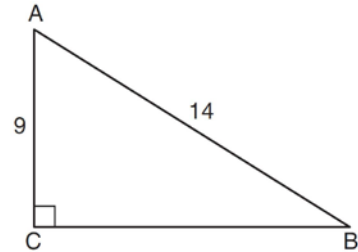
- 46 In the diagram below, which single transformation was used to map triangle A onto triangle B ?



- 47 Seawater contains approximately 1.2 ounces of salt per liter on average. How many gallons of seawater, to the *nearest tenth of a gallon*, would contain 1 pound of salt?

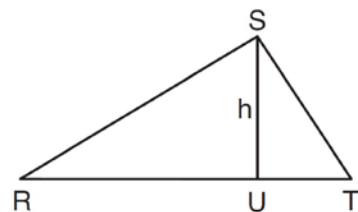
- 48 A quadrilateral has vertices with coordinates $(-3, 1)$, $(0, 3)$, $(5, 2)$, and $(-1, -2)$. Which type of quadrilateral is this?

- 49 In the diagram of right triangle ABC shown below, $AB = 14$ and $AC = 9$.



What is the measure of $\angle A$, to the *nearest degree*?

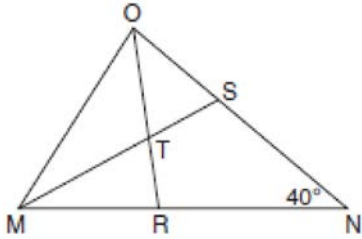
- 50 In $\triangle RST$ shown below, altitude \overline{SU} is drawn to \overline{RT} at U .



If $SU = h$, $UT = 12$, and $RT = 42$, which value of h will make $\triangle RST$ a right triangle with $\angle RST$ as a right angle?

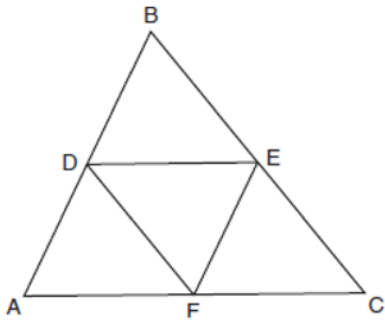
- 51 Line segment $A'B'$, whose endpoints are $(4, -2)$ and $(16, 14)$, is the image of \overline{AB} after a dilation of $\frac{1}{2}$ centered at the origin. What is the length of \overline{AB} ?

- 52 In the diagram below of triangle MNO , $\angle M$ and $\angle O$ are bisected by \overline{MS} and \overline{OR} , respectively. Segments \overline{MS} and \overline{OR} intersect at T , and $m\angle N = 40^\circ$.



If $m\angle TMR = 28^\circ$, the measure of angle OTS is

- 53 In the diagram below, \overline{DE} , \overline{DF} , and \overline{EF} are midsegments of $\triangle ABC$.



The perimeter of quadrilateral $ADEF$ is equivalent to

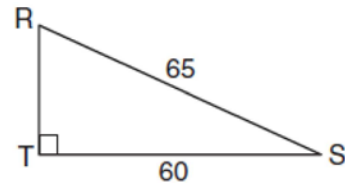
- 54 If the rectangle below is continuously rotated about side w , which solid figure is formed?



- 55 In $\triangle ABC$, where $\angle C$ is a right angle, $\cos A = \frac{\sqrt{21}}{5}$. What is $\sin B$?

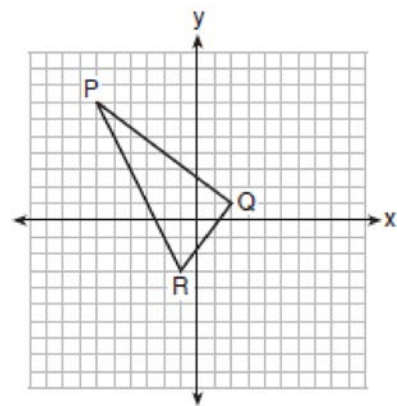
- 56 What are the coordinates of the center and the length of the radius of the circle represented by the equation $x^2 + y^2 - 4x + 8y + 11 = 0$?

- 57 In the diagram of $\triangle RST$ below, $m\angle T = 90^\circ$, $RS = 65$, and $ST = 60$.



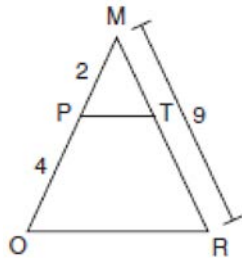
What is the measure of $\angle S$, to the nearest degree?

- 58 On the set of axes below, the vertices of $\triangle PQR$ have coordinates $P(-6, 7)$, $Q(2, 1)$, and $R(-1, -3)$.



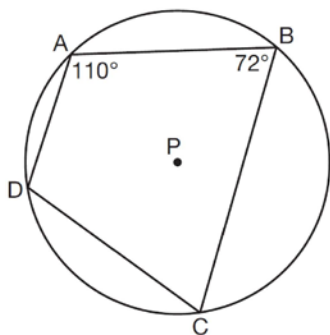
What is the area of $\triangle PQR$?

- 59 Given $\triangle MRO$ shown below, with trapezoid $PTRO$, $MR = 9$, $MP = 2$, and $PO = 4$.



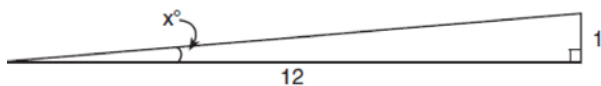
What is the length of \overline{TR} ?

- 60 In the diagram below, quadrilateral $ABCD$ is inscribed in circle P .



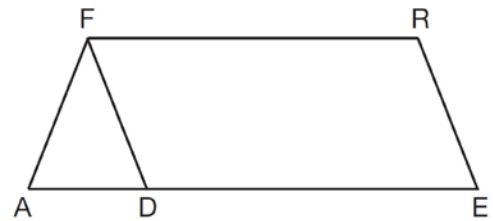
What is $m\angle ADC$?

- 61 To build a handicapped-access ramp, the building code states that for every 1 inch of vertical rise in height, the ramp must extend out 12 inches horizontally, as shown in the diagram below.



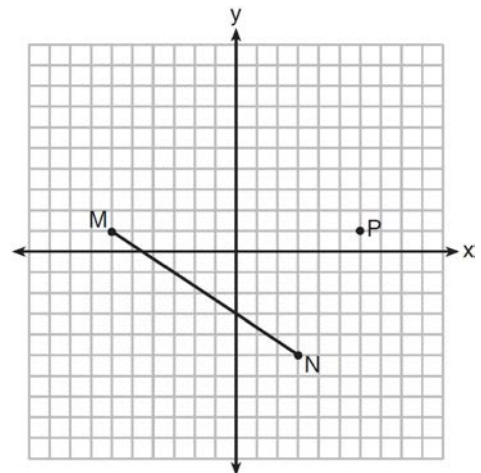
What is the angle of inclination, x , of this ramp, to the nearest hundredth of a degree?

- 62 In the diagram of parallelogram $FRED$ shown below, \overline{ED} is extended to A , and \overline{AF} is drawn such that $AF \cong DF$.



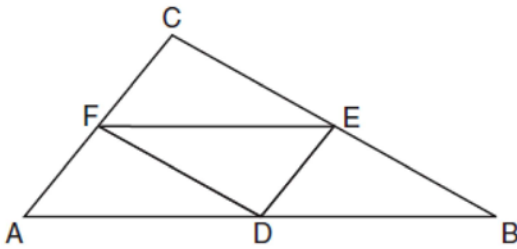
If $m\angle R = 124^\circ$, what is $m\angle AFD$?

- 63 Given \overline{MN} shown below, with $M(-6, 1)$ and $N(3, -5)$, what is an equation of the line that passes through point $P(6, 1)$ and is parallel to \overline{MN} ?



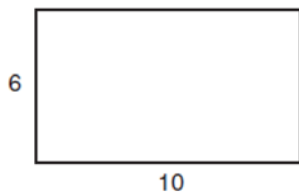
- 64 The cross section of a regular pyramid contains the altitude of the pyramid. The shape of this cross section is a

- 65 In the diagram below of $\triangle ABC$, D , E , and F are the midpoints of \overline{AB} , \overline{BC} , and \overline{CA} , respectively.



What is the ratio of the area of $\triangle CFE$ to the area of $\triangle CAB$?

- 66 A three-inch line segment is dilated by a scale factor of 6 and centered at its midpoint. What is the length of its image?
- 67 A rectangle whose length and width are 10 and 6, respectively, is shown below. The rectangle is continuously rotated around a straight line to form an object whose volume is 150π .



Which line could the rectangle be rotated around?

- 68 Which equation represents the line that passes through the point $(-2, 2)$ and is parallel to $y = \frac{1}{2}x + 8$?

- 69 The center of circle Q has coordinates $(3, -2)$. If circle Q passes through $R(7, 1)$, what is the length of its diameter?

- 70 What are the coordinates of the center and length of the radius of the circle whose equation is $x^2 + 6x + y^2 - 4y = 23$?

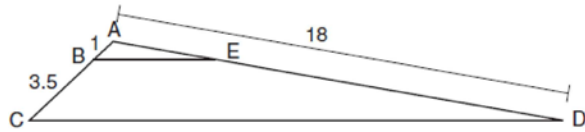
- 71 Tennis balls are sold in cylindrical cans with the balls stacked one on top of the other. A tennis ball has a diameter of 6.7 cm. To the *nearest cubic centimeter*, what is the minimum volume of the can that holds a stack of 4 tennis balls?

- 72 The line $y = 2x - 4$ is dilated by a scale factor of $\frac{3}{2}$ and centered at the origin. Which equation represents the image of the line after the dilation?

- 73 A water cup in the shape of a cone has a height of 4 inches and a maximum diameter of 3 inches. What is the volume of the water in the cup, to the *nearest tenth of a cubic inch*, when the cup is filled to half its height?

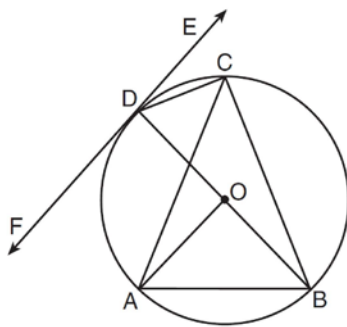
- 74 Point Q is on \overline{MN} such that $MQ:QN = 2:3$. If M has coordinates $(3, 5)$ and N has coordinates $(8, -5)$, the coordinates of Q are

- 75 In the diagram below, triangle ACD has points B and E on sides AC and AD , respectively, such that $\overline{BE} \parallel \overline{CD}$, $AB = 1$, $BC = 3.5$, and $AD = 18$.



What is the length of \overline{AE} , to the nearest tenth?

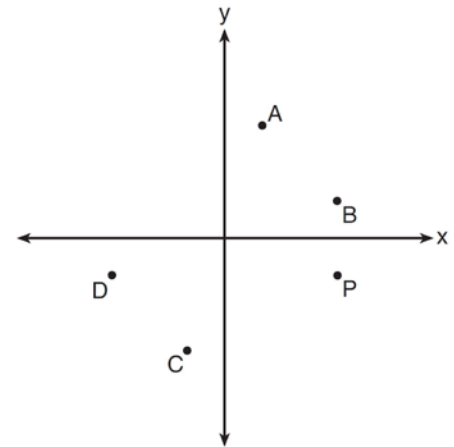
- 76 In the diagram below, \overline{DC} , \overline{AC} , \overline{DOB} , \overline{CB} , and \overline{AB} are chords of circle O , \overleftrightarrow{FDE} is tangent at point D , and radius \overline{AO} is drawn. Sam decides to apply this theorem to the diagram: "An angle inscribed in a semi-circle is a right angle."



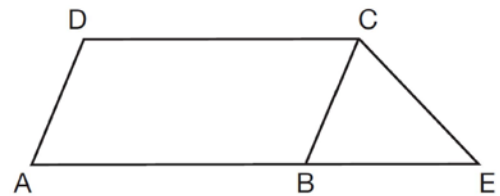
Which angle is Sam referring to?

- 77 The endpoints of one side of a regular pentagon are $(-1,4)$ and $(2,3)$. What is the perimeter of the pentagon?
- 78 Which regular polygon has a minimum rotation of 45° to carry the polygon onto itself?

- 79 Which point shown in the graph below is the image of point P after a counterclockwise rotation of 90° about the origin?



- 80 In the diagram below, $ABCD$ is a parallelogram, \overline{AB} is extended through B to E , and \overline{CE} is drawn.



If $\overline{CE} \cong \overline{BE}$ and $m\angle D = 112^\circ$, what is $m\angle E$?

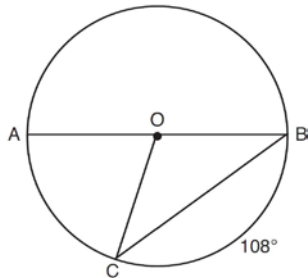
- 81 The density of the American white oak tree is 752 kilograms per cubic meter. If the trunk of an American white oak tree has a circumference of 4.5 meters and the height of the trunk is 8 meters, what is the approximate number of kilograms of the trunk?

82 The 2010 U.S. Census populations and population densities are shown in the table below.

State	Population Density $\left(\frac{\text{people}}{\text{mi}^2}\right)$	Population in 2010
Florida	350.6	18,801,310
Illinois	231.1	12,830,632
New York	411.2	19,378,102
Pennsylvania	283.9	12,702,379

Based on the table above, which list has the states' areas, in square miles, in order from largest to smallest?

83 In circle O , diameter \overline{AB} , chord \overline{BC} , and radius \overline{OC} are drawn, and the measure of arc BC is 108° .



Some students wrote these formulas to find the area of sector COB :

Amy $\frac{3}{10} \cdot \pi \cdot (BC)^2$

Beth $\frac{108}{360} \cdot \pi \cdot (OC)^2$

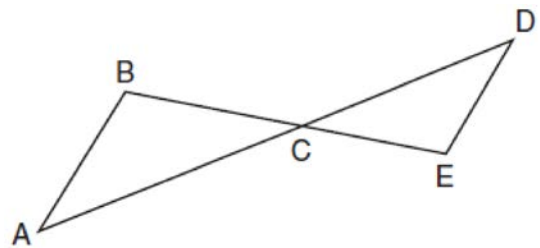
Carl $\frac{3}{10} \cdot \pi \cdot \left(\frac{1}{2} AB\right)^2$

Dex $\frac{108}{360} \cdot \pi \cdot \frac{1}{2} (AB)^2$

Which students wrote correct formulas?

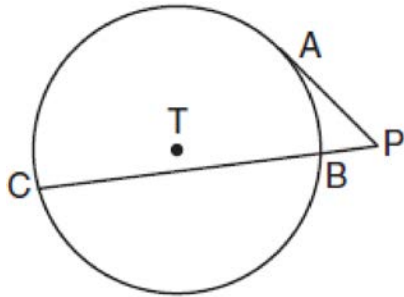
84 A hemispherical tank is filled with water and has a diameter of 10 feet. If water weighs 62.4 pounds per cubic foot, what is the total weight of the water in a full tank, to the nearest pound?

85 In the diagram below, \overline{AD} intersects \overline{BE} at C , and $\overline{AB} \parallel \overline{DE}$.



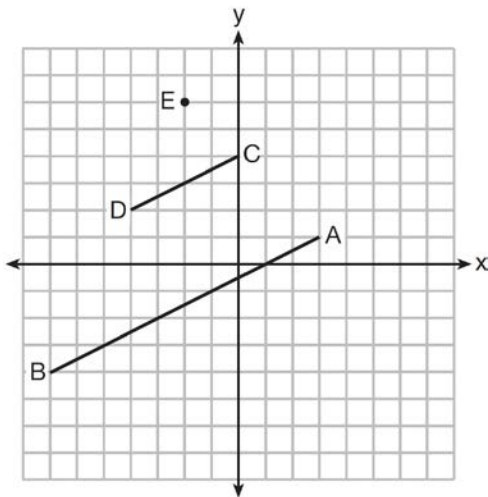
If $CD = 6.6$ cm, $DE = 3.4$ cm, $CE = 4.2$ cm, and $BC = 5.25$ cm, what is the length of \overline{AC} , to the nearest hundredth of a centimeter?

- 86 In the diagram shown below, \overline{PA} is tangent to circle T at A , and secant \overline{PBC} is drawn where point B is on circle T .



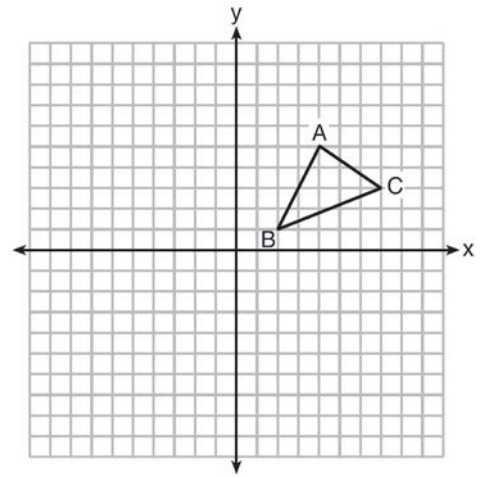
If $PB = 3$ and $BC = 15$, what is the length of \overline{PA} ?

- 87 In the diagram below, \overline{CD} is the image of \overline{AB} after a dilation of scale factor k with center E .



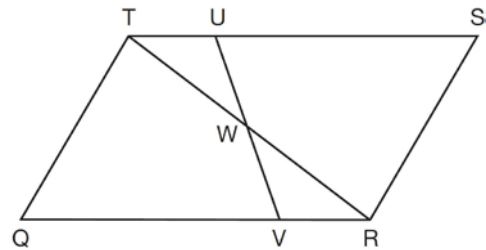
Which ratio is equal to the scale factor k of the dilation?

- 88 In the diagram below, $\triangle ABC$ has vertices $A(4,5)$, $B(2,1)$, and $C(7,3)$.



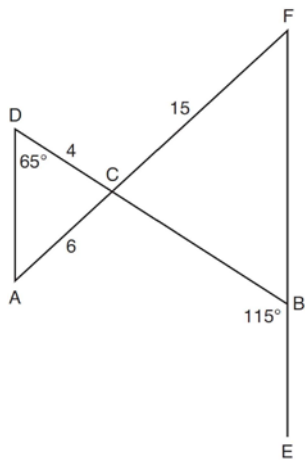
What is the slope of the altitude drawn from A to \overline{BC} ?

- 89 In parallelogram $QRST$ shown below, diagonal \overline{TR} is drawn, U and V are points on \overline{TS} and \overline{QR} , respectively, and \overline{UV} intersects \overline{TR} at W .



If $m\angle S = 60^\circ$, $m\angle SRT = 83^\circ$, and $m\angle TWU = 35^\circ$, what is $m\angle WVQ$?

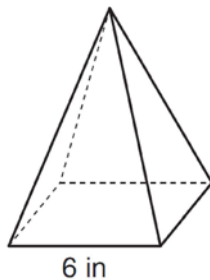
- 90 In the diagram below, \overline{DB} and \overline{AF} intersect at point C , and \overline{AD} and \overline{FBE} are drawn.



If $AC = 6$, $DC = 4$, $FC = 15$, $m\angle D = 65^\circ$, and $m\angle CBE = 115^\circ$, what is the length of \overline{CB} ?

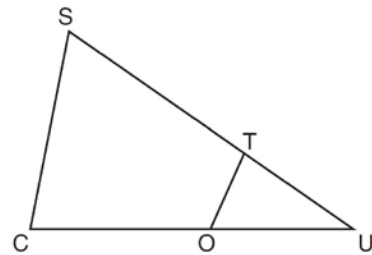
- 91 A plane intersects a hexagonal prism. The plane is perpendicular to the base of the prism. Which two-dimensional figure is the cross section of the plane intersecting the prism?

- 92 As shown in the diagram below, a regular pyramid has a square base whose side measures 6 inches.



If the altitude of the pyramid measures 12 inches, its volume, in cubic inches, is

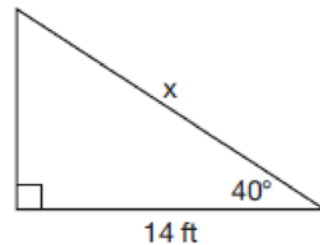
- 93 In $\triangle SCU$ shown below, points T and O are on \overline{SU} and \overline{CU} , respectively. Segment \overline{OT} is drawn so that $\angle C \cong \angle OTU$.



If $TU = 4$, $OU = 5$, and $OC = 7$, what is the length of \overline{ST} ?

- 94 The diameter of a basketball is approximately 9.5 inches and the diameter of a tennis ball is approximately 2.5 inches. The volume of the basketball is about how many times greater than the volume of the tennis ball?

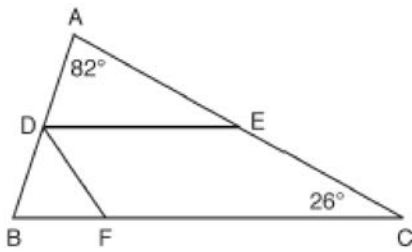
- 95 Given the right triangle in the diagram below, what is the value of x , to the nearest foot?



- 96 In right triangle ABC , $m\angle A = 32^\circ$, $m\angle B = 90^\circ$, and $AE = 6.2$ cm. What is the length of \overline{BC} , to the nearest tenth of a centimeter?

- 97 An equilateral triangle has sides of length 20. To the *nearest tenth*, what is the height of the equilateral triangle?

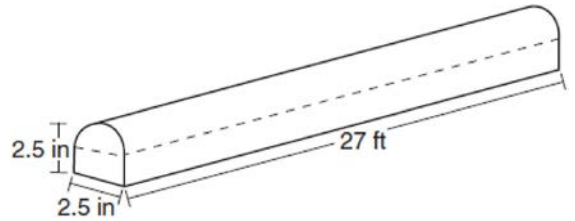
- 98 In the diagram below, \overline{DE} divides \overline{AB} and \overline{AC} proportionally, $m\angle C = 26^\circ$, $m\angle A = 82^\circ$, and \overline{DF} bisects $\angle BDE$.



The measure of angle DFB is

- 99 Which set of statements would describe a parallelogram that can always be classified as a rhombus?
- I. Diagonals are perpendicular bisectors of each other.
 - II. Diagonals bisect the angles from which they are drawn.
 - III. Diagonals form four congruent isosceles right triangles.
- 100 A fish tank in the shape of a rectangular prism has dimensions of 14 inches, 16 inches, and 10 inches. The tank contains 1680 cubic inches of water. What percent of the fish tank is empty?

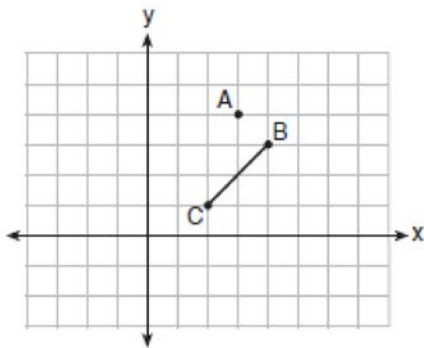
- 101 A fabricator is hired to make a 27-foot-long solid metal railing for the stairs at the local library. The railing is modeled by the diagram below. The railing is 2.5 inches high and 2.5 inches wide and is comprised of a rectangular prism and a half-cylinder.



How much metal, to the *nearest cubic inch*, will the railing contain?

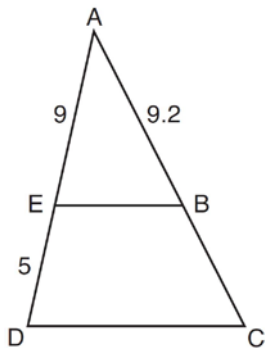
- 102 The equation of line h is $2x + y = 1$. Line m is the image of line h after a dilation of scale factor 4 with respect to the origin. What is the equation of the line m ?
- 103 What is the area of a sector of a circle with a radius of 8 inches and formed by a central angle that measures 60° ?
- 104 Line segment RW has endpoints $R(-4,5)$ and $W(6,20)$. Point P is on \overline{RW} such that $RP:PW$ is 2:3. What are the coordinates of point P ?
- 105 The ratio of similarity of $\triangle BOY$ to $\triangle GRL$ is 1:2. If $BO = x + 3$ and $GR = 3x - 1$, then the length of \overline{GR} is

- 106 On the graph below, point $A(3,4)$ and \overline{BC} with coordinates $B(4,3)$ and $C(2,1)$ are graphed.



What are the coordinates of B' and C' after \overline{BC} undergoes a dilation centered at point A with a scale factor of 2?

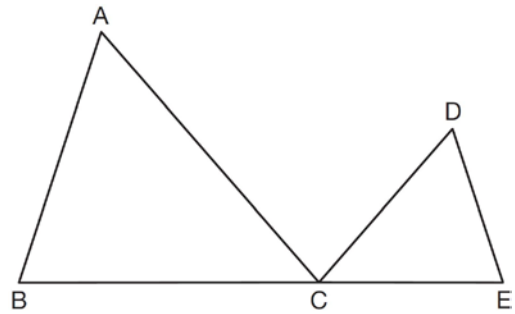
- 107 In the diagram of $\triangle ADC$ below, $\overline{EB} \parallel \overline{DC}$, $AE = 9$, $ED = 5$, and $AB = 9.2$.



What is the length of \overline{AC} , to the nearest tenth?

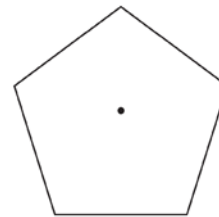
- 108 Point P is on the directed line segment from point $X(-6,-2)$ to point $Y(6,7)$ and divides the segment in the ratio 1:5. What are the coordinates of point P ?

- 109 In the diagram below, $\triangle ABC \sim \triangle DEC$.



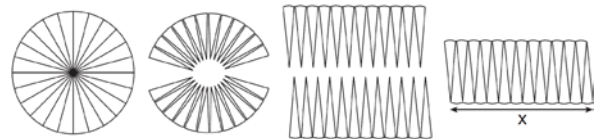
If $AC = 12$, $DC = 7$, $DE = 5$, and the perimeter of $\triangle ABC$ is 30, what is the perimeter of $\triangle DEC$?

- 110 A regular pentagon is shown in the diagram below.



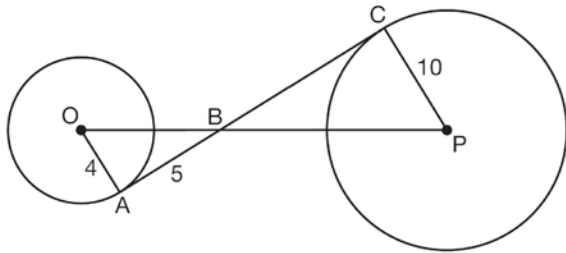
If the pentagon is rotated clockwise around its center, the minimum number of degrees it must be rotated to carry the pentagon onto itself is

- 111 A circle with a radius of 5 was divided into 24 congruent sectors. The sectors were then rearranged, as shown in the diagram below.



To the nearest integer, the value of x is

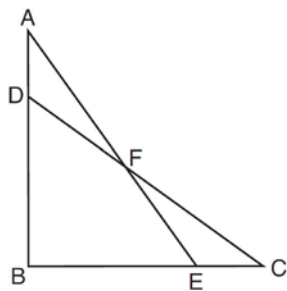
- 112 In the diagram shown below, \overline{AC} is tangent to circle O at A and to circle P at C , \overline{OP} intersects \overline{AC} at B , $OA = 4$, $AB = 5$, and $PC = 10$.



What is the length of \overline{BC} ?

- 113 Molly wishes to make a lawn ornament in the form of a solid sphere. The clay being used to make the sphere weighs .075 pound per cubic inch. If the sphere's radius is 4 inches, what is the weight of the sphere, to the nearest pound?

- 114 Given: $\triangle ABE$ and $\triangle CBD$ shown in the diagram below with $\overline{DB} \cong \overline{BE}$

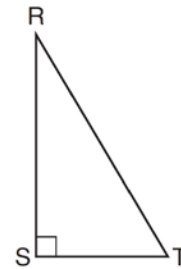


Which statement is needed to prove $\triangle ABE \cong \triangle CBD$ using only SAS \cong SAS?

- 115 What are the coordinates of the point on the directed line segment from $K(-5, -4)$ to $L(5, 1)$ that partitions the segment into a ratio of 3 to 2?

- 116 Line segment \overline{NY} has endpoints $N(-11, 5)$ and $Y(5, -7)$. What is the equation of the perpendicular bisector of \overline{NY} ?

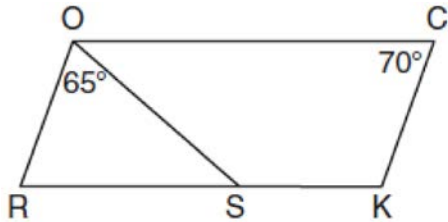
- 117 Which object is formed when right triangle RST shown below is rotated around leg \overline{RS} ?



- 118 A gallon of paint will cover approximately 450 square feet. An artist wants to paint all the outside surfaces of a cube measuring 12 feet on each edge. What is the least number of gallons of paint he must buy to paint the cube?

- 119 The coordinates of the vertices of $\triangle RST$ are $R(-2, -3)$, $S(8, 2)$, and $T(4, 5)$. Which type of triangle is $\triangle RST$?

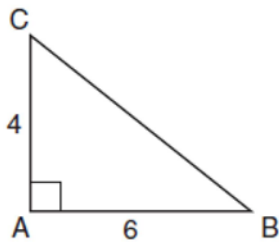
- 120 In the diagram below of parallelogram $ROCK$, $m\angle C$ is 70° and $m\angle ROS$ is 65° .



What is $m\angle KSO$?

- 121 A ladder 20 feet long leans against a building, forming an angle of 71° with the level ground. To the *nearest foot*, how high up the wall of the building does the ladder touch the building?

- 122 In the diagram below, right triangle ABC has legs whose lengths are 4 and 6.



What is the volume of the three-dimensional object formed by continuously rotating the right triangle around \overline{AB} ?

- 123 The equation of a circle is $x^2 + y^2 + 6y = 7$. What are the coordinates of the center and the length of the radius of the circle?

- 124 Kevin's work for deriving the equation of a circle is shown below.

$$x^2 + 4x = -(y^2 - 20)$$

STEP 1 $x^2 + 4x = -y^2 + 20$

STEP 2 $x^2 + 4x + 4 = -y^2 + 20 - 4$

STEP 3 $(x + 2)^2 = -y^2 + 20 - 4$

STEP 4 $(x + 2)^2 + y^2 = 16$

In which step did he make an error in his work?

Geometry Common Core State Standards Regents Bimodal Worksheets

Answer Section

1 ANS:
15
 $\frac{1000}{20\pi} \approx 15.9$

PTS: 2 REF: 011623geo TOP: Circumference

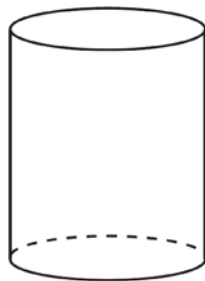
2 ANS:
34.1
The man's height, 69 inches, is opposite to the angle of elevation, and the shadow length, 102 inches, is adjacent to the angle of elevation. Therefore, tangent must be used to find the angle of elevation. $\tan x = \frac{69}{102}$
 $x \approx 34.1$

PTS: 2 REF: fall1401geo TOP: Using Trigonometry to Find an Angle

3 ANS:
 $\triangle GRS$ is not similar to $\triangle ART$.
 $\frac{36}{45} \neq \frac{15}{18}$
 $\frac{4}{5} \neq \frac{5}{6}$

PTS: 2 REF: 081709geo STA: G.G.44 TOP: Similarity Proofs

4 ANS:



PTS: 2 REF: 061601geo TOP: Rotations of Two-Dimensional Objects

5 ANS:
18.8
 $\sin 70 = \frac{x}{20}$
 $x \approx 18.8$

PTS: 2 REF: 061611geo TOP: Using Trigonometry to Find a Side
KEY: without graphics

6 ANS:

$$y = 3x - 1$$

The line $y = 3x - 1$ passes through the center of dilation, so the dilated line is not distinct.

PTS: 2 REF: 081524geo TOP: Line Dilations

7 ANS:

$$40^\circ$$

$$\frac{x}{360} \cdot 3^2 \pi = 2\pi \quad 180 - 80 = 100$$

$$x = 80 \quad \frac{180 - 100}{2} = 40$$

PTS: 2 REF: 011612geo TOP: Sectors

8 ANS:

$$32.8$$

$$6 + 6\sqrt{3} + 6 + 6\sqrt{3} \approx 32.8$$

PTS: 2 REF: 011709geo TOP: 30-60-90 Triangles

9 ANS:

$$y = -\frac{2}{3}x - 3$$

$$m = \frac{3}{2} \quad 1 = -\frac{2}{3}(-6) + b$$

$$m_{\perp} = -\frac{2}{3} \quad 1 = 4 + b$$

$$-3 = b$$

PTS: 2 REF: 061719geo TOP: Parallel and Perpendicular Lines

KEY: write equation of perpendicular line

10 ANS:

$$12$$

$$\frac{12}{4} = \frac{36}{x}$$

$$12x = 144$$

$$x = 12$$

PTS: 2 REF: 061621geo TOP: Side Splitter Theorem

11 ANS:

II, only

NYSED accepts either (1) or (3) as a correct answer. Statement III is not true if A , B , A' and B' are collinear.

PTS: 2 REF: 061714geo TOP: Compositions of Transformations

KEY: basic

12 ANS:

cone

PTS: 2 REF: 081603geo TOP: Rotations of Two-Dimensional Objects

13 ANS:
230

$$2592276 = \frac{1}{3} \cdot s^2 \cdot 146.5$$

$$230 \approx s$$

PTS: 2 REF: 081521geo TOP: Volume KEY: pyramids

14 ANS:
25

$$40 - x + 3x = 90$$

$$2x = 50$$

$$x = 25$$

PTS: 2 REF: 081721geo TOP: Cofunctions

15 ANS:

$$4\sqrt{20}$$

$$4\sqrt{(-1 - -3)^2 + (5 - 1)^2} = 4\sqrt{20}$$

PTS: 2 REF: 081703geo TOP: Polygons in the Coordinate Plane

16 ANS:
77

$$4 \times 4 \times 6 - \pi(1)^2(6) \approx 77$$

PTS: 2 REF: 011711geo TOP: Volume KEY: compositions

17 ANS:

$$\frac{\pi}{5}$$

$$\theta = \frac{s}{r} = \frac{2\pi}{10} = \frac{\pi}{5}$$

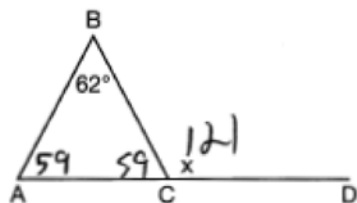
PTS: 2 REF: fall1404geo TOP: Arc Length KEY: angle

18 ANS:
46°

$$\frac{1}{2}(360 - 268) = 46$$

PTS: 2 REF: 061704geo TOP: Chords, Secants and Tangents
KEY: inscribed

- 19 ANS:
121°



PTS: 2 REF: 081711geo TOP: Exterior Angle Theorem

- 20 ANS:
5.6

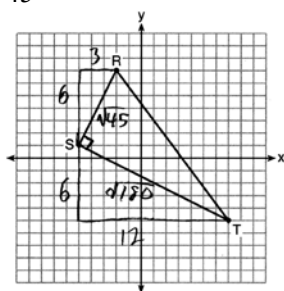
$$\tan \theta = \frac{2.4}{x}$$

$$\frac{3}{7} = \frac{2.4}{x}$$

$$x = 5.6$$

PTS: 2 REF: 011707geo TOP: Using Trigonometry to Find a Side

- 21 ANS:
45



$$\sqrt{45} = 3\sqrt{5} \quad a = \frac{1}{2} (3\sqrt{5})(6\sqrt{5}) = \frac{1}{2} (18)(5) = 45$$

$$\sqrt{180} = 6\sqrt{5}$$

PTS: 2 REF: 061622geo TOP: Polygons in the Coordinate Plane

- 22 ANS:
4.9

$$s^2 + s^2 = 7^2$$

$$2s^2 = 49$$

$$s^2 = 24.5$$

$$s \approx 4.9$$

PTS: 2 REF: 081511geo TOP: Pythagorean Theorem

23 ANS:

16,336

$$\frac{1}{2} \left(\frac{4}{3} \right) \pi \cdot 5^3 \cdot 62.4 \approx 16,336$$

PTS: 2

REF: 061620geo TOP: Density

24 ANS:

25

Parallel chords intercept congruent arcs. $\frac{180 - 130}{2} = 25$

PTS: 2

REF: 081704geo TOP: Chords, Secants and Tangents

KEY: parallel lines

25 ANS:

$$\frac{4\pi}{3}$$

$$\frac{\frac{512\pi}{3}}{\left(\frac{32}{2}\right)^2 \pi} \cdot 2\pi = \frac{4\pi}{3}$$

PTS: 2

REF: 081723geo TOP: Sectors

26 ANS:

22

$$8(x + 8) = 6(x + 18)$$

$$8x + 64 = 6x + 108$$

$$2x = 44$$

$$x = 22$$

PTS: 2

REF: 011715geo TOP: Chords, Secants and Tangents

KEY: secants drawn from common point, length

27 ANS:

5

$$x^2 + 4x + 4 + y^2 - 6y + 9 = 12 + 4 + 9$$

$$(x + 2)^2 + (y - 3)^2 = 25$$

PTS: 2

REF: 081509geo TOP: Equations of Circles

KEY: completing the square

28 ANS:
 $2y - x = 0$

The segment's midpoint is the origin and slope is -2 . The slope of a perpendicular line is $\frac{1}{2}$. $y = \frac{1}{2}x + 0$

$$2y = x$$

$$2y - x = 0$$

PTS: 2 REF: 081724geo TOP: Parallel and Perpendicular Lines
 KEY: perpendicular bisector

29 ANS:

$$\frac{160\pi}{3}$$

$$\frac{300}{360} \cdot 8^2 \pi = \frac{160\pi}{3}$$

PTS: 2 REF: 011721geo TOP: Sectors

30 ANS:

center (0,6) and radius 4

$$x^2 + y^2 - 12y + 36 = -20 + 36$$

$$x^2 + (y - 6)^2 = 16$$

PTS: 2 REF: 061712geo TOP: Equations of Circles
 KEY: completing the square

31 ANS:

reflection over the x -axis

PTS: 2 REF: 061616geo TOP: Identifying Transformations
 KEY: graphics

32 ANS:

$$13.5$$

$$\tan 34 = \frac{T}{20}$$

$$T \approx 13.5$$

PTS: 2 REF: 061505geo TOP: Using Trigonometry to Find a Side
 KEY: graphics

33 ANS:

$$(8.5)^3 - \frac{1}{3} \pi (4)^2 (8)$$

PTS: 2 REF: 061606geo TOP: Volume KEY: compositions

34 ANS:

6

$$84 = \frac{1}{3} \cdot s^2 \cdot 7$$

$$6 = s$$

PTS: 2

REF: 061716geo

TOP: Volume

KEY: pyramids

35 ANS:

 $\frac{2}{3}$

$$\frac{4}{6} = \frac{3}{4.5} = \frac{2}{3}$$

PTS: 2

REF: 081523geo

TOP: Dilations

36 ANS:

dilation

PTS: 2

REF: 081602geo

TOP: Identifying Transformations

KEY: basic

37 ANS:

$$y = x - 1$$

$$m_{TA} = -1 \quad y = mx + b$$

$$m_{EM} = 1 \quad 1 = 1(2) + b$$

$$-1 = b$$

PTS: 2

REF: 081614geo

TOP: Quadrilaterals in the Coordinate Plane

KEY: general

38 ANS:

 6π

$$\frac{60}{360} \cdot 6^2 \pi = 6\pi$$

PTS: 2

REF: 081518geo

TOP: Sectors

39 ANS:

center (0,3) and radius = $2\sqrt{2}$

$$x^2 + y^2 - 6y + 9 = -1 + 9$$

$$x^2 + (y - 3)^2 = 8$$

PTS: 2

REF: 011718geo

TOP: Equations of Circles

KEY: completing the square

40 ANS:
 102
 $V = 12 \cdot 8.5 \cdot 4 = 408$
 $W = 408 \cdot 0.25 = 102$

PTS: 2 REF: 061507geo TOP: Density

41 ANS:
 (1,1)
 $-8 + \frac{3}{8}(16 - -8) = -8 + \frac{3}{8}(24) = -8 + 9 = 1$ $-2 + \frac{3}{8}(6 - -2) = -2 + \frac{3}{8}(8) = -2 + 3 = 1$

PTS: 2 REF: 081717geo TOP: Directed Line Segments

42 ANS:
 $y = 2x - 16$
 $m = -\frac{1}{2}$ $-4 = 2(6) + b$
 $m_{\perp} = 2$ $-4 = 12 + b$
 $-16 = b$

PTS: 2 REF: 011602geo TOP: Parallel and Perpendicular Lines

KEY: write equation of perpendicular line

43 ANS:
 11
 $\frac{x}{10} = \frac{6}{4}$ $\overline{CD} = 15 - 4 = 11$
 $x = 15$

PTS: 2 REF: 081612geo TOP: Similarity KEY: basic

44 ANS:
 9
 $6 \cdot 6 = x(x - 5)$
 $36 = x^2 - 5x$
 $0 = x^2 - 5x - 36$
 $0 = (x - 9)(x + 4)$
 $x = 9$

PTS: 2 REF: 061708geo TOP: Chords, Secants and Tangents

KEY: intersecting chords, length

45 ANS:

$$2\sqrt{10}$$

$$x^2 = 4 \cdot 10$$

$$x = \sqrt{40}$$

$$x = 2\sqrt{10}$$

PTS: 2 REF: 081610geo TOP: Similarity KEY: leg

46 ANS:

rotation

PTS: 2 REF: 081513geo TOP: Identifying Transformations

KEY: graphics

47 ANS:

3.5

$$\frac{11}{1.2 \text{ oz}} \left(\frac{16 \text{ oz}}{1 \text{ lb}} \right) = \frac{13.\bar{3}1}{\text{lb}} \quad \frac{13.\bar{3}1}{\text{lb}} \left(\frac{1 \text{ g}}{3.7851} \right) \approx \frac{3.5 \text{ g}}{1 \text{ lb}}$$

PTS: 2 REF: 061618geo TOP: Density

48 ANS:

trapezoid

$$\frac{-2-1}{-1-3} = \frac{-3}{2} \quad \frac{3-2}{0-5} = \frac{1}{-5} \quad \frac{3-1}{0-3} = \frac{2}{-3} \quad \frac{2-2}{5-1} = \frac{0}{4} = \frac{0}{4}$$

PTS: 2 REF: 081522geo TOP: Quadrilaterals in the Coordinate Plane

KEY: general

49 ANS:

50

$$\cos A = \frac{9}{14}$$

$$A \approx 50^\circ$$

PTS: 2 REF: 011616geo TOP: Using Trigonometry to Find an Angle

50 ANS:

$$6\sqrt{10}$$

$$h^2 = 30 \cdot 12$$

$$h^2 = 360$$

$$h = 6\sqrt{10}$$

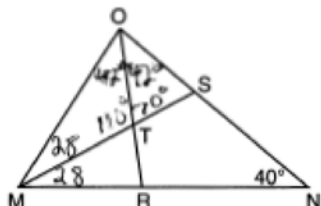
PTS: 2 REF: 061613geo TOP: Similarity KEY: altitude

51 ANS:
40

$$\sqrt{(32-8)^2 + (28-4)^2} = \sqrt{576 + 1024} = \sqrt{1600} = 40$$

PTS: 2 REF: 081621geo TOP: Line Dilations

52 ANS:
70°



PTS: 2 REF: 061717geo TOP: Interior and Exterior Angles of Triangles

53 ANS:
 $AB + AC$

PTS: 2 REF: 011704geo TOP: Midsegments

54 ANS:
cylinder

PTS: 2 REF: 081503geo TOP: Rotations of Two-Dimensional Objects

55 ANS:
 $\frac{\sqrt{21}}{5}$

PTS: 2 REF: 081606geo TOP: Cofunctions

56 ANS:
center $(2, -4)$ and radius 3
 $x^2 - 4x + 4 + y^2 + 8y + 16 = -11 + 4 + 16$
 $(x - 2)^2 + (y + 4)^2 = 9$

PTS: 2 REF: 081616geo TOP: Equations of Circles
KEY: completing the square

57 ANS:
23°
 $\cos S = \frac{60}{65}$
 $S \approx 23$

PTS: 2 REF: 061713geo TOP: Using Trigonometry to Find an Angle

58 ANS:
25

PTS: 2 REF: 061702geo TOP: Polygons in the Coordinate Plane

59 ANS:

6

$$\frac{2}{4} = \frac{9-x}{x}$$

$$36 - 4x = 2x$$

$$x = 6$$

PTS: 2

REF: 061705geo

TOP: Side Splitter Theorem

60 ANS:

108°

PTS: 2

REF: 081515geo

TOP: Inscribed Quadrilaterals

61 ANS:

4.76

$$\tan x = \frac{1}{12}$$

$$x \approx 4.76$$

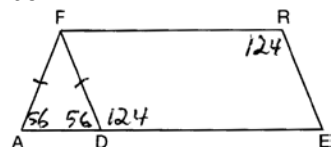
PTS: 2

REF: 081715geo

TOP: Using Trigonometry to Find an Angle

62 ANS:

68°



PTS: 2

REF: 081508geo

TOP: Parallelograms

63 ANS:

$$y = -\frac{2}{3}x + 5$$

$$m = -\frac{2}{3} \quad 1 = \left(-\frac{2}{3}\right)6 + b$$

$$1 = -4 + b$$

$$5 = b$$

PTS: 2

REF: 081510geo

TOP: Parallel and Perpendicular Lines

KEY: write equation of parallel line

64 ANS:

triangle

PTS: 2

REF: 081613geo

TOP: Cross-Sections of Three-Dimensional Objects

65 ANS:

1:4

PTS: 2

REF: 081716geo

TOP: Midsegments

66 ANS:
18 inches
 $3 \times 6 = 18$

PTS: 2 REF: 061602geo TOP: Line Dilations

67 ANS:
the vertical line of symmetry
 $v = \pi r^2 h$ (1) $6^2 \cdot 10 = 360$
 $150\pi = \pi r^2 h$ (2) $10^2 \cdot 6 = 600$
 $150 = r^2 h$ (3) $5^2 \cdot 6 = 150$
(4) $3^2 \cdot 10 = 900$

PTS: 2 REF: 081713geo TOP: Rotations of Two-Dimensional Objects

68 ANS:
 $y = \frac{1}{2}x + 3$
 $y = mx + b$
 $2 = \frac{1}{2}(-2) + b$
 $3 = b$

PTS: 2 REF: 011701geo TOP: Parallel and Perpendicular Lines
KEY: write equation of parallel line

69 ANS:
10
 $r = \sqrt{(7-3)^2 + (1-(-2))^2} = \sqrt{16+9} = 5$

PTS: 2 REF: 061503geo TOP: Circles in the Coordinate Plane

70 ANS:
 $(-3,2)$ and 6
 $x^2 + 6x + 9 + y^2 - 4y + 4 = 23 + 9 + 4$
 $(x+3)^2 + (y-2)^2 = 36$

PTS: 2 REF: 011617geo TOP: Equations of Circles
KEY: completing the square

71 ANS:
945
 $V = \pi \left(\frac{6.7}{2} \right)^2 (4 \cdot 6.7) \approx 945$

PTS: 2 REF: 081620geo TOP: Volume KEY: cylinders

72 ANS:

$$y = 2x - 6$$

The line $y = 2x - 4$ does not pass through the center of dilation, so the dilated line will be distinct from $y = 2x - 4$. Since a dilation preserves parallelism, the line $y = 2x - 4$ and its image will be parallel, with slopes of 2. To

obtain the y -intercept of the dilated line, the scale factor of the dilation, $\frac{3}{2}$, can be applied to the y -intercept,

$(0, -4)$. Therefore, $\left(0 \cdot \frac{3}{2}, -4 \cdot \frac{3}{2}\right) \rightarrow (0, -6)$. So the equation of the dilated line is $y = 2x - 6$.

PTS: 2 REF: fall1403geo TOP: Line Dilations

73 ANS:

1.2

$$V = \frac{1}{3} \pi \left(\frac{1.5}{2}\right)^2 \left(\frac{4}{2}\right) \approx 1.2$$

PTS: 2 REF: 011724geo TOP: Volume KEY: cones

74 ANS:

 $(5, 1)$

$$3 + \frac{2}{5}(8 - 3) = 3 + \frac{2}{5}(5) = 3 + 2 = 5 \quad 5 + \frac{2}{5}(-5 - 5) = 5 + \frac{2}{5}(-10) = 5 - 4 = 1$$

PTS: 2 REF: 011720geo TOP: Directed Line Segments

75 ANS:

4.0

$$\frac{1}{3.5} = \frac{x}{18 - x}$$

$$3.5x = 18 - x$$

$$4.5x = 18$$

$$x = 4$$

PTS: 2 REF: 081707geo TOP: Side Splitter Theorem

76 ANS:

 $\angle DCB$

PTS: 2 REF: 011621geo TOP: Chords, Secants and Tangents

KEY: inscribed

77 ANS:

$$\frac{5\sqrt{10}}{\sqrt{(-1-2)^2 + (4-3)^2}} = \sqrt{10}$$

PTS: 2 REF: 011615geo TOP: Polygons in the Coordinate Plane

78 ANS:
 octagon
 $\frac{360^\circ}{45^\circ} = 8$

PTS: 2 REF: 061510geo TOP: Mapping a Polygon onto Itself

79 ANS:
 A

PTS: 2 REF: 081605geo TOP: Rotations KEY: grids

80 ANS:
 44°
 $180 - (68 \cdot 2)$

PTS: 2 REF: 081624geo TOP: Parallelograms

81 ANS:
 9694

$$C = \pi d \quad V = \pi \left(\frac{2.25}{\pi} \right)^2 \cdot 8 \approx 12.8916 \quad W = 12.8916 \cdot 752 \approx 9694$$

$$4.5 = \pi d$$

$$\frac{4.5}{\pi} = d$$

$$\frac{2.25}{\pi} = r$$

PTS: 2 REF: 081617geo TOP: Density

82 ANS:
 Illinois, Florida, New York, Pennsylvania
 Illinois: $\frac{12830632}{231.1} \approx 55520$ Florida: $\frac{18801310}{350.6} \approx 53626$ New York: $\frac{19378102}{411.2} \approx 47126$ Pennsylvania:
 $\frac{12702379}{283.9} \approx 44742$

PTS: 2 REF: 081720geo TOP: Density

83 ANS:
 Beth and Carl

PTS: 2 REF: 081619geo TOP: Sectors

84 ANS:
 16,336

$$V = \frac{\frac{4}{3} \pi \left(\frac{10}{2} \right)^3}{2} \approx 261.8 \cdot 62.4 = 16,336$$

PTS: 2 REF: 081516geo TOP: Density

85 ANS:

8.25

$$\frac{6.6}{x} = \frac{4.2}{5.25}$$

$$4.2x = 34.65$$

$$x = 8.25$$

PTS: 2

REF: 081705geo

TOP: Similarity

KEY: basic

86 ANS:

$$3\sqrt{6}$$

$$x^2 = 3 \cdot 18$$

$$x = \sqrt{3 \cdot 3 \cdot 6}$$

$$x = 3\sqrt{6}$$

PTS: 2

REF: 081712geo

TOP: Chords, Secants and Tangents

KEY: secant and tangent drawn from common point, length

87 ANS:

$$\frac{EC}{EA}$$

PTS: 2

REF: 061518geo

TOP: Line Dilations

88 ANS:

$$-\frac{5}{2}$$

The slope of \overline{BC} is $\frac{2}{5}$. Altitude is perpendicular, so its slope is $-\frac{5}{2}$.

PTS: 2

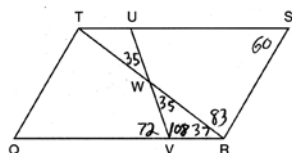
REF: 061614geo

TOP: Parallel and Perpendicular Lines

KEY: find slope of perpendicular line

89 ANS:

72°



PTS: 2

REF: 011603geo

TOP: Parallelograms

90 ANS:

10

$$\frac{f}{4} = \frac{15}{6}$$

$$f = 10$$

PTS: 2

REF: 061617geo

TOP: Lines and Angles

91 ANS:
rectangle

PTS: 2 REF: 011723geo TOP: Cross-Sections of Three-Dimensional Objects

92 ANS:
144

$$V = \frac{1}{3} \cdot 6^2 \cdot 12 = 144$$

PTS: 2 REF: 011607geo TOP: Volume KEY: pyramids

93 ANS:
11

$$\frac{12}{4} = \frac{x}{5} \quad 15 - 4 = 11$$

$$x = 15$$

PTS: 2 REF: 011624geo TOP: Similarity KEY: basic

94 ANS:
55

$$\frac{\frac{4}{3} \pi \left(\frac{9.5}{2} \right)^3}{\frac{4}{3} \pi \left(\frac{2.5}{2} \right)^3} \approx 55$$

PTS: 2 REF: 011614geo TOP: Volume KEY: spheres

95 ANS:
18

$$\cos 40 = \frac{14}{x}$$

$$x \approx 18$$

PTS: 2 REF: 011712geo TOP: Using Trigonometry to Find a Side

96 ANS:
3.3

$$\sin 32 = \frac{x}{6.2}$$

$$x \approx 3.3$$

PTS: 2 REF: 081719geo TOP: Using Trigonometry to Find a Side

97 ANS:
17.3

$$\sqrt{20^2 - 10^2} \approx 17.3$$

PTS: 2 REF: 081608geo TOP: Pythagorean Theorem

KEY: without graphics

98 ANS:
54°

$$\angle B = 180 - (82 + 26) = 72; \angle DEC = 180 - 26 = 154; \angle EDB = 360 - (154 + 26 + 72) = 108; \angle BDF = \frac{108}{2} = 54;$$

$$\angle DFB = 180 - (54 + 72) = 54$$

PTS: 2 REF: 061710geo TOP: Interior and Exterior Angles of Triangles

99 ANS:
I, II, and III

PTS: 2 REF: 061711geo TOP: Special Quadrilaterals

100 ANS:
25

$$14 \times 16 \times 10 = 2240 \quad \frac{2240 - 1680}{2240} = 0.25$$

PTS: 2 REF: 011604geo TOP: Volume KEY: prisms

101 ANS:
1808

$$2.5 \times 1.25 \times (27 \times 12) + \frac{1}{2} \pi (1.25)^2 (27 \times 12) \approx 1808$$

PTS: 2 REF: 061723geo TOP: Volume KEY: compositions

102 ANS:
 $y = -2x + 4$

The given line h , $2x + y = 1$, does not pass through the center of dilation, the origin, because the y -intercept is at $(0, 1)$. The slope of the dilated line, m , will remain the same as the slope of line h , -2 . All points on line h , such as $(0, 1)$, the y -intercept, are dilated by a scale factor of 4; therefore, the y -intercept of the dilated line is $(0, 4)$ because the center of dilation is the origin, resulting in the dilated line represented by the equation $y = -2x + 4$.

PTS: 2 REF: spr1403geo TOP: Line Dilations

103 ANS:
 $\frac{32\pi}{3}$

$$\frac{60}{360} \cdot 8^2 \pi = \frac{1}{6} \cdot 64\pi = \frac{32\pi}{3}$$

PTS: 2 REF: 061624geo TOP: Sectors

104 ANS:
 $(0, 11)$

$$-4 + \frac{2}{5}(6 - -4) = -4 + \frac{2}{5}(10) = -4 + 4 = 0 \quad 5 + \frac{2}{5}(20 - 5) = 5 + \frac{2}{5}(15) = 5 + 6 = 11$$

PTS: 2 REF: 061715geo TOP: Directed Line Segments

105 ANS:

20

$$\frac{1}{2} = \frac{x+3}{3x-1} \quad GR = 3(7) - 1 = 20$$

$$3x - 1 = 2x + 6$$

$$x = 7$$

PTS: 2 REF: 011620geo TOP: Similarity KEY: basic

106 ANS:

 $B'(5,2)$ and $C'(1,-2)$ $B: (4-3, 3-4) \rightarrow (1,-1) \rightarrow (2,-2) \rightarrow (2+3, -2+4)$ $C: (2-3, 1-4) \rightarrow (-1,-3) \rightarrow (-2,-6) \rightarrow (-2+3, -6+4)$

PTS: 2 REF: 011713geo TOP: Line Dilations

107 ANS:

14.3

$$\frac{9}{5} = \frac{9.2}{x} \quad 5.1 + 9.2 = 14.3$$

$$9x = 46$$

$$x \approx 5.1$$

PTS: 2 REF: 061511geo TOP: Side Splitter Theorem

108 ANS:

$$\left(-4, -\frac{1}{2}\right)$$

$$x = -6 + \frac{1}{6}(6 - -6) = -6 + 2 = -4 \quad y = -2 + \frac{1}{6}(7 - -2) = -2 + \frac{9}{6} = -\frac{1}{2}$$

PTS: 2 REF: 081618geo TOP: Directed Line Segments

109 ANS:

17.5

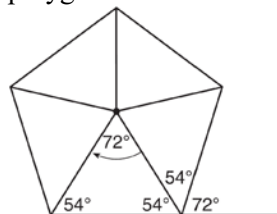
$$\frac{7}{12} \cdot 30 = 17.5$$

PTS: 2 REF: 061521geo TOP: Similarity KEY: perimeter and area

110 ANS:

72°

Segments drawn from the center of the regular pentagon bisect each angle of the pentagon, and create five isosceles triangles as shown in the diagram below. Since each exterior angle equals the angles formed by the segments drawn from the center of the regular pentagon, the minimum degrees necessary to carry a regular polygon onto itself are equal to the measure of an exterior angle of the regular polygon.



$$\frac{360}{5} = 72.$$

PTS: 2

REF: spr1402geo

TOP: Mapping a Polygon onto Itself

111 ANS:

16

x is $\frac{1}{2}$ the circumference. $\frac{C}{2} = \frac{10\pi}{2} \approx 16$

PTS: 2

REF: 061523geo

TOP: Circumference

112 ANS:

12.5

$$5 \cdot \frac{10}{4} = \frac{50}{4} = 12.5$$

PTS: 2

REF: 081512geo

TOP: Chords, Secants and Tangents

KEY: common tangents

113 ANS:

20

$$\frac{4}{3} \pi \cdot 4^3 + 0.075 \approx 20$$

PTS: 2

REF: 011619geo

TOP: Density

114 ANS:

$$\overline{AD} \cong \overline{CE}$$

PTS: 2

REF: 081622geo

TOP: Triangle Proofs

KEY: statements

115 ANS:

(1,-1)

$$-5 + \frac{3}{5}(5 - -5) \quad -4 + \frac{3}{5}(1 - -4)$$

$$-5 + \frac{3}{5}(10) \quad -4 + \frac{3}{5}(5)$$

$$-5 + 6 \quad -4 + 3$$

$$1 \quad -1$$

PTS: 2

REF: spr1401geo TOP: Directed Line Segments

116 ANS:

$$y + 1 = \frac{4}{3}(x + 3)$$

$$m = \left(\frac{-11 + 5}{2}, \frac{5 + -7}{2} \right) = (-3, -1) \quad m = \frac{5 - -7}{-11 - 5} = \frac{12}{-16} = -\frac{3}{4} \quad m_{\perp} = \frac{4}{3}$$

PTS: 2

REF: 061612geo TOP: Parallel and Perpendicular Lines

KEY: perpendicular bisector

117 ANS:

a cone

PTS: 2

REF: 061501geo TOP: Rotations of Two-Dimensional Objects

118 ANS:

2

$$SA = 6 \cdot 12^2 = 864$$

$$\frac{864}{450} = 1.92$$

PTS: 2

REF: 061519geo TOP: Surface Area

119 ANS:

right

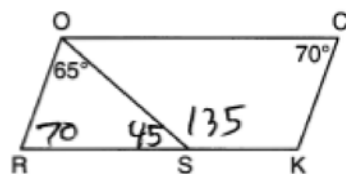
$$m_{\overline{RT}} = \frac{5 - -3}{4 - -2} = \frac{8}{6} = \frac{4}{3} \quad m_{\overline{ST}} = \frac{5 - 2}{4 - 8} = \frac{3}{-4} = -\frac{3}{4} \quad \text{Slopes are opposite reciprocals, so lines form a right angle.}$$

PTS: 2

REF: 011618geo TOP: Triangles in the Coordinate Plane

120 ANS:

135°



PTS: 2

REF: 081708geo TOP: Parallelograms

121 ANS:
19

$$\sin 71 = \frac{x}{20}$$

$$x = 20 \sin 71 \approx 19$$

PTS: 2 REF: 061721geo TOP: Using Trigonometry to Find a Side

KEY: without graphics

122 ANS:
 32π

$$V = \frac{1}{3} \pi(4)^2(6) = 32\pi$$

PTS: 2 REF: 061718geo TOP: Rotations of Two-Dimensional Objects

123 ANS:

center $(0, -3)$ and radius 4

$$x^2 + y^2 + 6y + 9 = 7 + 9$$

$$x^2 + (y + 3)^2 = 16$$

PTS: 2 REF: 061514geo TOP: Equations of Circles

KEY: completing the square

124 ANS:
Step 2

PTS: 2 REF: 061603geo TOP: Equations of Circles

KEY: find center and radius | completing the square