Geometry Regents Bimodal Worksheets

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

2 An isosceles right triangle whose legs measure 6 is continuously rotated about one of its legs to form a three-dimensional object. The three-dimensional object is a

3 Which regular polygon has a minimum rotation of 36° about its center that carries the polygon onto itself?

4 What are the coordinates of the center and the length of the radius of the circle whose equation is $x^2 + y^2 - 12y - 20.25 = 0$?

5 What is an equation of the image of the line $y = \frac{3}{2}x - 4$ after a dilation of a scale factor of $\frac{3}{4}$ centered at the origin?

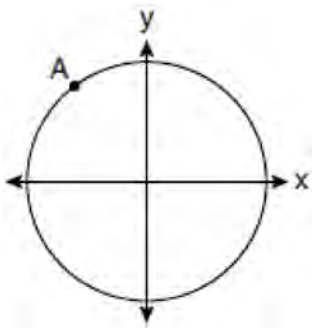
6 Which figure(s) below can have a triangle as a two-dimensional cross section?

I. cone
II. cylinder
III. cube
IV. square pyramid

7 In rhombus *VENU*, diagonals $\overline{VN}$ and $\overline{EU}$ intersect at *S*. If *VN* = 12 and *EU* = 16, what is the perimeter of the rhombus?

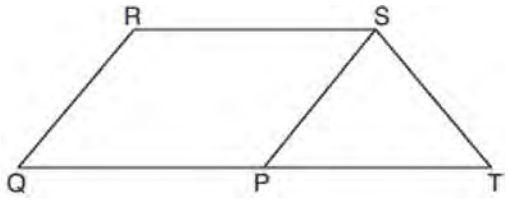
8 Chelsea is sitting 8 feet from the foot of a tree. From where she is sitting, the angle of elevation of her line of sight to the top of the tree is 36°. If her line of sight starts 1.5 feet above ground, how tall is the tree, to the *nearest foot*?

9 A circle centered at the origin passes through $A(-3, 4)$.



What is the equation of the line tangent to the circle at *A*?

10 In parallelogram *PQRS*, $\overline{QP}$ is extended to point *T* and $\overline{ST}$ is drawn.

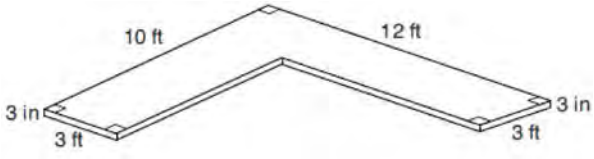


If $\overline{ST} \cong \overline{SP}$ and $m\angle R = 130°$, what is $m\angle PST$?

11 Jaden is comparing two cones. The radius of the base of cone *A* is twice as large as the radius of the base of cone *B*. The height of cone *B* is twice the height of cone *A*. The volume of cone *A* is

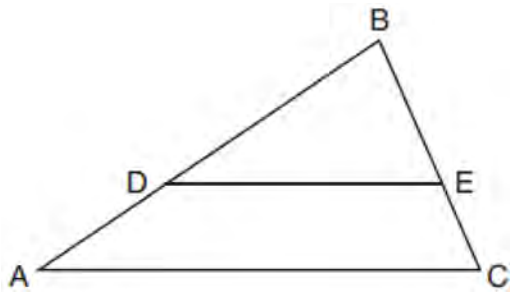
Geometry Regents Bimodal Worksheet # 2 Name: _____
www.jmap.org

12 The diagram below models a countertop designed for a kitchen. The countertop is made of solid oak and is 3 inches thick.



If oak weighs approximately 44 pounds per cubic foot, the approximate weight, in pounds, of the countertop is

13 In triangle ABC, points D and E are on sides $\overline{AB}$ and $\overline{BC}$, respectively, such that $\overline{DE} \parallel \overline{AC}$, and $AD:DB = 3:5$.



If $DB = 6.3$ and $AC = 9.4$, what is the length of DE, to the *nearest tenth*?

14 From a point on the ground one-half mile from the base of a historic monument, the angle of elevation to its top is 11.87°. To the *nearest foot*, what is the height of the monument?

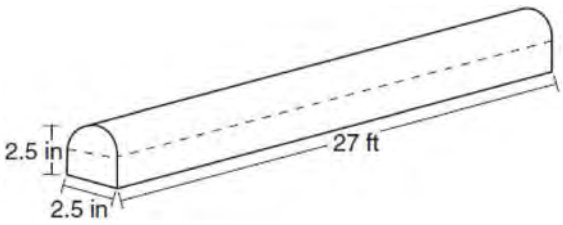
15 If $\sin(2x + 7)° = \cos(4x - 7)°$, what is the value of x?

16 What is an equation of a circle whose center is $(1,4)$ and diameter is 10?

17 In right triangle ABC, hypotenuse $\overline{AB}$ has a length of 26 cm, and side $\overline{BC}$ has a length of 17.6 cm. What is the measure of angle B, to the *nearest degree*?

18 What is an equation of a circle whose center is at $(2,-4)$ and is tangent to the line $x = -2$?

19 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.

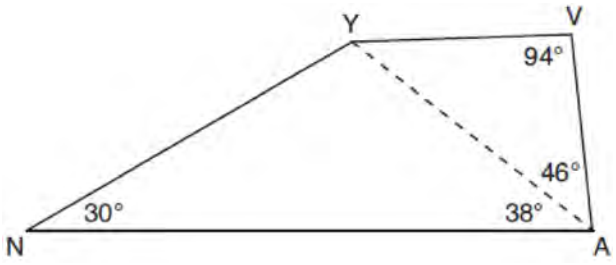


How much metal, to the *nearest cubic inch*, will the railing contain?

20 In circle O two secants, $\overline{ABP}$ and $\overline{CDP}$, are drawn to external point P. If $m\overset{\frown}{AC} = 72°$, and $m\overset{\frown}{BD} = 34°$, what is the measure of $\angle P$?

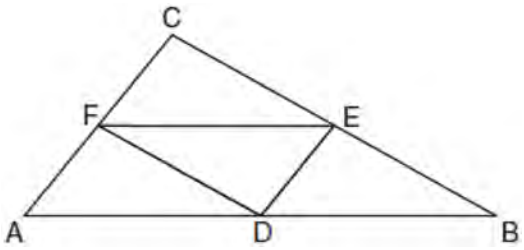
Geometry Regents Bimodal Worksheet # 3 Name: _____
www.jmap.org

21 In the diagram of quadrilateral *NAVY* below, $m\angle YNA = 30°$, $m\angle YAN = 38°$, $m\angle AVY = 94°$, and $m\angle VAY = 46°$.



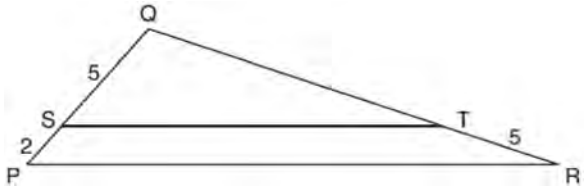
Which segment has the shortest length?

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



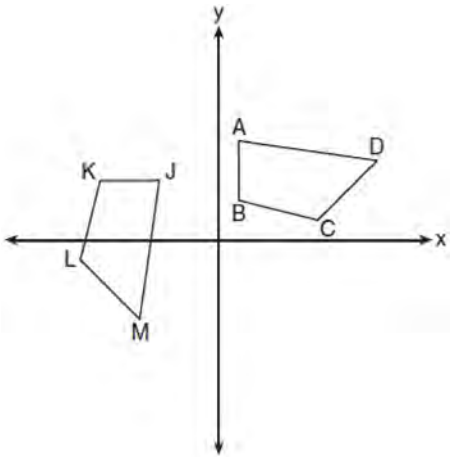
What is the ratio of the area of $\triangle CFE$ to the area of $\triangle CAB$?

23 In the diagram below of $\triangle PQR$, $\overline{ST}$ is drawn parallel to $\overline{PR}$, $PS = 2$, $SQ = 5$, and $TR = 5$.



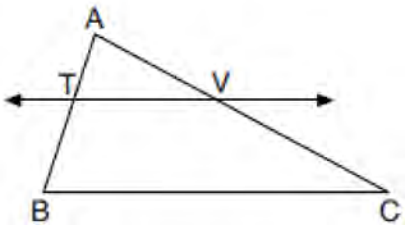
What is the length of $\overline{QR}$?

24 In the diagram below, a sequence of rigid motions maps *ABCD* onto *JKLM*.



If $m\angle A = 82°$, $m\angle B = 104°$, and $m\angle L = 121°$, the measure of $\angle M$ is

25 In the diagram below of $\triangle ABC$, $\overline{TV}$ intersects $\overline{AB}$ and $\overline{AC}$ at points *T* and *V* respectively, and $m\angle ATV = m\angle ABC$.

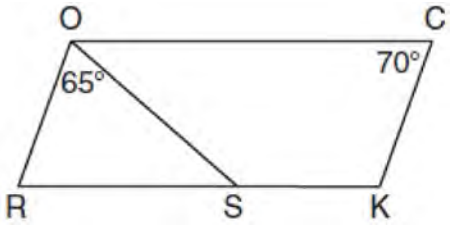


If $AT = 4$, $BC = 18$, $TB = 5$, and $AV = 6$, what is the perimeter of quadrilateral *TBCV*?

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

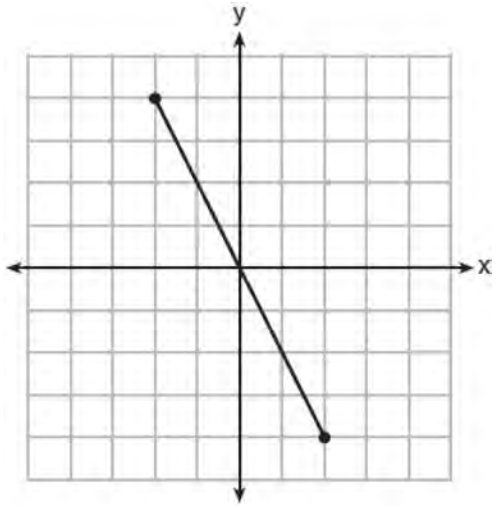
Geometry Regents Bimodal Worksheet # 4 Name: _____
www.jmap.org

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



What is $m\angle KSO$?

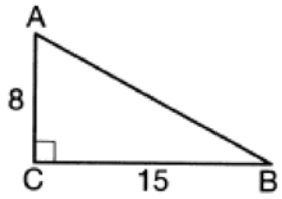
28 What is an equation of the perpendicular bisector of the line segment shown in the diagram below?



29 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?

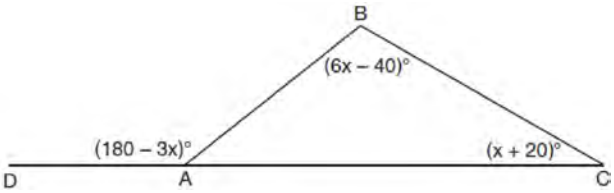
I. $\triangle ABC \cong \triangle A'B'C'$
II. $\triangle ABC \sim \triangle A'B'C'$
III. $\overline{AB} \parallel \overline{A'B'}$
IV. $AA' = BB'$

30 As shown in the diagram below, right triangle *ABC* has side lengths of 8 and 15.



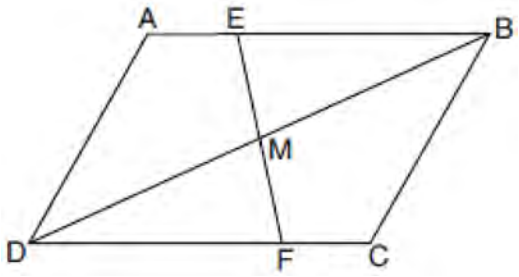
If the triangle is continuously rotated about $\overline{AC}$, the resulting figure will be

31 In $\triangle ABC$ shown below, side $\overline{AC}$ is extended to point *D* with $m\angle DAB = (180 - 3x)°$, $m\angle B = (6x - 40)°$, and $m\angle C = (x + 20)°$.



What is $m\angle BAC$?

32 Parallelogram *ABCD* with diagonal $\overline{DB}$ is drawn below. Line segment *EF* is drawn such that it bisects $\overline{DB}$ at *M*.



Which triangle congruence method would prove that $\triangle EMB \sim \triangle FMD$?

33 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

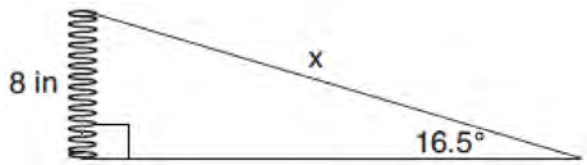
Based on the table above, which list has the states' areas, in square miles, in order from largest to smallest?

34 The table below shows the population and land area, in square miles, of four counties in New York State at the turn of the century.

County	2000 Census Population	2000 Land Area $\left(\text{mi}^2\right)$
Broome	200,536	706.82
Dutchess	280,150	801.59
Niagara	219,846	522.95
Saratoga	200,635	811.84

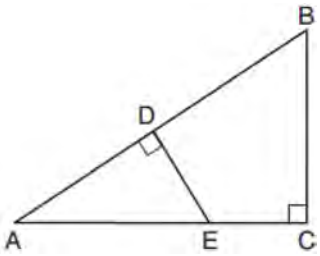
Which county had the greatest population density?

35 Yolanda is making a springboard to use for gymnastics. She has 8-inch-tall springs and wants to form a 16.5° angle with the base, as modeled in the diagram below.



To the *nearest tenth of an inch*, what will be the length of the springboard, x?

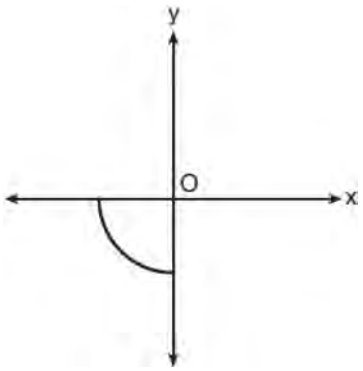
36 In $\triangle ABC$ shown below, $\angle ACB$ is a right angle, E is a point on $\overline{AC}$, and $\overline{ED}$ is drawn perpendicular to hypotenuse $\overline{AB}$.



If $AB = 9$, $BC = 6$, and $DE = 4$, what is the length of $\overline{AE}$?

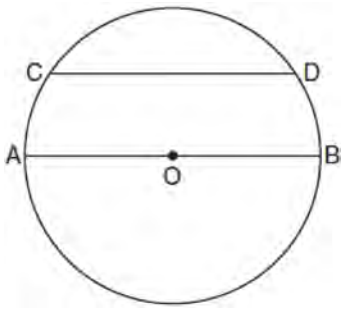
Geometry Regents Bimodal Worksheet # 6 Name: _____
www.jmap.org

37 Circle O is centered at the origin. In the diagram below, a quarter of circle O is graphed.



Which three-dimensional figure is generated when the quarter circle is continuously rotated about the y-axis?

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

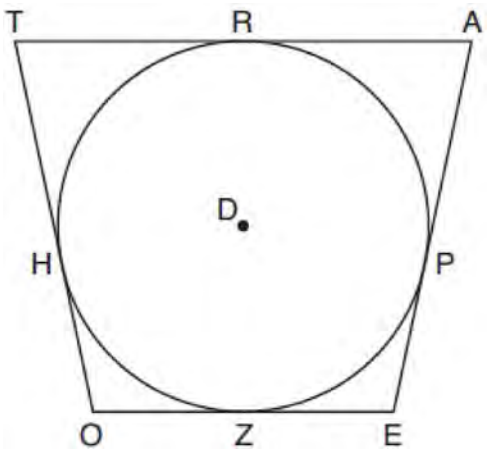


What is $m\overset{\frown}{AC}$?

39 The line represented by $2y = x + 8$ is dilated by a scale factor of k centered at the origin, such that the image of the line has an equation of $y - \frac{1}{2}x = 2$.

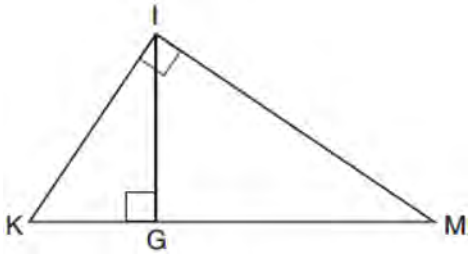
What is the scale factor?

40 In the figure shown below, quadrilateral $TAEO$ is circumscribed around circle D. The midpoint of $\overline{TA}$ is R, and $\overline{HO} \cong \overline{PE}$.



If $AP = 10$ and $EO = 12$, what is the perimeter of quadrilateral $TAEO$?

41 In the diagram below of right triangle KMI, altitude $\overline{IG}$ is drawn to hypotenuse $\overline{KM}$.

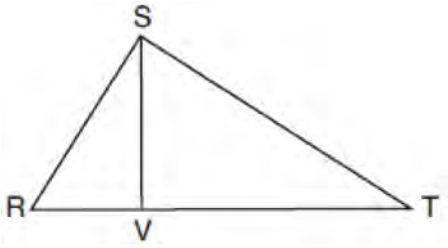


If $KG = 9$ and $IG = 12$, the length of $\overline{IM}$ is

42 The base of a pyramid is a rectangle with a width of 4.6 cm and a length of 9 cm. What is the height, in centimeters, of the pyramid if its volume is 82.8 cm^3?

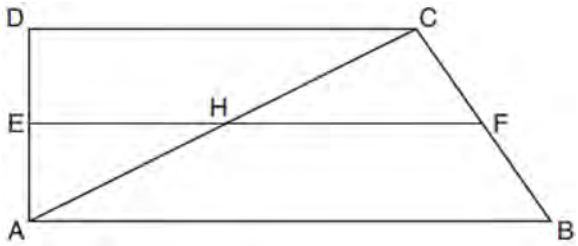
Geometry Regents Bimodal Worksheet # 7 Name: _____
www.jmap.org

43 In right triangle *RST* below, altitude $\overline{SV}$ is drawn to hypotenuse $\overline{RT}$.



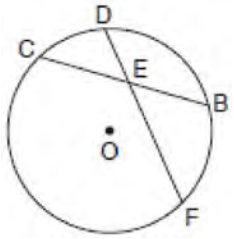
If $RV = 4.1$ and $TV = 10.2$, what is the length of $\overline{ST}$, to the *nearest tenth*?

44 In quadrilateral *ABCD* below, $\overline{AB} \parallel \overline{CD}$, and *E*, *H*, and *F* are the midpoints of $\overline{AD}$, $\overline{AC}$, and $\overline{BC}$, respectively.



If $AB = 24$, $CD = 18$, and $AH = 10$, then FH is

45 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

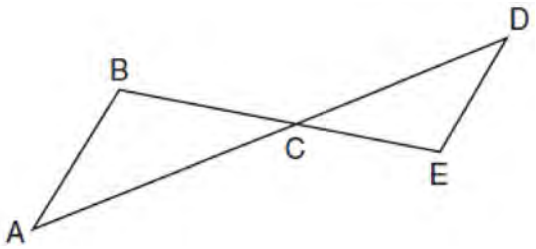
46 The area of a sector of a circle with a radius measuring 15 cm is 75π cm^2. What is the measure of the central angle that forms the sector?

47 The coordinates of the endpoints of directed line segment *ABC* are $A(-8, 7)$ and $C(7, -13)$. If $AB:BC = 3:2$, the coordinates of *B* are

48 A regular pyramid has a square base. The perimeter of the base is 36 inches and the height of the pyramid is 15 inches. What is the volume of the pyramid in cubic inches?

49 In right triangle *RST*, altitude $\overline{TV}$ is drawn to hypotenuse $\overline{RS}$. If $RV = 12$ and $RT = 18$, what is the length of $\overline{SV}$?

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

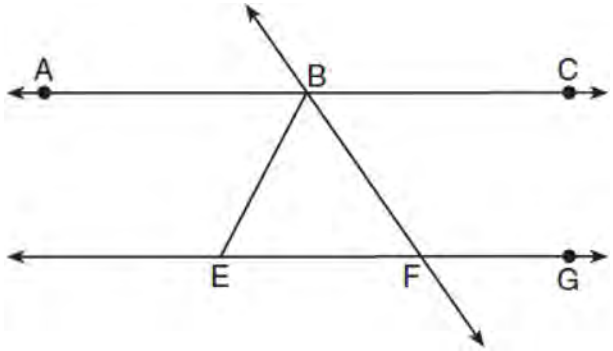


If $CD = 6.6$ cm, $DE = 3.4$ cm, $CE = 4.2$ cm, and $BC = 5.25$ cm, what is the length of $\overline{AC}$, to the *nearest hundredth of a centimeter*?

51 In a right triangle, $\sin(40 - x)° = \cos(3x)°$. What is the value of *x*?

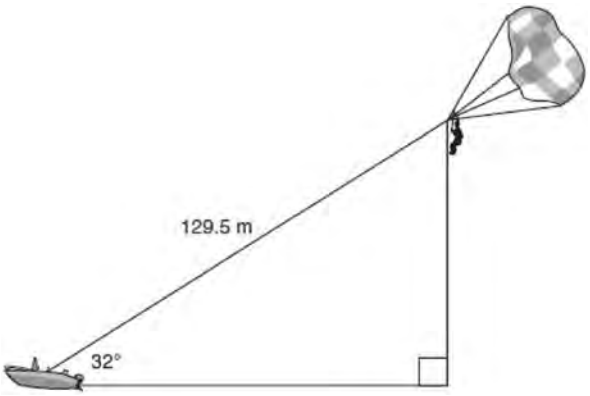
Geometry Regents Bimodal Worksheet # 8 Name: _____
www.jmap.org

52 As shown in the diagram below, $\overleftrightarrow{ABC} \parallel \overleftrightarrow{EFG}$ and $\overline{BF} \cong \overline{EF}$.



If $m\angle CBF = 42.5°$, then $m\angle EBF$ is

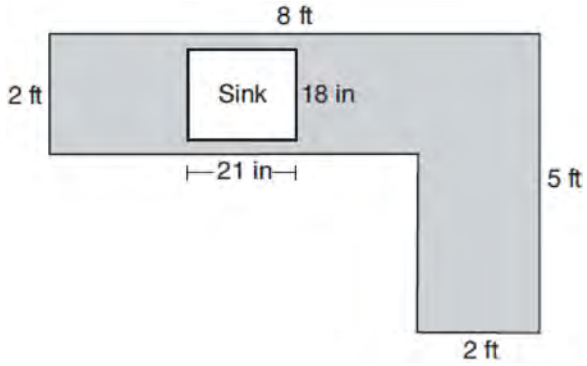
53 A man was parasailing above a lake at an angle of elevation of 32° from a boat, as modeled in the diagram below.



If 129.5 meters of cable connected the boat to the parasail, approximately how many meters above the lake was the man?

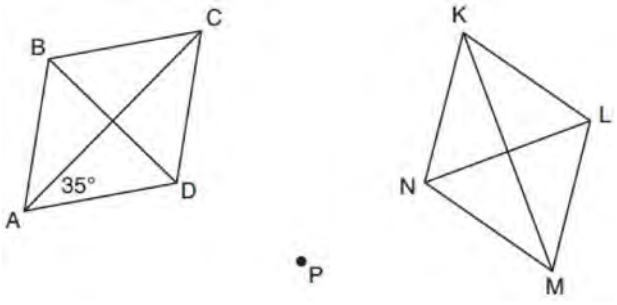
54 Lou has a solid clay brick in the shape of a rectangular prism with a length of 8 inches, a width of 3.5 inches, and a height of 2.25 inches. If the clay weighs 1.055 oz/in^3, how much does Lou's brick weigh, to the *nearest ounce*?

55 A countertop for a kitchen is modeled with the dimensions shown below. An 18-inch by 21-inch rectangle will be removed for the installation of the sink.



What is the area of the top of the installed countertop, to the *nearest square foot*?

56 Rhombus *ABCD* can be mapped onto rhombus *KLMN* by a rotation about point *P*, as shown below.

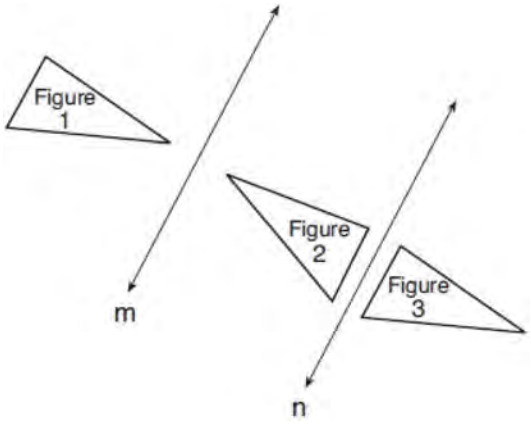


What is the measure of $\angle KNM$ if the measure of $\angle CAD = 35$?

57 Square *MATH* has a side length of 7 inches. Which three-dimensional object will be formed by continuously rotating square *MATH* around side $\overline{AT}$?

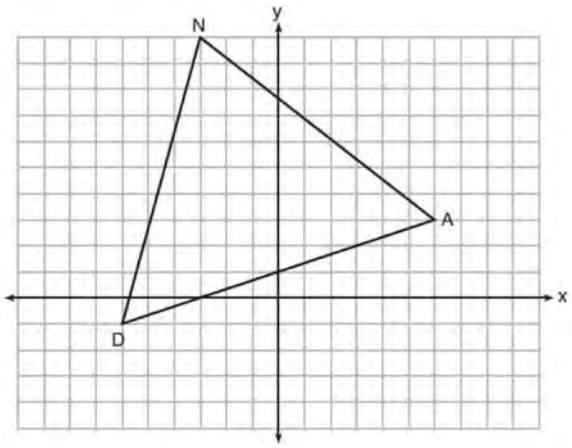
Geometry Regents Bimodal Worksheet # 9 Name: _____
www.jmap.org

58 In the diagram below, line *m* is parallel to line *n*. Figure 2 is the image of Figure 1 after a reflection over line *m*. Figure 3 is the image of Figure 2 after a reflection over line *n*.



Which single transformation would carry Figure 1 onto Figure 3?

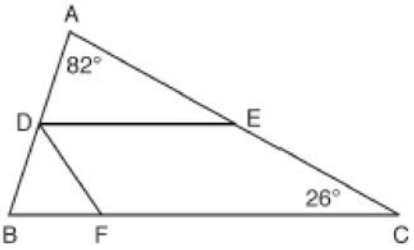
59 Triangle *DAN* is graphed on the set of axes below. The vertices of $\triangle DAN$ have coordinates $D(-6,-1)$, $A(6,3)$, and $N(-3,10)$.



What is the area of $\triangle DAN$?

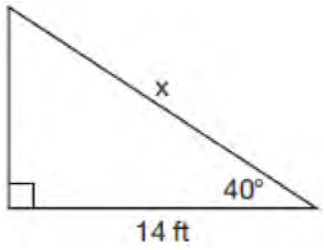
60 A right cylinder is cut perpendicular to its base. The shape of the cross section is a

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

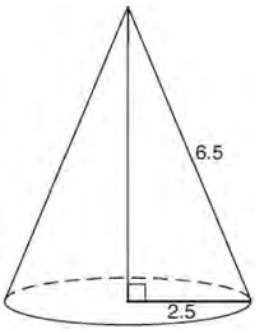


The measure of angle *DFB* is

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



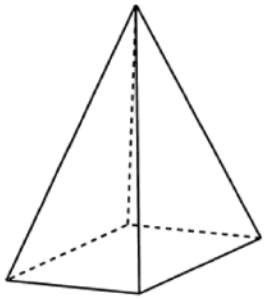
63 As shown in the diagram below, the radius of a cone is 2.5 cm and its slant height is 6.5 cm.



How many cubic centimeters are in the volume of the cone?

Geometry Regents Bimodal Worksheet # 10 Name: _____
www.jmap.org

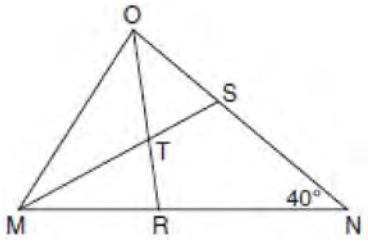
64 In the diagram below, a plane intersects a square pyramid parallel to its base.



Which two-dimensional shape describes this cross section?

65 A 12-foot ladder leans against a building and reaches a window 10 feet above ground. What is the measure of the angle, to the *nearest degree*, that the ladder forms with the ground?

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



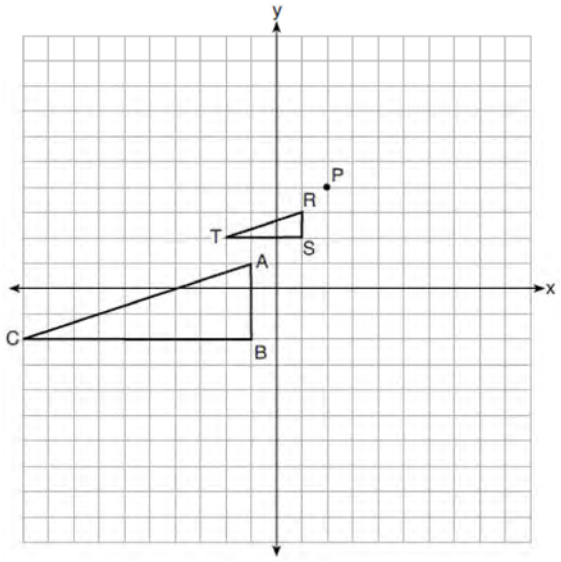
If $m\angle TMR = 28°$, the measure of angle OTS is

67 After a dilation with center $(0,0)$, the image of $\overline{DB}$ is $\overline{D'B'}$. If $DB = 4.5$ and $D'B' = 18$, the scale factor of this dilation is

68 Rhombus $STAR$ has vertices $S(-1,2)$, $T(2,3)$, $A(3,0)$, and $R(0,-1)$. What is the perimeter of rhombus $STAR$?

69 In right triangle ABC, $m\angle C = 90°$. If $\cos B = \frac{5}{13}$, which function also equals $\frac{5}{13}$?

70 On the set of axes below, $\triangle RST$ is the image of $\triangle ABC$ after a dilation centered at point P.

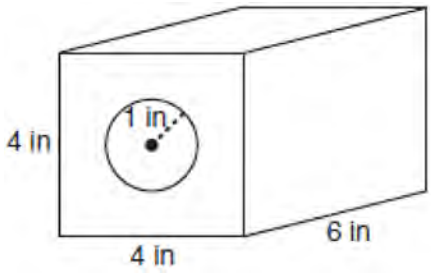


The scale factor of the dilation that maps $\triangle ABC$ onto $\triangle RST$ is

71 Line MN is dilated by a scale factor of 2 centered at the point $(0,6)$. If $\overleftrightarrow{MN}$ is represented by $y = -3x + 6$, which equation can represent $\overleftrightarrow{M'N'}$, the image of $\overleftrightarrow{MN}$?

Geometry Regents Bimodal Worksheet # 11 Name: _____
www.jmap.org

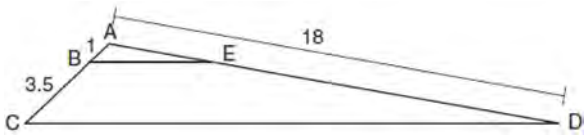
72 A solid metal prism has a rectangular base with sides of 4 inches and 6 inches, and a height of 4 inches. A hole in the shape of a cylinder, with a radius of 1 inch, is drilled through the entire length of the rectangular prism.



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

73 Diameter $\overline{ROQ}$ of circle O is extended through Q to point P, and tangent $\overline{PA}$ is drawn. If $m\overset{\frown}{RA} = 100°$, what is $m\angle P$?

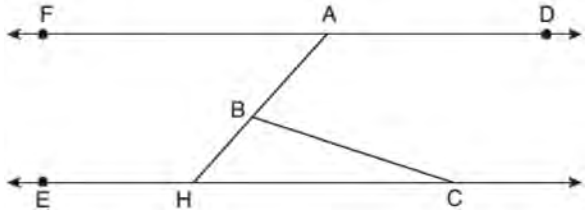
74 In the diagram below, triangle ACD has points B and E on sides $\overline{AC}$ and $\overline{AD}$, respectively, such that $\overline{BE} \parallel \overline{CD}$, $AB = 1$, $BC = 3.5$, and $AD = 18$.



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

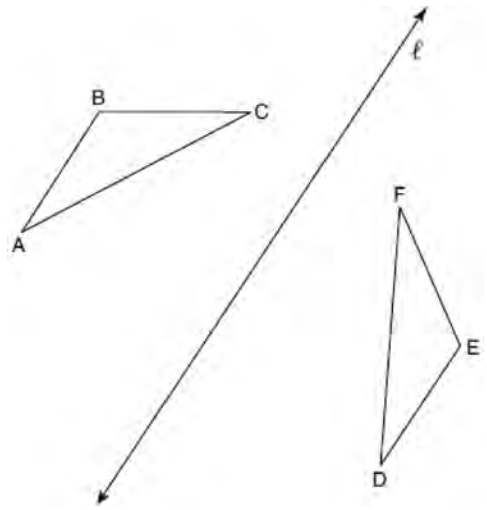
75 Point Q is on $\overline{MN}$ such that $MQ:QN = 2:3$. If M has coordinates $(3,5)$ and N has coordinates $(8,-5)$, the coordinates of Q are

76 In the diagram below, $\overline{FAD} \parallel \overline{EHC}$, and $\overline{ABH}$ and $\overline{BC}$ are drawn.



If $m\angle FAB = 48°$ and $m\angle ECB = 18°$, what is $m\angle ABC$?

77 In the diagram below, $\triangle ABC$ is reflected over line ℓ to create $\triangle DEF$.



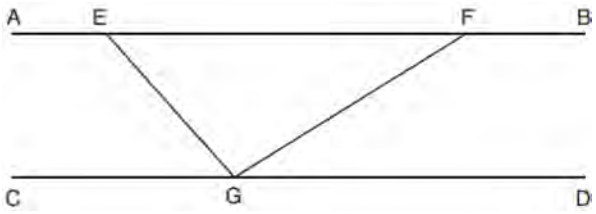
If $m\angle A = 40°$ and $m\angle B = 95°$, what is $m\angle F$?

78 In $\triangle ABC$, $\overline{BD}$ is the perpendicular bisector of $\overline{ADC}$. Based upon this information, which statements below can be proven?

I. $\overline{BD}$ is a median.
II. $\overline{BD}$ bisects $\angle ABC$.
III. $\triangle ABC$ is isosceles.

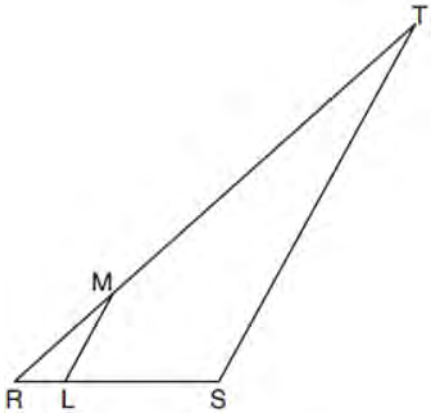
Geometry Regents Bimodal Worksheet # 12 Name: _____
www.jmap.org

79 In the diagram below, $\overline{AEFB} \| \overline{CGD}$, and $\overline{GE}$ and $\overline{GF}$ are drawn.



If m$\angle EFG = 32°$ and m$\angle AEG = 137°$, what is m$\angle EGF$?

80 In the diagram below of $\triangle RST$, L is a point on $\overline{RS}$, and M is a point on $\overline{RT}$, such that $LM \| ST$.



If $RL = 2$, $LS = 6$, $LM = 4$, and $ST = x + 2$, what is the length of $\overline{ST}$?

81 Triangle RJM has an area of 6 and a perimeter of 12. If the triangle is dilated by a scale factor of 3 centered at the origin, what are the area and perimeter of its image, triangle $R'J'M'$?

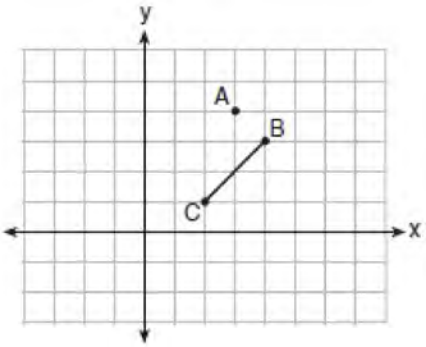
82 The coordinates of the endpoints of $\overline{SC}$ are $S(-7,3)$ and $C(2,-6)$. If point M is on $\overline{SC}$, what are the coordinates of M such that SM:MC is 1:2?

83 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?

84 What is the volume of a hemisphere that has a diameter of 12.6 cm, to the *nearest tenth of a cubic centimeter*?

85 The endpoints of directed line segment PQ have coordinates of $P(-7,-5)$ and $Q(5,3)$. What are the coordinates of point A, on $\overline{PQ}$, that divide $\overline{PQ}$ into a ratio of 1:3?

86 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?

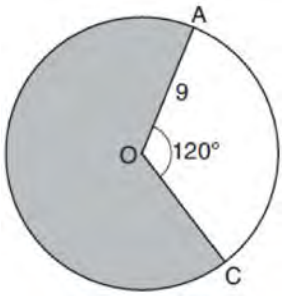
87 A standard-size golf ball has a diameter of 1.680 inches. The material used to make the golf ball weighs 0.6523 ounce per cubic inch. What is the weight, to the *nearest hundredth of an ounce*, of one golf ball?

Geometry Regents Bimodal Worksheet # 13 Name: _____

www.jmap.org

88 The coordinates of the endpoints of $\overline{QS}$ are $Q(-9,8)$ and $S(9,-4)$. Point R is on $\overline{QS}$ such that $QR{:}RS$ is in the ratio of 1:2. What are the coordinates of point R?

89 Circle O with a radius of 9 is drawn below. The measure of central angle AOC is 120°.



What is the area of the shaded sector of circle O?

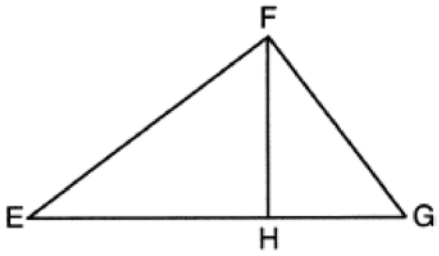
90 To build a handicapped-access ramp, the building code states that for every 1 inch of vertical rise in height, the ramp must extend out 12 inches horizontally, as shown in the diagram below.

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

91 What are the coordinates of the center and the length of the radius of the circle whose equation is $x^2 + y^2 = 8x - 6y + 39$?

92 A cone has a volume of 108π and a base diameter of 12. What is the height of the cone?

93 In the diagram below of right triangle EFG, altitude $\overline{FH}$ intersects hypotenuse $\overline{EG}$ at H.

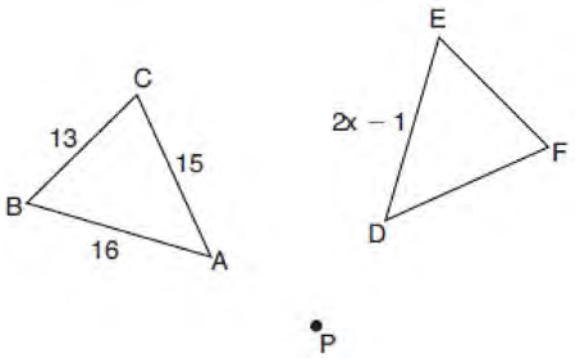


If $FH = 9$ and $EF = 15$, what is EG?

94 The equation of a circle is $x^2 + 8x + y^2 - 12y = 144$. What are the coordinates of the center and the length of the radius of the circle?

95 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?

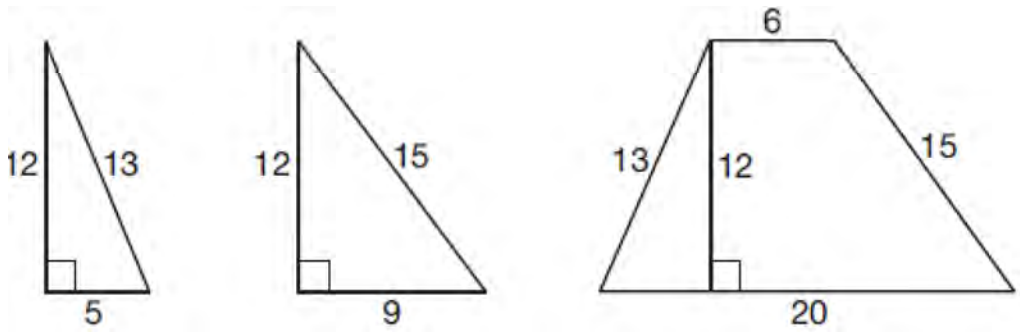
96 In the diagram below, $\triangle ABC$ with sides 13, 15, and 16, is mapped onto $\triangle DEF$ after a clockwise rotation of 90° about point P.



If $DE = 2x - 1$, what is the value of x?

Geometry Regents Bimodal Worksheet # 14 Name: _____
www.jmap.org

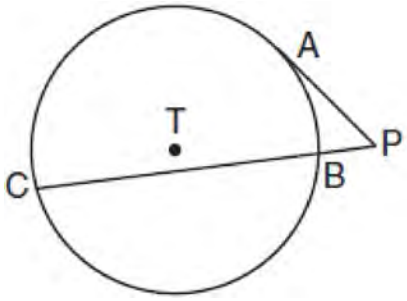
97 Francisco needs the three pieces of glass shown below to complete a stained glass window. The shapes, two triangles and a trapezoid, are measured in inches.



Glass can be purchased in rectangular sheets that are 12 inches wide. What is the minimum length of a sheet of glass, in inches, that Francisco must purchase in order to have enough to complete the window?

98 In a right triangle, the acute angles have the relationship $\sin(2x + 4) = \cos(46)$. What is the value of x?

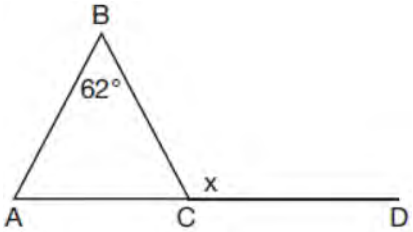
99 In the diagram shown below, $\overline{PA}$ is tangent to circle T at A, and secant $\overline{PBC}$ is drawn where point B is on circle T.



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

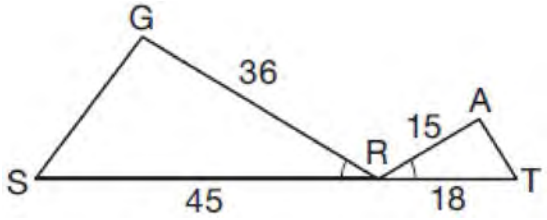
100 In circle O, secants $\overline{ADB}$ and $\overline{AEC}$ are drawn from external point A such that points D, B, E, and C are on circle O. If $AD = 8$, $AE = 6$, and EC is 12 more than BD, the length of $\overline{BD}$ is

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



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

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

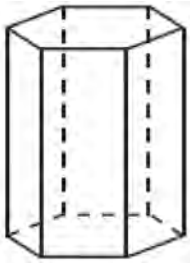


Which triangle similarity statement is correct?

Geometry Regents Bimodal Worksheet # 15 Name: _____

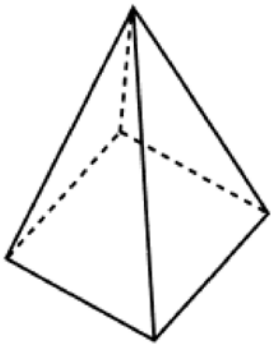
www.jmap.org

103 A right hexagonal prism is shown below. A two-dimensional cross section that is perpendicular to the base is taken from the prism.



Which figure describes the two-dimensional cross section?

104 The square pyramid below models a toy block made of maple wood.

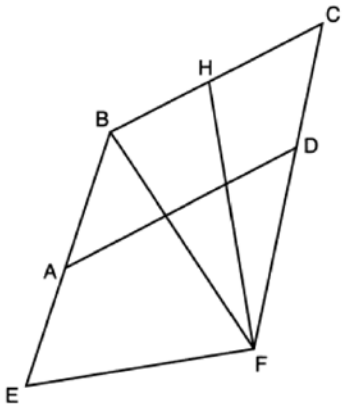


Each side of the base measures 4.5 cm and the height of the pyramid is 10 cm. If the density of maple is 0.676 g/cm^3, what is the mass of the block, to the *nearest tenth of a gram*?

105 After a dilation centered at the origin, the image of $\overline{CD}$ is $\overline{C'D'}$. If the coordinates of the endpoints of these segments are $C(6,-4)$, $D(2,-8)$, $C'(9,-6)$, and $D'(3,-12)$, the scale factor of the dilation is

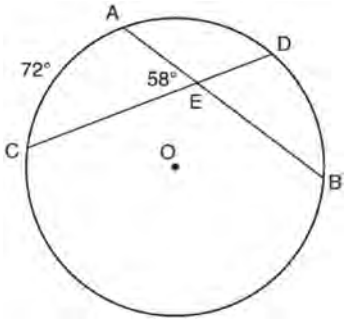
106 What is an equation of a line which passes through $(6,9)$ and is perpendicular to the line whose equation is $4x - 6y = 15$?

107 Quadrilateral $EBCF$ and $\overline{AD}$ are drawn below, such that $ABCD$ is a parallelogram, $\overline{EB} \cong \overline{FB}$, and $\overline{EF} \perp \overline{FH}$.



If $m\angle E = 62°$ and $m\angle C = 51°$, what is $m\angle FHB$?

108 In the diagram below of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E.

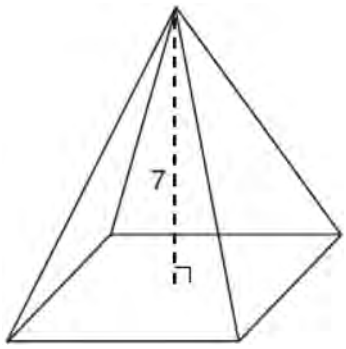


If $m\overset{\frown}{AC} = 72°$ and $m\angle AEC = 58°$, how many degrees are in $m\overset{\frown}{DB}$?

Geometry Regents Bimodal Worksheet # 16 Name: _____
www.jmap.org

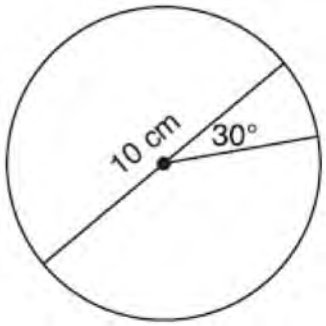
109 A child's tent can be modeled as a pyramid with a square base whose sides measure 60 inches and whose height measures 84 inches. What is the volume of the tent, to the *nearest cubic foot*?

110 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?

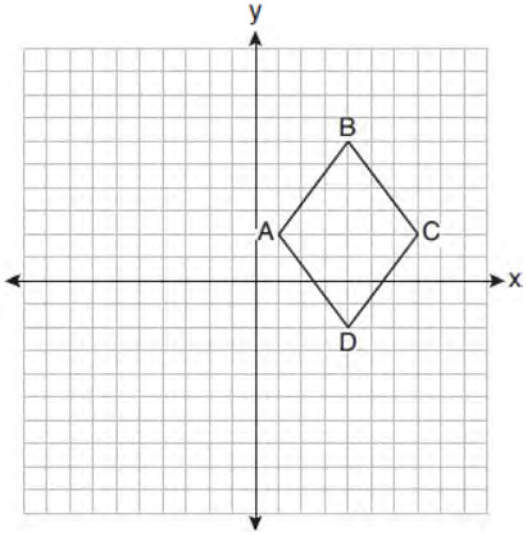
111 A circle with a diameter of 10 cm and a central angle of 30° is drawn below.



What is the area, to the *nearest tenth of a square centimeter*, of the sector formed by the 30° angle?

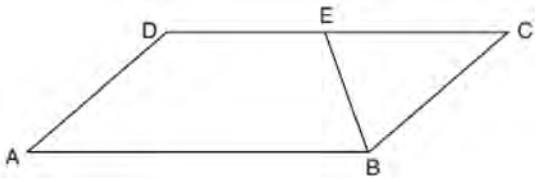
112 What is an equation of the line that passes through the point $(6,8)$ and is perpendicular to a line with equation $y = \frac{3}{2}x + 5$?

113 On the set of axes below, rhombus *ABCD* has vertices whose coordinates are $A(1,2)$, $B(4,6)$, $C(7,2)$, and $D(4,-2)$.



What is the area of rhombus *ABCD*?

114 In parallelogram *ABCD* shown below, $\overline{EB}$ bisects $\angle ABC$.

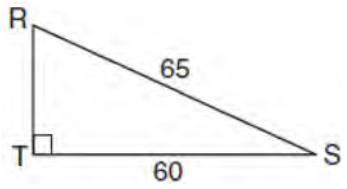


If $m\angle A = 40°$, then $m\angle BED$ is

115 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?

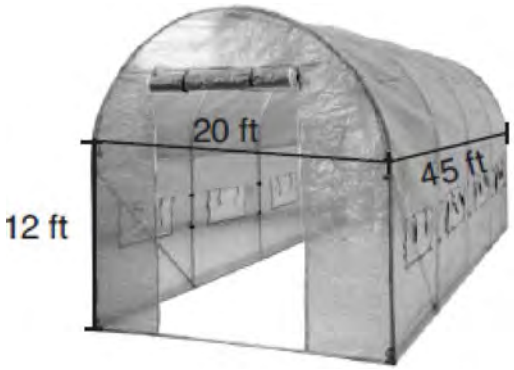
Geometry Regents Bimodal Worksheet # 17 Name: _____
www.jmap.org

116 In the diagram of $\triangle RST$ below, $m\angle T = 90°$, $RS = 65$, and $ST = 60$.



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

117 The greenhouse pictured below can be modeled as a rectangular prism with a half-cylinder on top. The rectangular prism is 20 feet wide, 12 feet high, and 45 feet long. The half-cylinder has a diameter of 20 feet.

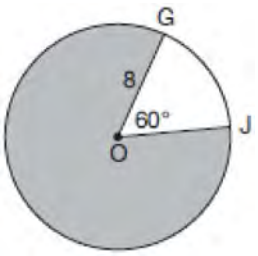


To the *nearest cubic foot*, what is the volume of the greenhouse?

118 Which equation represents a line parallel to the line whose equation is $-2x + 3y = -4$ and passes through the point $(1,3)$?

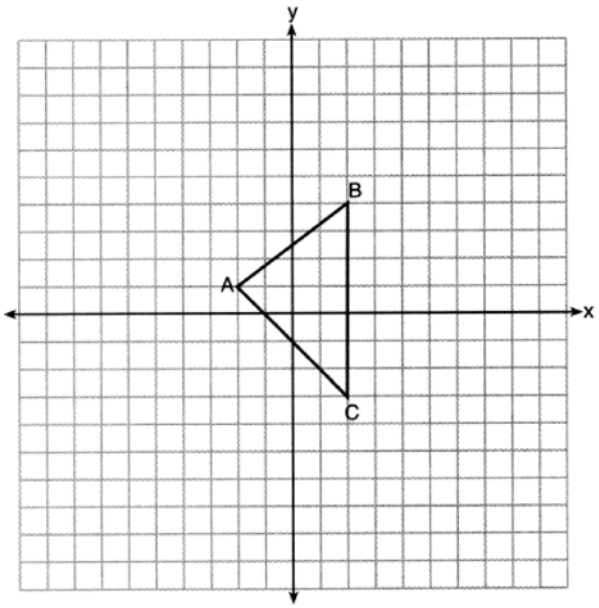
119 In a circle with a diameter of 32, the area of a sector is $\frac{512\pi}{3}$. The measure of the angle of the sector, in radians, is

120 In the diagram below of circle O, $GO = 8$ and $m\angle GOJ = 60°$.



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

121 Triangle $A'B'C'$ is the image of $\triangle ABC$ after a dilation centered at the origin. The coordinates of the vertices of $\triangle ABC$ are $A(-2,1)$, $B(2,4)$, and $C(2,-3)$.

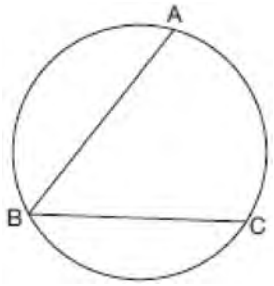


If the coordinates of A' are $(-4,2)$, the coordinates of B' are

122 If the altitudes of a triangle meet at one of the triangle's vertices, then the triangle is

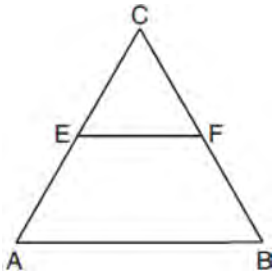
Geometry Regents Bimodal Worksheet # 18 Name: _____
www.jmap.org

123 In the diagram below, $m\overset{\frown}{ABC} = 268°$.



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

124 In the diagram of equilateral triangle ABC shown below, E and F are the midpoints of $\overline{AC}$ and $\overline{BC}$, respectively.



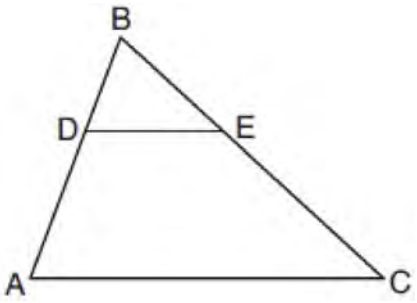
If $EF = 2x + 8$ and $AB = 7x - 2$, what is the perimeter of trapezoid $ABFE$?

125 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?

126 In right triangle ABC, $m\angle A = 32°$, $m\angle B = 90°$, and $AC = 6.2$ cm. What is the length of $\overline{BC}$, to the *nearest tenth of a centimeter*?

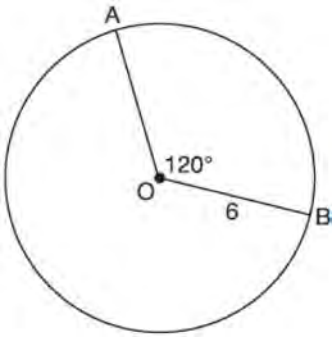
127 Which three-dimensional figure will result when a rectangle 6 inches long and 5 inches wide is continuously rotated about the longer side?

128 In the diagram below of $\triangle ABC$, D is a point on $\overline{BA}$, E is a point on $\overline{BC}$, and $\overline{DE}$ is drawn.



If $BD = 5$, $DA = 12$, and $BE = 7$, what is the length of $\overline{BC}$ so that $\overline{AC} \parallel \overline{DE}$?

129 The diagram below shows circle O with radii $\overline{OA}$ and $\overline{OB}$. The measure of angle AOB is 120°, and the length of a radius is 6 inches.

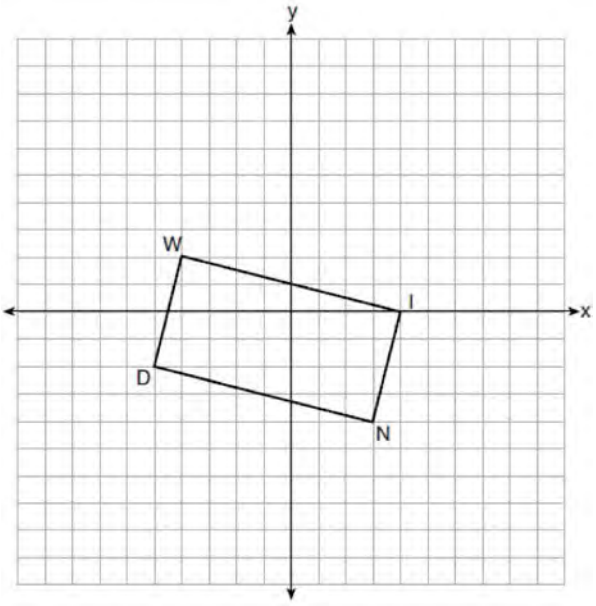


Which expression represents the length of arc AB, in inches?

130 In right triangle ABC, $m\angle C = 90°$ and $AC \neq BC$. Which trigonometric ratio is equivalent to $\sin B$?

Geometry Regents Bimodal Worksheet # 19 Name: _____
www.jmap.org

131 On the set of axes below, rectangle *WIND* has vertices with coordinates $W(-4,2)$, $I(4,0)$, $N(3,-4)$, and $D(-5,-2)$.



What is the area of rectangle *WIND*?

132 A 15-foot ladder leans against a wall and makes an angle of 65° with the ground. What is the horizontal distance from the wall to the base of the ladder, to the *nearest tenth of a foot*?

133 What is the volume, in cubic centimeters, of a right square pyramid with base edges that are 64 cm long and a slant height of 40 cm?

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

135 For the acute angles in a right triangle, $\sin(4x)° = \cos(3x + 13)°$. What is the number of degrees in the measure of the *smaller* angle?

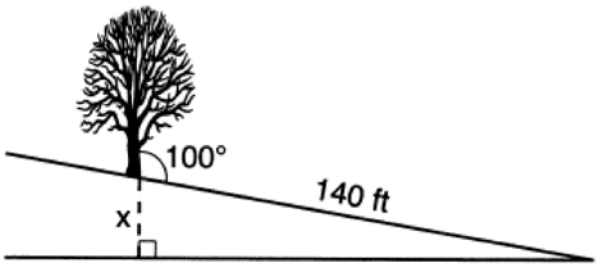
136 Which set of statements would describe a parallelogram that can always be classified as a rhombus?

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.

137 The diagram below shows a tree growing vertically on a hillside. The angle formed by the tree trunk and the hillside is 100°. The distance from the base of the tree to the bottom of the hill is 140 feet.



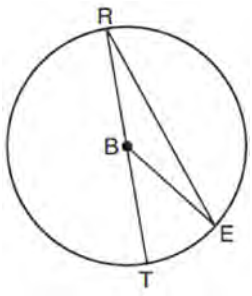
What is the vertical drop, *x*, to the base of the hill, to the *nearest foot*?

138 An ice cream waffle cone can be modeled by a right circular cone with a base diameter of 6.6 centimeters and a volume of 54.45π cubic centimeters. What is the number of centimeters in the height of the waffle cone?

139 If a rectangle is continuously rotated around one of its sides, what is the three-dimensional figure formed?

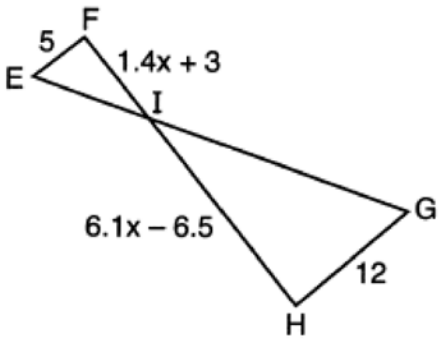
Geometry Regents Bimodal Worksheet # 20 Name: _____
www.jmap.org

140 In circle B below, diameter $\overline{RT}$, radius $\overline{BE}$, and chord $\overline{RE}$ are drawn.



If m$\angle TRE = 15°$ and $BE = 9$, then the area of sector EBR is

141 In the diagram below, $\overline{EF} \parallel \overline{HG}$, $EF = 5$, $HG = 12$, $FI = 1.4x + 3$, and $HI = 6.1x - 6.5$.

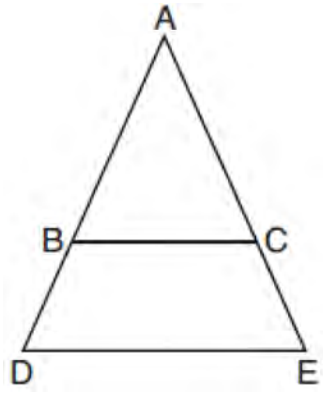


What is the length of $\overline{HI}$?

142 A tent is in the shape of a right pyramid with a square floor. The square floor has side lengths of 8 feet. If the height of the tent at its center is 6 feet, what is the volume of the tent, in cubic feet?

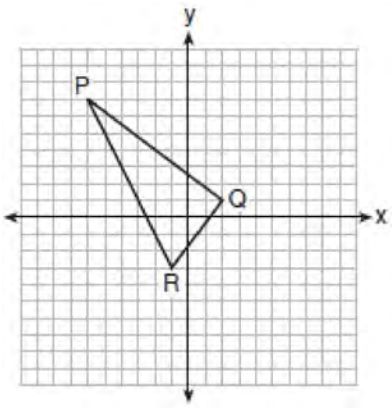
143 Given square $RSTV$, where $RS = 9$ cm. If square $RSTV$ is dilated by a scale factor of 3 about a given center, what is the perimeter, in centimeters, of the image of $RSTV$ after the dilation?

144 In the diagram below, $\overline{BC}$ connects points B and C on the congruent sides of isosceles triangle ADE, such that $\triangle ABC$ is isosceles with vertex angle A.



If $AB = 10$, $BD = 5$, and $DE = 12$, what is the length of $\overline{BC}$?

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



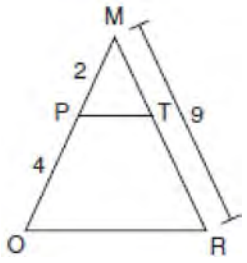
What is the area of $\triangle PQR$?

146 The coordinates of the vertices of parallelogram $CDEH$ are $C(-5,5)$, $D(2,5)$, $E(-1,-1)$, and $H(-8,-1)$. What are the coordinates of P, the point of intersection of diagonals $\overline{CE}$ and $\overline{DH}$?

Geometry Regents Bimodal Worksheet # 21 Name: _____
www.jmap.org

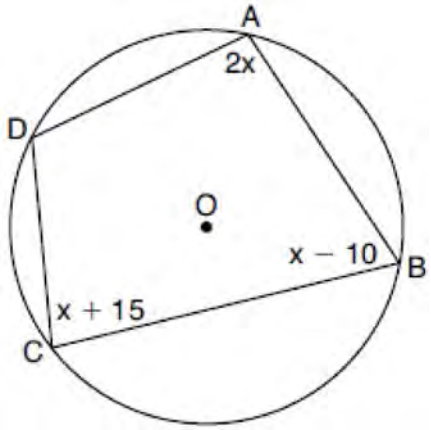
147 The vertices of square *RSTV* have coordinates $R(-1,5)$, $S(-3,1)$, $T(-7,3)$, and $V(-5,7)$. What is the perimeter of *RSTV*?

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



What is the length of $\overline{TR}$?

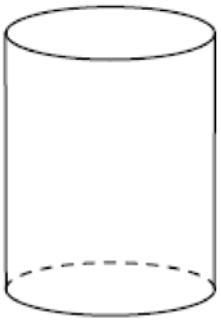
149 In the diagram below, quadrilateral *ABCD* is inscribed in circle *O*, $m\angle A = (2x)°$, $m\angle B = (x - 10)°$, and $m\angle C = (x + 15)°$.



What is $m\angle D$?

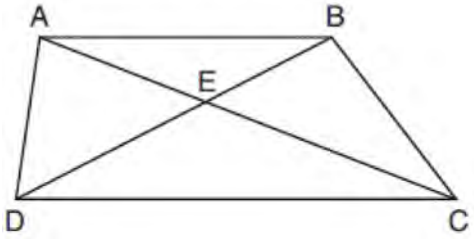
150 Line segment *CD* is the altitude drawn to hypotenuse $\overline{EF}$ in right triangle *ECF*. If $EC = 10$ and $EF = 24$, then, to the *nearest tenth*, *ED* is

151 A plane intersects a cylinder perpendicular to its bases.



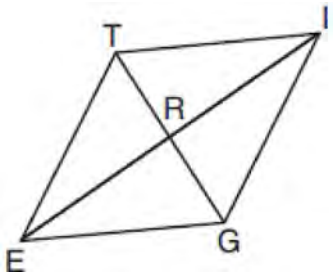
This cross section can be described as a

152 In trapezoid *ABCD* below, $\overline{AB} \parallel \overline{CD}$.



If $AE = 5.2$, $AC = 11.7$, and $CD = 10.5$, what is the length of $\overline{AB}$, to the *nearest tenth*?

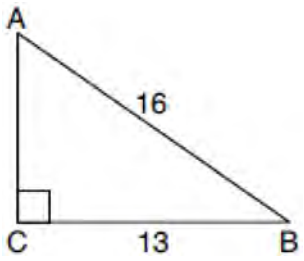
153 In rhombus *TIGE*, diagonals $\overline{TG}$ and $\overline{IE}$ intersect at *R*. The perimeter of *TIGE* is 68, and $TG = 16$.



What is the length of diagonal $\overline{IE}$?

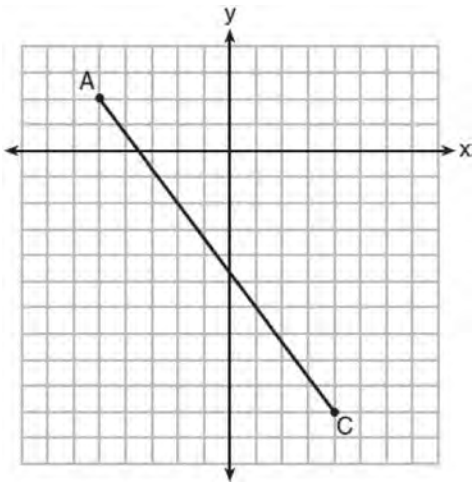
Geometry Regents Bimodal Worksheet # 22 Name: _____
www.jmap.org

154 In the diagram of $\triangle ABC$ below, $m\angle C = 90°$, $CB = 13$, and $AB = 16$.



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

155 In the diagram below, $\overline{AC}$ has endpoints with coordinates $A(-5,2)$ and $C(4,-10)$.



If B is a point on $\overline{AC}$ and $AB:BC = 1:2$, what are the coordinates of B?

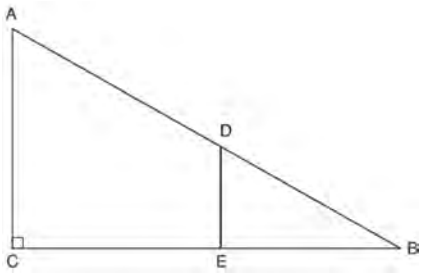
156 A ladder 20 feet long leans against a building, forming an angle of 71° with the level ground. To the *nearest foot*, how high up the wall of the building does the ladder touch the building?

157 Directed line segment DE has endpoints $D(-4,-2)$ and $E(1,8)$. Point F divides $\overline{DE}$ such that $DF:FE$ is 2:3. What are the coordinates of F?

158 The Pyramid of Memphis, in Tennessee, stands 107 yards tall and has a square base whose side is 197 yards long.

What is the volume of the Pyramid of Memphis, to the *nearest cubic yard*?

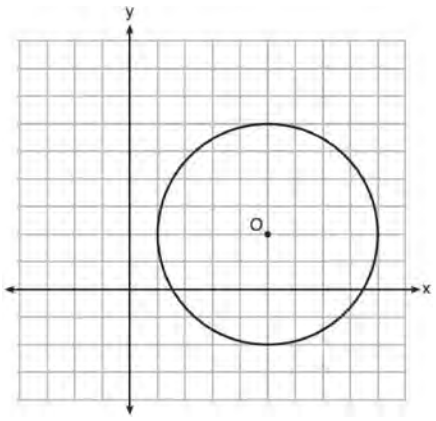
159 In right triangle ABC shown below, point D is on $\overline{AB}$ and point E is on $\overline{CB}$ such that $\overline{AC} \parallel \overline{DE}$.



If $AB = 15$, $BC = 12$, and $EC = 7$, what is the length of $\overline{BD}$?

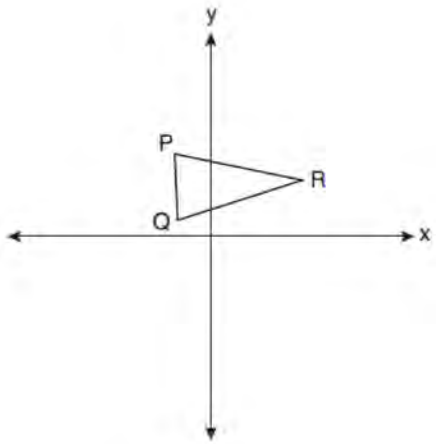
Geometry Regents Bimodal Worksheet # 23 Name: _____
www.jmap.org

160 What is an equation of circle O shown in the graph below?



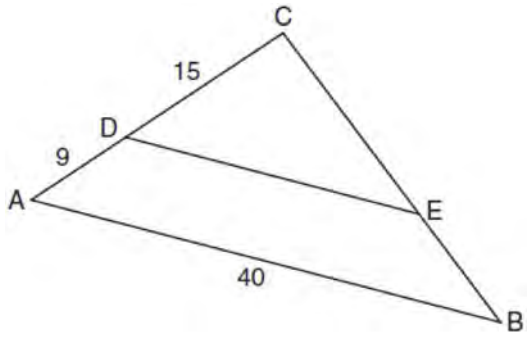
161 The coordinates of the endpoints of $\overline{AB}$ are $A(-8,-2)$ and $B(16,6)$. Point P is on $\overline{AB}$. What are the coordinates of point P, such that $AP:PB$ is 3:5?

162 Triangle PQR is shown on the set of axes below.



Which quadrant will contain point R'', the image of point R, after a 90° clockwise rotation centered at $(0,0)$ followed by a reflection over the x-axis?

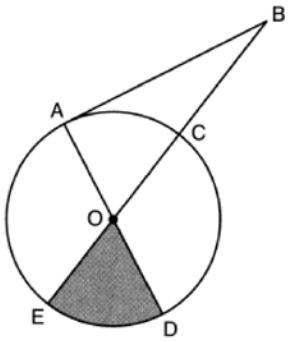
163 In the diagram of $\triangle ABC$ below, $\overline{DE}$ is parallel to $\overline{AB}$, $CD = 15$, $AD = 9$, and $AB = 40$.



The length of $\overline{DE}$ is

164 Point P divides the directed line segment from point $A(-4,-1)$ to point $B(6,4)$ in the ratio 2:3. The coordinates of point P are

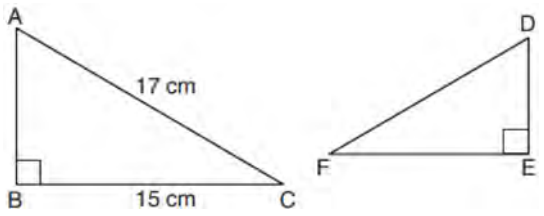
165 In the diagram below of circle O, tangent $\overline{AB}$ is drawn from external point B, and secant $\overline{BCOE}$ and diameter $\overline{AOD}$ are drawn.



If $m\angle OBA = 36°$ and $OC = 10$, what is the area of shaded sector DOE?

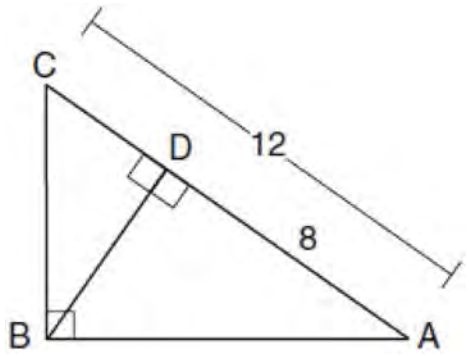
Geometry Regents Bimodal Worksheet # 24 Name: _____
www.jmap.org

166 Kayla was cutting right triangles from wood to use for an art project. Two of the right triangles she cut are shown below.



If $\triangle ABC \sim \triangle DEF$, with right angles B and E, $BC = 15$ cm, and $AC = 17$ cm, what is the measure of $\angle F$, to the *nearest degree*?

167 In the diagram below of $\triangle ABC$, $\angle ABC$ is a right angle, $AC = 12$, $AD = 8$, and altitude $\overline{BD}$ is drawn.

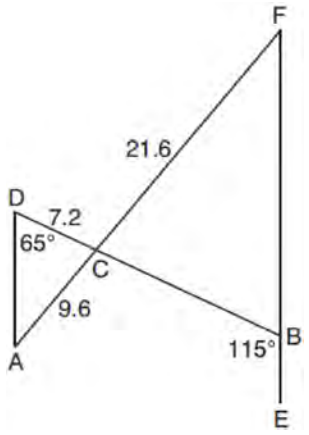


What is the length of $\overline{BC}$?

168 Point M divides $\overline{AB}$ so that $AM:MB = 1:2$. If A has coordinates $(-1,-3)$ and B has coordinates $(8,9)$, the coordinates of M are

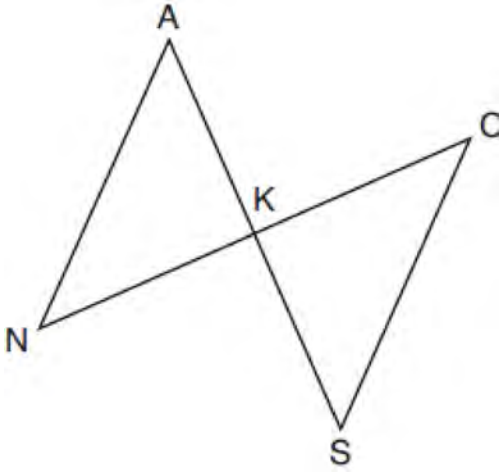
169 Segment JM has endpoints $J(-5,1)$ and $M(7,-9)$. An equation of the perpendicular bisector of $\overline{JM}$ is

170 In the diagram below, $\overline{AF}$, and $\overline{DB}$ intersect at C, and $\overline{AD}$ and $\overline{FBE}$ are drawn such that $m\angle D = 65°$, $m\angle CBE = 115°$, $DC = 7.2$, $AC = 9.6$, and $FC = 21.6$.



What is the length of $\overline{CB}$?

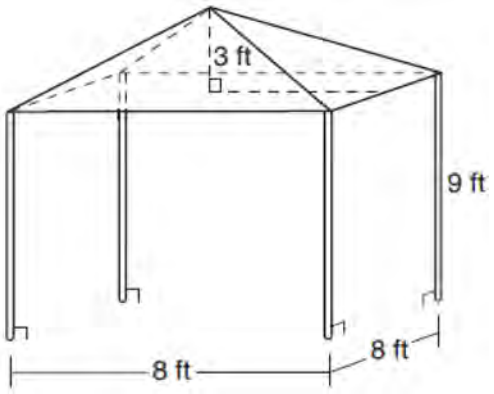
171 In the diagram below, $\overline{AKS}$, $\overline{NKC}$, $\overline{AN}$, and $\overline{SC}$ are drawn such that $\overline{AN} \cong \overline{SC}$.



Which additional statement is sufficient to prove $\triangle KAN \cong \triangle KSC$ by AAS?

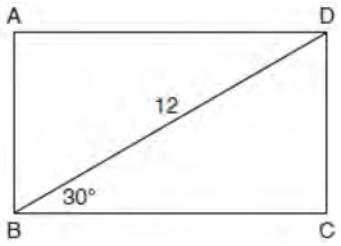
Geometry Regents Bimodal Worksheet # 25 Name: _____
www.jmap.org

172 A vendor is using an 8-ft by 8-ft tent for a craft fair. The legs of the tent are 9 ft tall and the top forms a square pyramid with a height of 3 ft.



What is the volume, in cubic feet, of space the tent occupies?

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

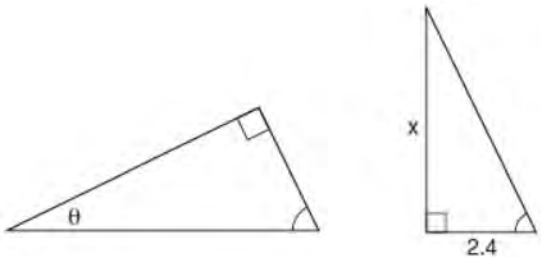


What is the perimeter of rectangle *ABCD*, to the *nearest tenth*?

174 What are the coordinates of point *C* on the directed segment from $A(-8,4)$ to $B(10,-2)$ that partitions the segment such that $AC:CB$ is 2:1?

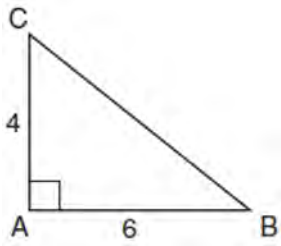
175 The equation of a circle is $x^2 + y^2 - 12y + 20 = 0$. What are the coordinates of the center and the length of the radius of the circle?

176 The diagram below shows two similar triangles.



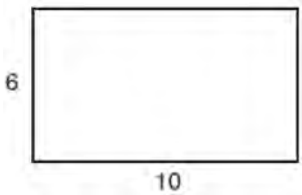
If $\tan\theta = \frac{3}{7}$, what is the value of *x*, to the *nearest tenth*?

177 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 $\overline{AB}$?

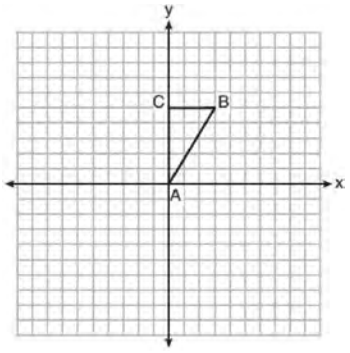
178 A rectangle whose length and width are 10 and 6, respectively, is shown below. The rectangle is continuously rotated around a straight line to form an object whose volume is 150π.



Which line could the rectangle be rotated around?

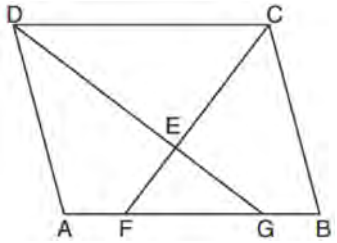
Geometry Regents Bimodal Worksheet # 26 Name: _____
www.jmap.org

179 Triangle ABC, with vertices at $A(0,0)$, $B(3,5)$, and $C(0,5)$, is graphed on the set of axes shown below.



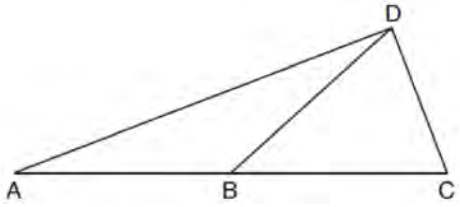
Which figure is formed when $\triangle ABC$ is rotated continuously about $\overline{BC}$?

180 In the diagram below of parallelogram $ABCD$, $\overline{AFGB}$, $\overline{CF}$ bisects $\angle DCB$, $\overline{DG}$ bisects $\angle ADC$, and $\overline{CF}$ and $\overline{DG}$ intersect at E.



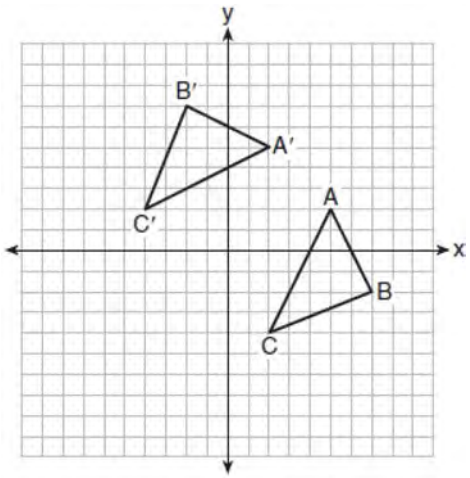
If $m\angle B = 75°$, then the measure of $\angle EFA$ is

181 In the diagram below of $\triangle ACD$, $\overline{DB}$ is a median to $\overline{AC}$, and $\overline{AB} \cong \overline{DB}$.



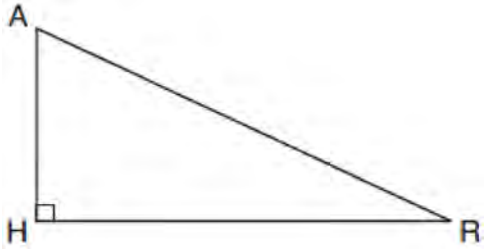
If $m\angle DAB = 32°$, what is $m\angle BDC$?

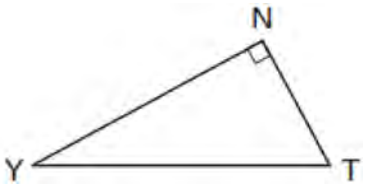
182 The graph below shows two congruent triangles, ABC and $A'B'C'$.



Which rigid motion would map $\triangle ABC$ onto $\triangle A'B'C'$?

183 In the diagram below of $\triangle HAR$ and $\triangle NTY$, angles H and N are right angles, and $\triangle HAR \sim \triangle NTY$.

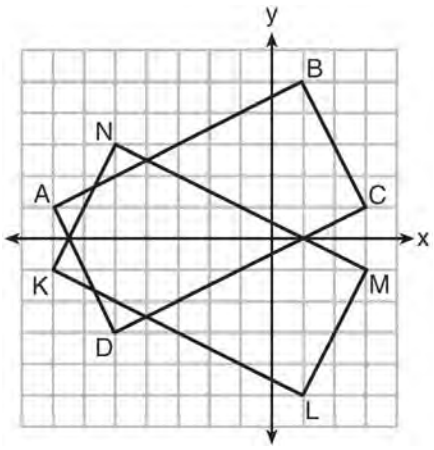




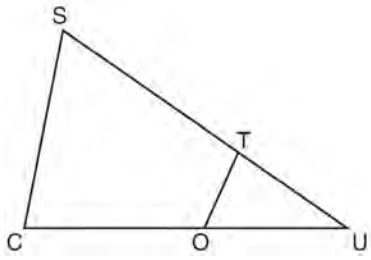
If $AR = 13$ and $HR = 12$, what is the measure of angle Y, to the *nearest degree*?

Geometry Regents Bimodal Worksheets

184 On the set of axes below, rectangle *ABCD* can be proven congruent to rectangle *KLMN* using which transformation?



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

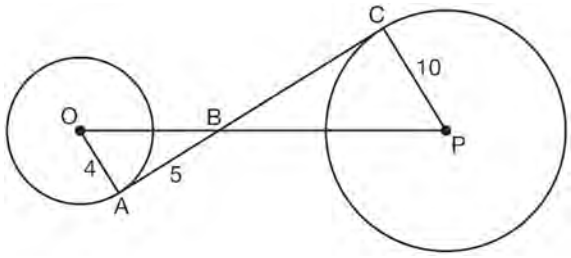


If $TU = 4$, $OU = 5$, and $OC = 7$, what is the length of $\overline{ST}$?

186 What are the coordinates of the center and length of the radius of the circle whose equation is $x^2 + y^2 + 2x - 16y + 49 = 0$?

187 The area of $\triangle TAP$ is 36 cm^2. A second triangle, *JOE*, is formed by connecting the midpoints of each side of $\triangle TAP$. What is the area of *JOE*, in square centimeters?

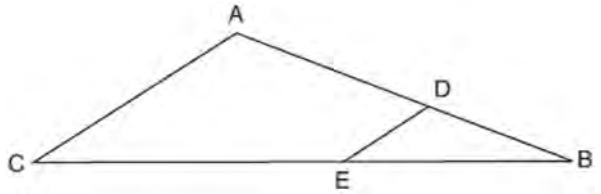
188 In the diagram shown below, $\overline{AC}$ is tangent to circle *O* at *A* and to circle *P* at *C*, $\overline{OP}$ intersects $\overline{AC}$ at *B*, $OA = 4$, $AB = 5$, and $PC = 10$.



What is the length of $\overline{BC}$?

189 A regular pyramid with a square base is made of solid glass. It has a base area of 36 cm^2 and a height of 10 cm. If the density of glass is 2.7 grams per cubic centimeter, the mass of the pyramid, in grams, is

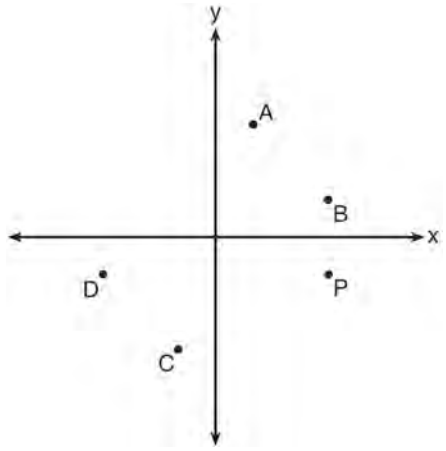
190 In the diagram of $\triangle ABC$ below, points *D* and *E* are on sides $\overline{AB}$ and $\overline{CB}$ respectively, such that $\overline{DE} \parallel \overline{AC}$.



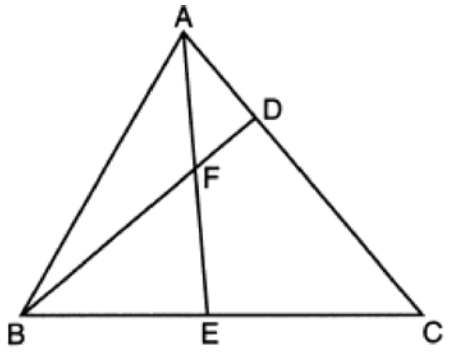
If *EB* is 3 more than *DB*, $AB = 14$, and $CB = 21$, what is the length of $\overline{AD}$?

Geometry Regents Bimodal Worksheet # 28 Name: _____
www.jmap.org

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



192 In the diagram of $\triangle ABC$ below, $\overline{AE}$ bisects angle *BAC*, and altitude $\overline{BD}$ is drawn.



If $m\angle C = 50°$ and $m\angle ABC = 60°$, $m\angle FEB$ is

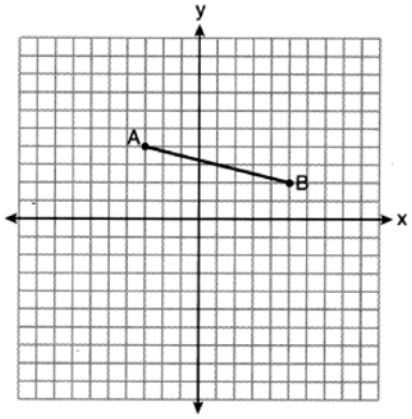
193 What are the coordinates of the center and length of the radius of the circle whose equation is $x^2 + 6x + y^2 - 4y = 23$?

194 If the circumference of a standard lacrosse ball is 19.9 cm, what is the volume of this ball, to the *nearest cubic centimeter*?

195 The line whose equation is $6x + 3y = 3$ is dilated by a scale factor of 2 centered at the point $(0,0)$. An equation of its image is

196 In right triangle *ABC*, $m\angle A = 90°$, $m\angle B = 18°$, and $AC = 8$. To the *nearest tenth*, the length of $\overline{BC}$ is

197 On the set of axes below, the endpoints of $\overline{AB}$ have coordinates $A(-3,4)$ and $B(5,2)$.

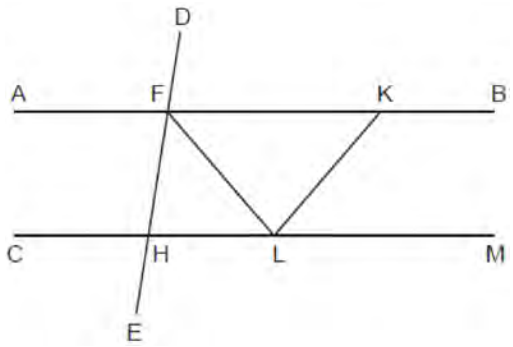


If $\overline{AB}$ is dilated by a scale factor of 2 centered at $(3,5)$, what are the coordinates of the endpoints of its image, $\overline{A'B'}$?

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

Geometry Regents Bimodal Worksheet # 29 Name: _____
www.jmap.org

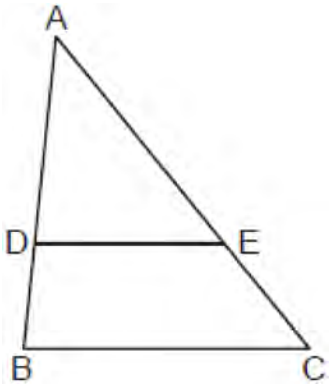
199 In the diagram below, $\overline{AFKB} \parallel \overline{CHLM}$, $\overline{FH} \cong \overline{LH}$, $\overline{FL} \cong \overline{KL}$, and $\overline{LF}$ bisects $\angle HFK$.



Which statement is always true?

200 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?

201 In triangle ABC below, D is a point on $\overline{AB}$ and E is a point on $\overline{AC}$, such that $\overline{DE} \parallel \overline{BC}$.



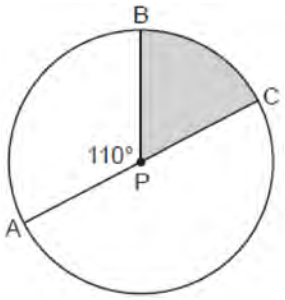
If $AD = 12$, $DB = 8$, and $EC = 10$, what is the length of $\overline{AC}$?

202 Rectangle $ABCD$ has two vertices at coordinates $A(-1,-3)$ and $B(6,5)$. The slope of $\overline{BC}$ is

203 Zach placed the foot of an extension ladder 8 feet from the base of the house and extended the ladder 25 feet to reach the house. To the *nearest degree*, what is the measure of the angle the ladder makes with the ground?

204 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

205 In circle P below, diameter $\overline{AC}$ and radius $\overline{BP}$ are drawn such that $m\angle APB = 110°$.



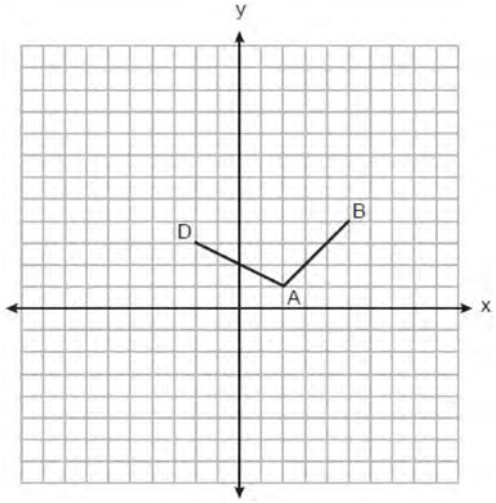
If $AC = 12$, what is the area of shaded sector BPC?

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

207 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?

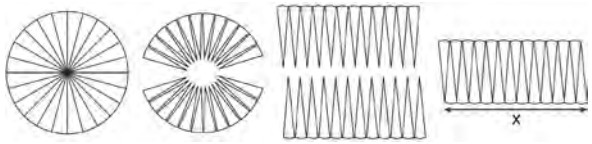
Geometry Regents Bimodal Worksheet # 30 Name: _____
www.jmap.org

208 On the set of axes below, the coordinates of three vertices of trapezoid *ABCD* are $A(2,1)$, $B(5,4)$, and $D(-2,3)$.



Which point could be vertex *C*?

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



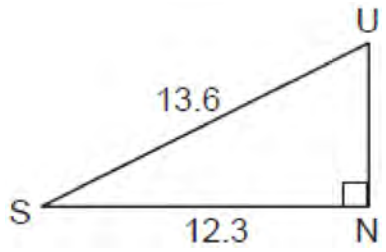
To the *nearest integer*, the value of *x* is

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

211 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 *EM*?

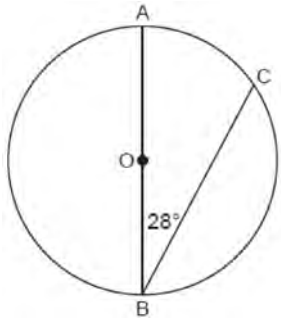
212 The endpoints of $\overline{AB}$ are $A(-5,3)$ and $B(7,-5)$. Point *P* is on $\overline{AB}$ such that $AP:PB = 3:1$. What are the coordinates of point *P*?

213 In the diagram below of right triangle *SUN*, where $\angle N$ is a right angle, $SU = 13.6$ and $SN = 12.3$.



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

214 In the diagram below of Circle *O*, diameter $\overline{AOB}$ and chord $\overline{CB}$ are drawn, and $m\angle B = 28°$.



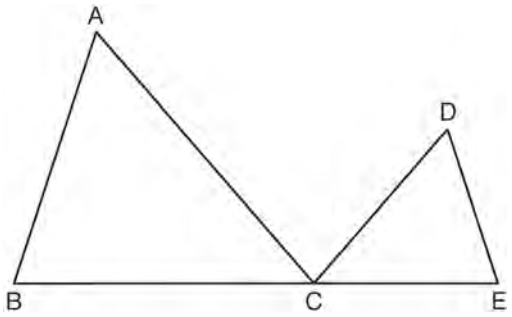
What is $m\overset{\frown}{BC}$?

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

Geometry Regents Bimodal Worksheet # 31 Name: _____
www.jmap.org

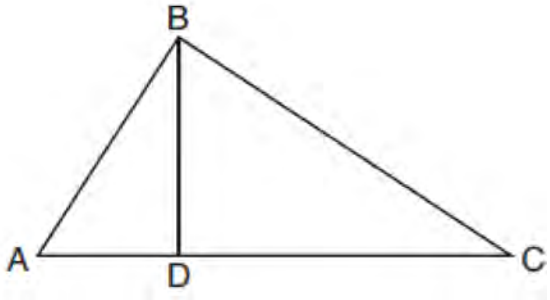
216 A fish tank in the shape of a rectangular prism has dimensions of 14 inches, 16 inches, and 10 inches. The tank contains 1680 cubic inches of water. What percent of the fish tank is empty?

217 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 $\triangle DEC$?

218 In the diagram below of right triangle ABC, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$.

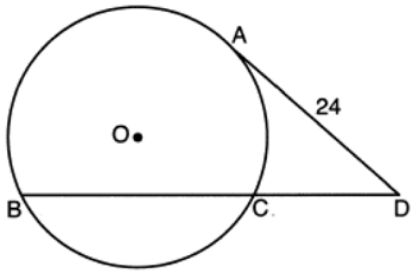


If $BD = 4$, $AD = x - 6$, and $CD = x$, what is the length of $\overline{CD}$?

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

220 A circle is continuously rotated about its diameter. Which three-dimensional object will be formed?

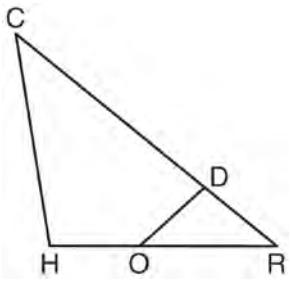
221 Circle O is drawn below with secant $\overline{BCD}$. The length of tangent $\overline{AD}$ is 24.



If the ratio of $DC:CB$ is 4:5, what is the length of $\overline{CB}$?

222 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

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

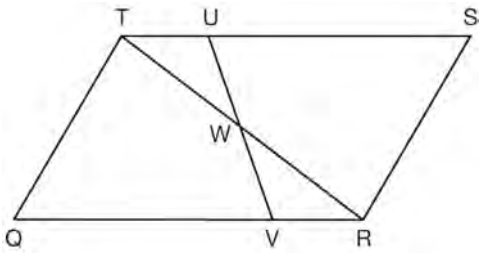


If $RD = 4$, $RO = 6$, and $OH = 4$, what is the length of $\overline{CD}$?

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

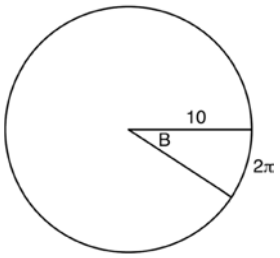
Geometry Regents Bimodal Worksheet # 32 Name: _____
www.jmap.org

225 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 $m\angle S = 60°$, $m\angle SRT = 83°$, and $m\angle TWU = 35°$, what is $m\angle WVQ$?

226 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?

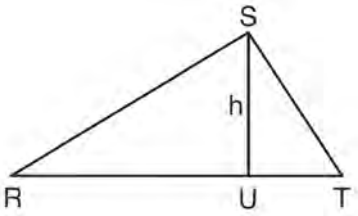
227 Seawater contains approximately 1.2 ounces of salt per liter on average. How many gallons of seawater, to the *nearest tenth of a gallon*, would contain 1 pound of salt?

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

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

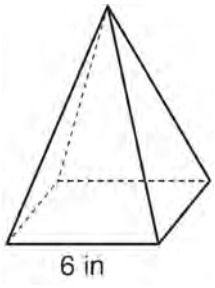
230 A 20-foot support post leans against a wall, making a 70° angle with the ground. To the *nearest tenth of a foot*, how far up the wall will the support post reach?

231 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?

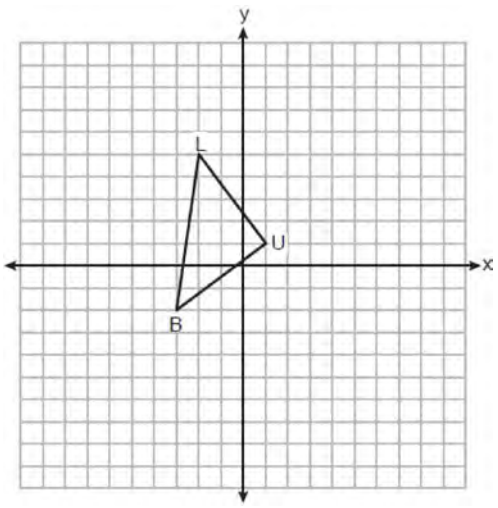
232 As shown in the diagram below, a regular pyramid has a square base whose side measures 6 inches.



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

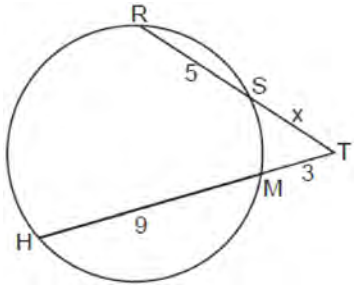
Geometry Regents Bimodal Worksheet # 33 Name: _____
www.jmap.org

233 On the set of axes below, $\triangle BLU$ has vertices with coordinates $B(-3,-2)$, $L(-2,5)$, and $U(1,1)$.



What is the area of $\triangle BLU$?

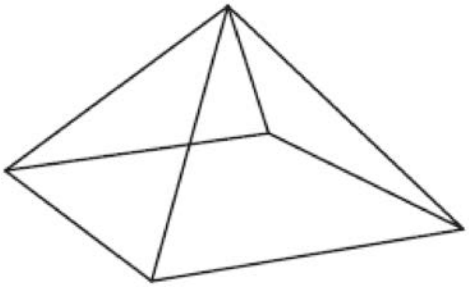
234 In the circle below, secants $\overline{TSR}$ and $\overline{TMH}$ intersect at T, $SR = 5$, $HM = 9$, $TM = 3$, and $TS = x$.



Which equation could be used to find the value of x?

235 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*?

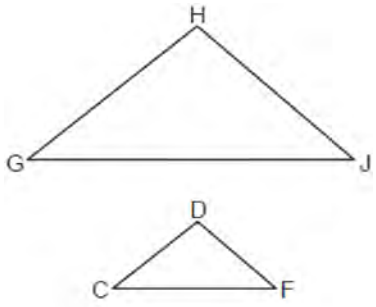
236 A square pyramid is intersected by a plane passing through the vertex and perpendicular to the base.



Which two-dimensional shape describes this cross section?

237 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 $\overline{AB}$?

238 In the diagram below, $\triangle GHJ$ is dilated by a scale factor of $\frac{1}{2}$ centered at point B to map onto $\triangle CDF$.

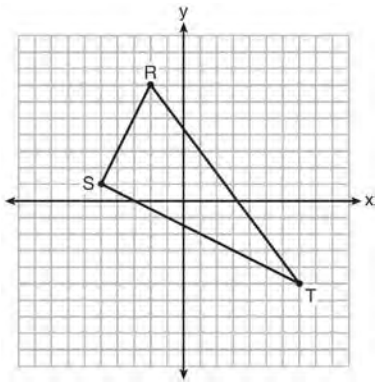


If $m\angle DFC = 40°$, what is $m\angle HJG$?

Geometry Regents Bimodal Worksheet # 34 Name: _____
www.jmap.org

239 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*?

240 Triangle *RST* is graphed on the set of axes below.



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

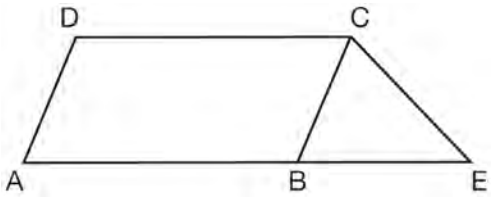
241 If the rectangle below is continuously rotated about side *w*, which solid figure is formed?

242 In $\triangle ABC$, side $\overline{BC}$ is extended through *C* to *D*. If $m\angle A = 30°$ and $m\angle ACD = 110°$, what is the longest side of $\triangle ABC$?

243 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?

244 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*?

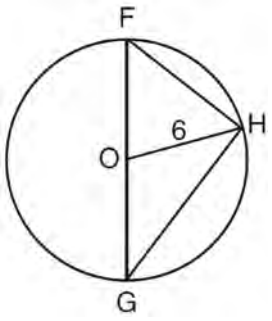
245 In the diagram below, *ABCD* is a parallelogram, $\overline{AB}$ is extended through *B* to *E*, and $\overline{CE}$ is drawn.



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

246 A gardener wants to buy enough mulch to cover a rectangular garden that is 3 feet by 10 feet. One bag contains 2 cubic feet of mulch and costs $3.66. How much will the minimum number of bags cost to cover the garden with mulch 3 inches deep?

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

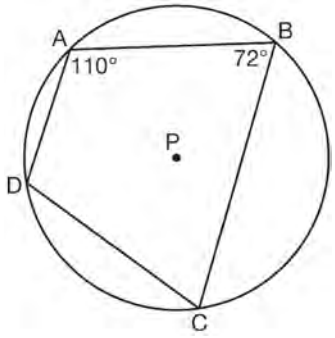


What is the area of the sector formed by angle *FOH*?

Geometry Regents Bimodal Worksheet # 35 Name: _____
www.jmap.org

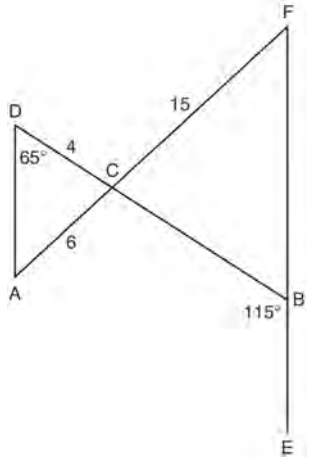
248 The cross section of a regular pyramid contains the altitude of the pyramid. The shape of this cross section is a

249 In the diagram below, quadrilateral *ABCD* is inscribed in circle *P*.



What is m∠*ADC*?

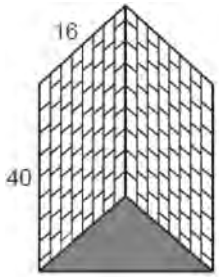
250 In the diagram below, $\overline{DB}$ and $\overline{AF}$ intersect at point *C*, and $\overline{AD}$ and $\overline{FBE}$ are drawn.

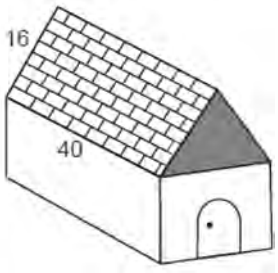


If *AC* = 6, *DC* = 4, *FC* = 15, m∠*D* = 65°, and m∠*CBE* = 115°, what is the length of $\overline{CB}$?

251 Right triangle *ACT* has m∠*A* = 90°. Which expression is always equivalent to cos *T*?

252 The surface of the roof of a house is modeled by two congruent rectangles with dimensions 40 feet by 16 feet, as shown below.





Roofing shingles are sold in bundles. Each bundle covers $33\frac{1}{3}$ square feet. What is the minimum number of bundles that must be purchased to completely cover both rectangular sides of the roof?

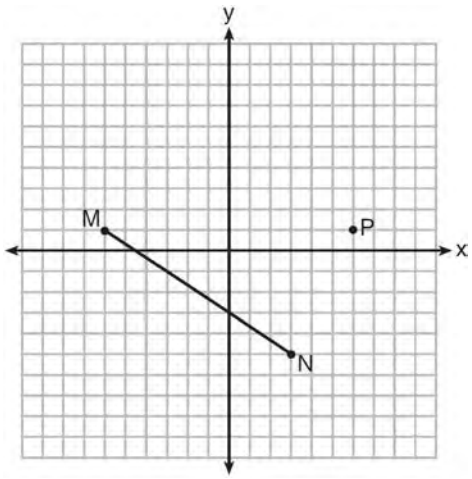
253 A company is creating an object from a wooden cube with an edge length of 8.5 cm. A right circular cone with a diameter of 8 cm and an altitude of 8 cm will be cut out of the cube. Which expression represents the volume of the remaining wood?

254 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?

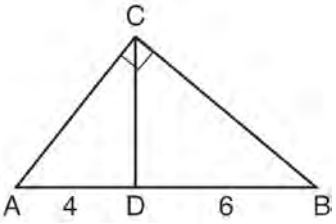
255 Molly wishes to make a lawn ornament in the form of a solid sphere. The clay being used to make the sphere weighs .075 pound per cubic inch. If the sphere's radius is 4 inches, what is the weight of the sphere, to the *nearest pound*?

Geometry Regents Bimodal Worksheet # 36 Name: _____
www.jmap.org

256 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 $\overline{MN}$?



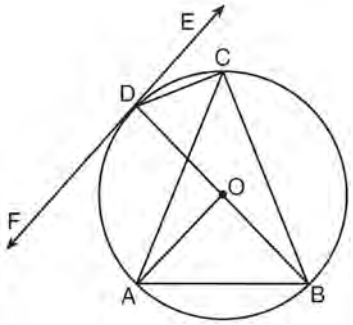
257 In the diagram of right triangle ABC, $\overline{CD}$ intersects hypotenuse $\overline{AB}$ at D.



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

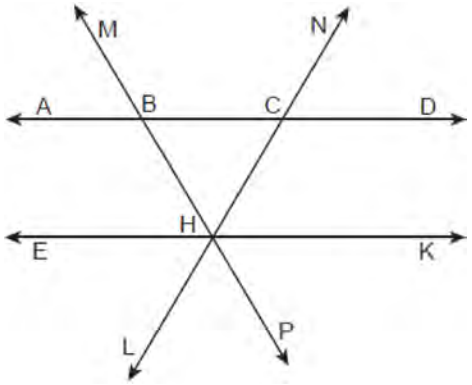
258 The diameter of a basketball is approximately 9.5 inches and the diameter of a tennis ball is approximately 2.5 inches. The volume of the basketball is about how many times greater than the volume of the tennis ball?

259 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?

260 In the diagram below, $\overleftrightarrow{ABCD} \parallel \overleftrightarrow{EHK}$, and $\overleftrightarrow{MBHP}$ and $\overleftrightarrow{NCHL}$ are drawn such that $\overline{BC} \cong \overline{BH}$.



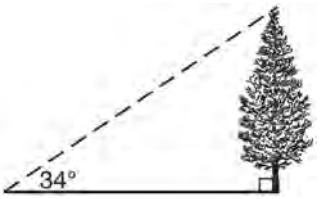
If $m\angle NCD = 62°$, what is $m\angle PHK$?

261 A plane intersects a sphere. Which two-dimensional shape is formed by this cross section?

Geometry Regents Bimodal Worksheet # 37 Name: _____
www.jmap.org

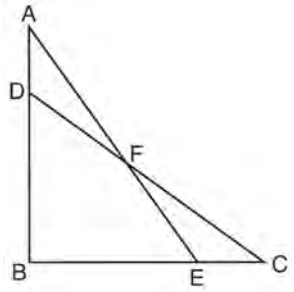
262 The measure of one of the base angles of an isosceles triangle is 42°. The measure of an exterior angle at the vertex of the triangle is

263 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*?

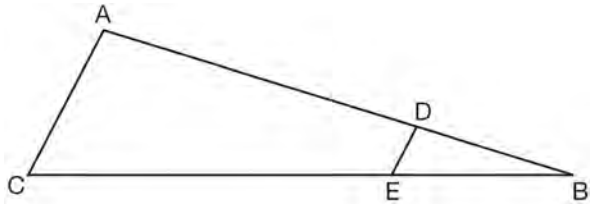
264 Given: $\triangle ABE$ and $\triangle CBD$ shown in the diagram below with $\overline{DB} \cong \overline{BE}$



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

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

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

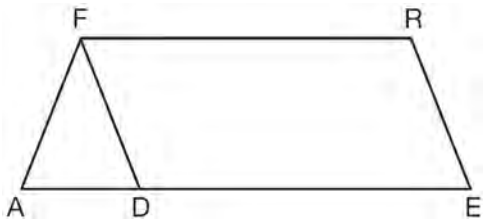


If $AD = 24$, $DB = 12$, and $DE = 4$, what is the length of $\overline{AC}$?

267 The rectangle drawn below is continuously rotated about side S.

Which three-dimensional figure is formed by this rotation?

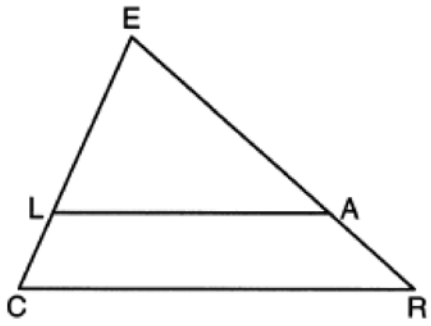
268 In the diagram of parallelogram $FRED$ shown below, $\overline{ED}$ is extended to A, and $\overline{AF}$ is drawn such that $\overline{AF} \cong \overline{DF}$.



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

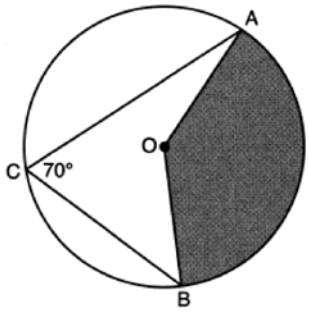
Geometry Regents Bimodal Worksheet # 38 Name: _____
www.jmap.org

269 In the diagram below of $\triangle CER$, $\overline{LA} \parallel \overline{CR}$.



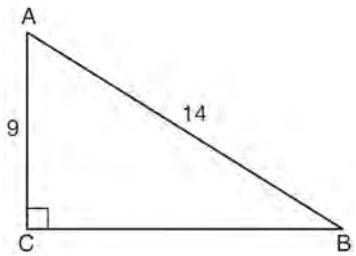
If $CL = 3.5$, $LE = 7.5$, and $EA = 9.5$, what is the length of $\overline{AR}$, to the *nearest tenth*?

270 In the diagram below of circle O, $\overline{AC}$ and $\overline{BC}$ are chords, and $m\angle ACB = 70°$.



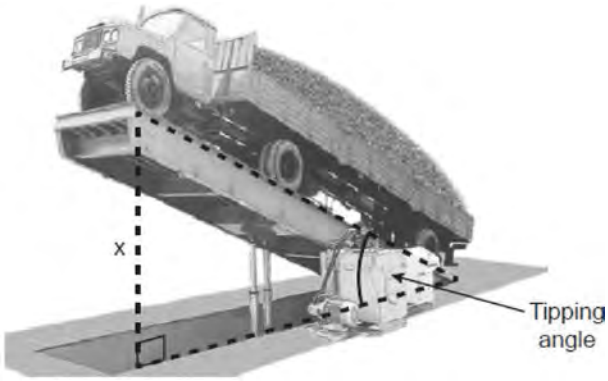
If $OA = 9$, the area of the shaded sector AOB is

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



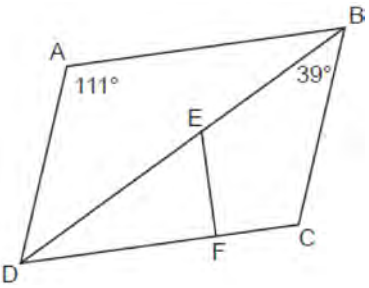
What is the measure of $\angle A$, to the *nearest degree*?

272 A tipping platform is a ramp used to unload trucks, as shown in the diagram below.



The truck is on a 75-foot-long ramp. The ramp is tipped at an angle of 30°. What is the height of the upper end of the ramp, x, to the *nearest tenth of a foot*?

273 In the diagram below of parallelogram $ABCD$, diagonal $\overline{BED}$ and $\overline{EF}$ are drawn, $\overline{EF} \perp \overline{DFC}$, $m\angle DAB = 111°$, and $m\angle DBC = 39°$.

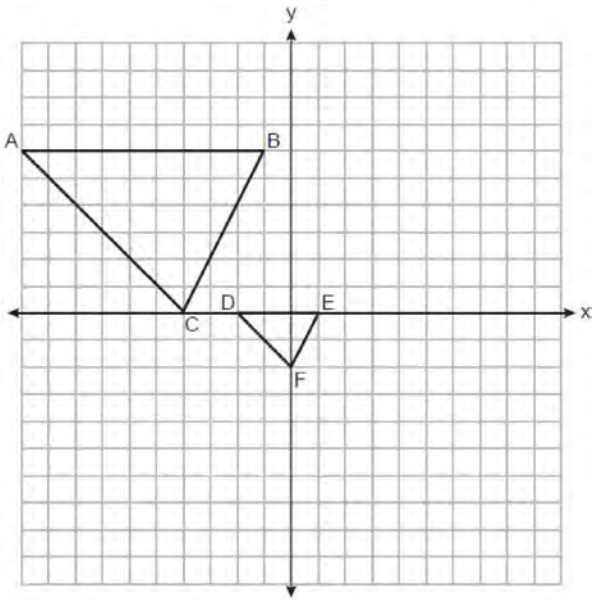


What is $m\angle DEF$?

274 The equation of line t is $3x - y = 6$. Line m is the image of line t after a dilation with a scale factor of $\frac{1}{2}$ centered at the origin. What is an equation of the line m?

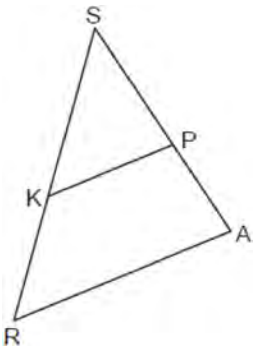
Geometry Regents Bimodal Worksheet # 39 Name: _____
www.jmap.org

275 On the set of axes below, $\triangle DEF$ is the image of $\triangle ABC$ after a dilation of scale factor $\frac{1}{3}$.



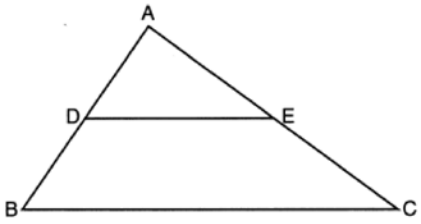
The center of dilation is at

276 In the diagram of $\triangle SRA$ below, $\overline{KP}$ is drawn such that $\angle SKP \cong \angle SRA$.



If $SK = 10$, $SP = 8$, and $PA = 6$, what is the length of $\overline{KR}$, to the *nearest tenth*?

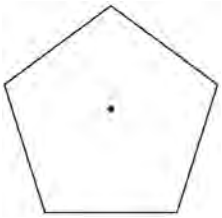
277 In the diagram below of $\triangle ABC$, D and E are the midpoints of $\overline{AB}$ and $\overline{AC}$, respectively, and $\overline{DE}$ is drawn.



I. AA similarity
II. SSS similarity
III. SAS similarity

Which methods could be used to prove $\triangle ABC \sim \triangle ADE$?

278 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

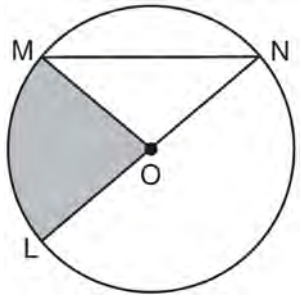
279 What is the area of a sector of a circle with a radius of 8 inches and formed by a central angle that measures 60°?

280 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?

Geometry Regents Bimodal Worksheet # 40 Name: _____
www.jmap.org

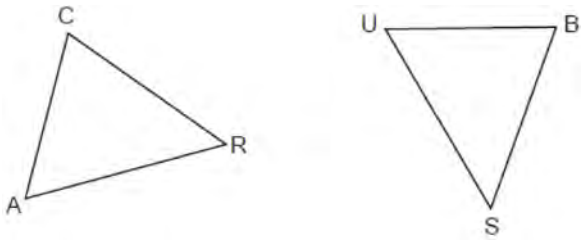
281 What is the volume of a right circular cone that has a height of 7.2 centimeters and a radius of 2.5 centimeters, to the *nearest tenth of a cubic centimeter*?

282 In the diagram below of circle O, the area of the shaded sector LOM is 2π cm^2.



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

283 In the diagram below, $\triangle CAR$ is mapped onto $\triangle BUS$ after a sequence of rigid motions.

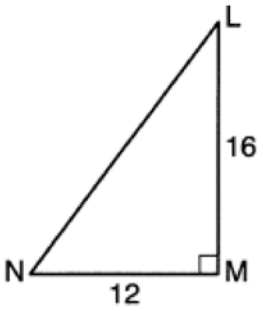


If $AR = 3x + 4$, $RC = 5x - 10$, $CA = 2x + 6$, and $SB = 4x - 4$, what is the length of $\overline{SB}$?

284 An equation of the line perpendicular to the line whose equation is $4x - 5y = 6$ and passes through the point $(-2, 3)$ is

285 What is the image of $(4, 3)$ after a reflection over the line $y = 1$?

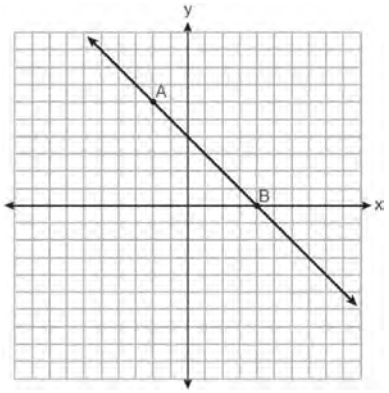
286 In right triangle LMN shown below, $m\angle M = 90°$, $MN = 12$, and $LM = 16$.



The ratio of $\cos N$ is

287 A sandbox in the shape of a rectangular prism has a length of 43 inches and a width of 30 inches. Jack uses bags of sand to fill the sandbox to a depth of 9 inches. Each bag of sand has a volume of 0.5 cubic foot. What is the minimum number of bags of sand that must be purchased to fill the sandbox?

288 On the set of axes below, $\overleftrightarrow{AB}$ is drawn and passes through $A(-2, 6)$ and $B(4, 0)$.



If $\overleftrightarrow{CD}$ is the image of $\overleftrightarrow{AB}$ after a dilation with a scale factor of $\frac{1}{2}$ centered at the origin, which equation represents $\overleftrightarrow{CD}$?

Geometry Regents Bimodal Worksheet # 41 Name: _____
www.jmap.org

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

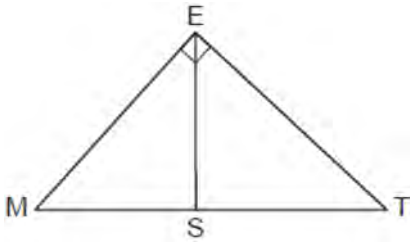
In which step did he make an error in his work?

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

291 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*?

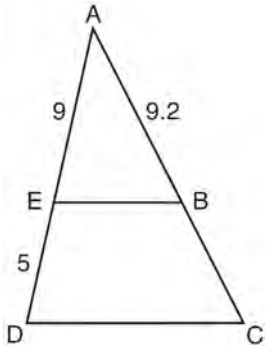
292 A gallon of paint will cover approximately 450 square feet. An artist wants to paint all the outside surfaces of a cube measuring 12 feet on each edge. What is the *least* number of gallons of paint he must buy to paint the cube?

293 In the diagram below of right triangle MET, altitude $\overline{ES}$ is drawn to hypotenuse $\overline{MT}$.



If $ME = 6$ and $SM = 4$, what is MT?

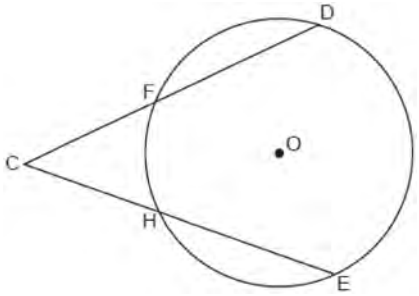
294 In the diagram of $\triangle ADC$ below, $\overline{EB} \parallel \overline{DC}$, $AE = 9$, $ED = 5$, and $AB = 9.2$.



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

295 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*?

296 In the diagram below of circle O, secants $\overline{CFD}$ and $\overline{CHE}$ are drawn from external point C.



If $m\overset{\frown}{DE} = 136°$ and $m\angle C = 44°$, then $m\overset{\frown}{FH}$ is

297 The endpoints of one side of a regular pentagon are $(-1,4)$ and $(2,3)$. What is the perimeter of the pentagon?

Geometry Regents Bimodal Worksheet # 42 Name: _____
www.jmap.org

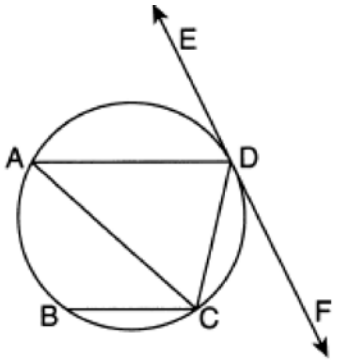
298 A cylindrical pool has a diameter of 16 feet and height of 4 feet. The pool is filled to $\frac{1}{2}$ foot below the top. How much water does the pool contain, to the *nearest gallon*? [1 ft^3 = 7.48 gallons]

299 A right circular cylinder has a diameter of 8 inches and a height of 12 inches. Which two-dimensional figure shows a cross section that is perpendicular to the base and passes through the center of the base?

300 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?

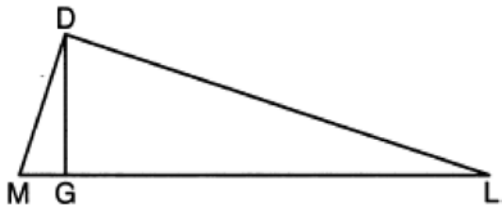
301 The density of the American white oak tree is 752 kilograms per cubic meter. If the trunk of an American white oak tree has a circumference of 4.5 meters and the height of the trunk is 8 meters, what is the approximate number of kilograms of the trunk?

302 In the circle below, $\overline{AD}$, $\overline{AC}$, $\overline{BC}$, and $\overline{DC}$ are chords, $\overleftrightarrow{EDF}$ is tangent at point *D*, and $\overline{AD} \parallel \overline{BC}$.



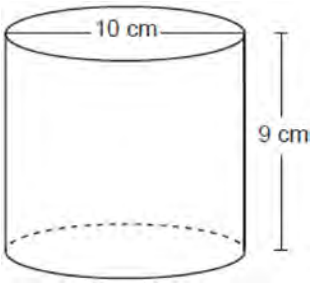
Which statement is always true?

303 In the diagram below of right triangle *MDL*, altitude $\overline{DG}$ is drawn to hypotenuse $\overline{ML}$.



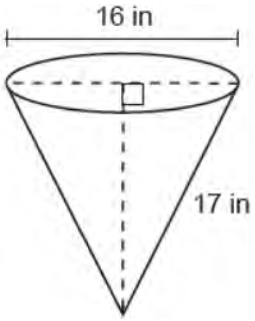
If $MG = 3$ and $GL = 24$, what is the length of $\overline{DG}$?

304 Darnell models a cup with the cylinder below. He measured the diameter of the cup to be 10 cm and the height to be 9 cm.



If Darnell fills the cup with water to a height of 8 cm, what is the volume of the water in the cup, to the *nearest cubic centimeter*?

305 In the diagram below, a cone has a diameter of 16 inches and a slant height of 17 inches.



What is the volume of the cone, in cubic inches?

Geometry Regents Bimodal Worksheet # 43 Name: _____
www.jmap.org

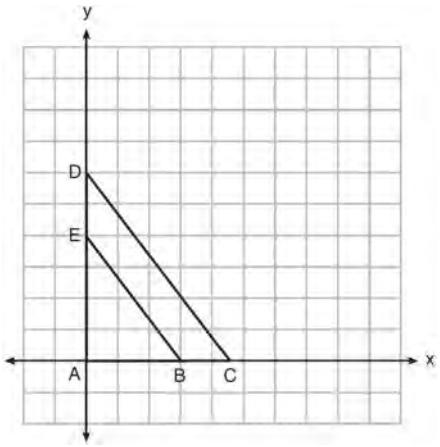
306 A designer needs to create perfectly circular necklaces. The necklaces each need to have a radius of 10 cm. What is the largest number of necklaces that can be made from 1000 cm of wire?

307 Which regular polygon has a minimum rotation of 45° to carry the polygon onto itself?

308 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

309 A jewelry company makes copper heart pendants. Each heart uses 0.75 in^3 of copper and there is 0.323 pound of copper per cubic inch. If copper costs $3.68 per pound, what is the total cost for 24 copper hearts?

310 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 $E(0,4)$.

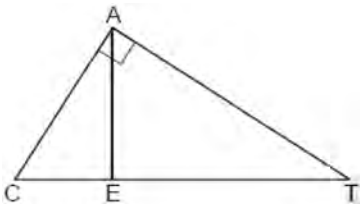


The ratio of the lengths of $\overline{BE}$ to $\overline{CD}$ is

311 An equation of circle M is $x^2 + y^2 + 6x - 2y + 1 = 0$. What are the coordinates of the center and the length of the radius of circle M?

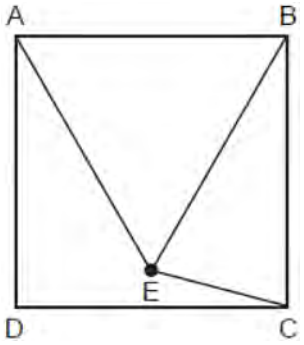
312 The equation of line h is $2x + y = 1$. Line m is the image of line h after a dilation of scale factor 4 with respect to the origin. What is the equation of the line m?

313 In the diagram of $\triangle CAT$ below, $m\angle A = 90°$ and altitude $\overline{AE}$ is drawn from vertex A.



Which statement is always true?

314 In the diagram below, point E is located inside square $ABCD$ such that $\triangle ABE$ is equilateral, and $\overline{CE}$ is drawn.

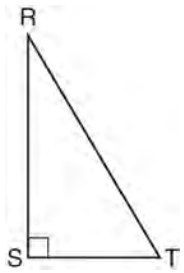


What is $m\angle BEC$?

Geometry Regents Bimodal Worksheet # 44 Name: _____
www.jmap.org

315 The endpoints of $\overline{AB}$ are $A(0,4)$ and $B(-4,6)$. Which equation of a line represents the perpendicular bisector of $\overline{AB}$?

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



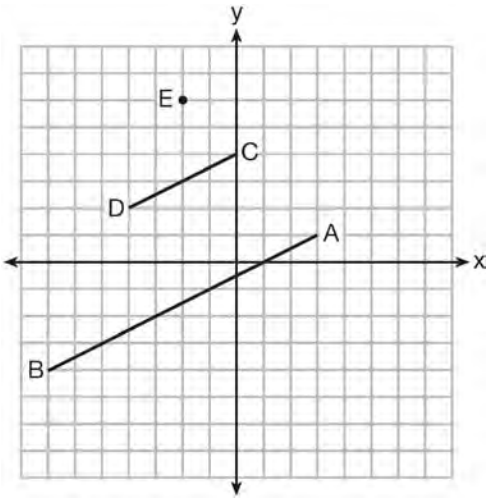
317 The equation of a line is $3x - 5y = 8$. All lines perpendicular to this line must have a slope of

318 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?

319 A small town is installing a water storage tank in the shape of a cylinder. The tank must be able to hold at least 100,000 gallons of water. The tank must have a height of exactly 30 feet. [1 cubic foot holds 7.48 gallons of water] What should the minimum diameter of the tank be, to the *nearest foot*?

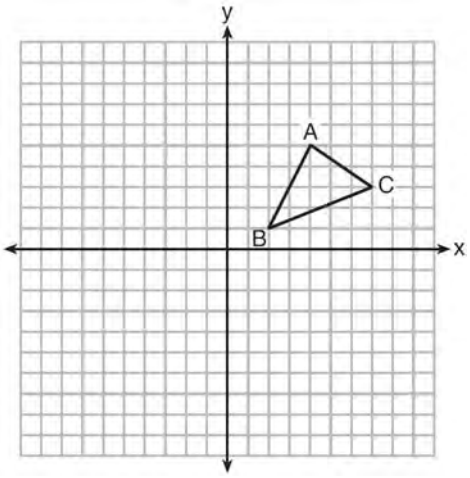
320 The equation of a circle is $x^2 + y^2 + 12x = -27$. What are the coordinates of the center and the length of the radius of the circle?

321 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?

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

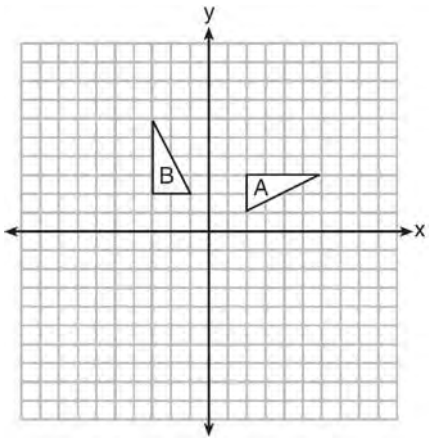


What is the slope of the altitude drawn from A to $\overline{BC}$?

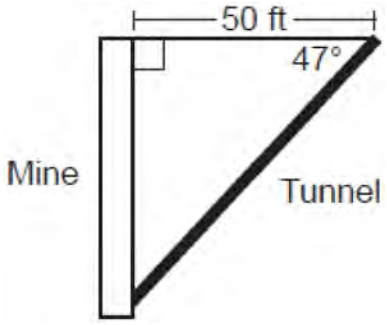
Geometry Regents Bimodal Worksheet # 45 Name: _____
www.jmap.org

323 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

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

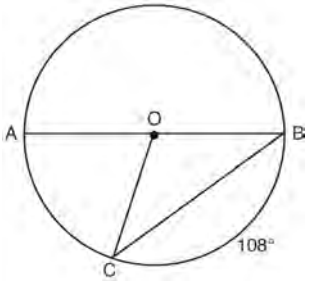


325 A vertical mine shaft is modeled in the diagram below. At a point on the ground 50 feet from the top of the mine, a ventilation tunnel is dug at an angle of 47°.



What is the length of the tunnel, to the *nearest foot*?

326 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 $\frac{3}{10} \cdot \pi \cdot (\frac{1}{2}AB)^2$

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

Which students wrote correct formulas?

327 Directed line segment *AJ* has endpoints whose coordinates are $A(5,7)$ and $J(-10,-8)$. Point *E* is on $\overline{AJ}$ such that $AE:EJ$ is $2:3$. What are the coordinates of point *E*?

Geometry Regents Bimodal Worksheets
Answer Section

1 ANS:
center $(3,-1)$ and radius 4

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

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

$$(x-3)^2 + (y+1)^2 = 16$$

PTS: 2 REF: 011812geo TOP: Equations of Circles
KEY: completing the square

2 ANS:
cone with a diameter of 12

PTS: 2 REF: 081803geo TOP: Rotations of Two-Dimensional Objects

3 ANS:
decagon

$$\frac{360°}{n} = 36$$

$$n = 10$$

PTS: 2 REF: 082205geo TOP: Mapping a Polygon onto Itself

4 ANS:
center $(0,6)$ and radius 7.5

$x^2 + y^2 - 12y + 36 = 20.25 + 36$ $\sqrt{56.25} = 7.5$

$$x^2 + (y-6)^2 = 56.25$$

PTS: 2 REF: 082219geo TOP: Equations of Circles
KEY: completing the square

5 ANS:

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

The line $y = \frac{3}{2}x - 4$ does not pass through the center of dilation, so the dilated line will be distinct from $y = \frac{3}{2}x - 4$. Since a dilation preserves parallelism, the line $y = \frac{3}{2}x - 4$ and its image will be parallel, with slopes of $\frac{3}{2}$. To obtain the *y*-intercept of the dilated line, the scale factor of the dilation, $\frac{3}{4}$, can be applied to the *y*-intercept, $(0,-4)$. Therefore, $\left(0 \cdot \frac{3}{4}, -4 \cdot \frac{3}{4}\right) \rightarrow (0,-3)$. So the equation of the dilated line is $y = \frac{3}{2}x - 3$.

PTS: 2 REF: 011924geo TOP: Line Dilations

6 ANS:
I, III, and IV, only

PTS: 2 REF: 012019geo TOP: Cross-Sections of Three-Dimensional Objects

7 ANS:
40

$\sqrt{8^2 + 6^2} = 10$ for one side

PTS: 2 REF: 011907geo TOP: Special Quadrilaterals

8 ANS:
7

$\tan 36 = \frac{x}{8}$ $5.8 + 1.5 \approx 7$

$x \approx 5.8$

PTS: 2 REF: 081915geo TOP: Using Trigonometry to Find a Side

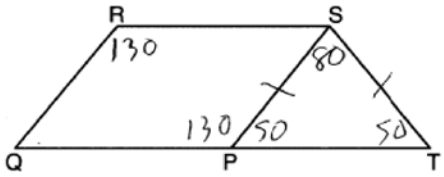
9 ANS:

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

slope of $\overline{OA} = \frac{4 - 0}{-3 - 0} = -\frac{4}{3}$ $m_{\perp} = \frac{3}{4}$

PTS: 2 REF: 082223geo TOP: Chords, Secants and Tangents
KEY: radius drawn to tangent

10 ANS:
80°



PTS: 2 REF: 061921geo TOP: Interior and Exterior Angles of Polygons

11 ANS:
twice the volume of cone *B*

$\frac{\frac{1}{3}\pi(2)^2\left(\frac{1}{2}\right)}{\frac{1}{3}\pi(1)^2(1)} = 2$

PTS: 2 REF: 012010geo TOP: Volume KEY: cones

12 ANS:
630

$44\left(\left(10\times 3\times \frac{1}{4}\right)+\left(9\times 3\times \frac{1}{4}\right)\right)=627$

PTS: 2 REF: 082221geo TOP: Volume KEY: compositions

13 ANS:
5.9

$\frac{x}{6.3}=\frac{3}{5}\ \ \frac{y}{9.4}=\frac{6.3}{6.3+3.78}$

$x=3.78 \quad y\approx 5.9$

PTS: 2 REF: 081816geo TOP: Side Splitter Theorem

14 ANS:
555

$\tan 11.87=\frac{x}{0.5(5280)}$

$x\approx 555$

PTS: 2 REF: 011913geo TOP: Using Trigonometry to Find a Side

15 ANS:
15

$2x+7+4x-7=90$

$6x=90$

$x=15$

PTS: 2 REF: 081824geo TOP: Cofunctions

16 ANS:

$x^2-2x+y^2-8y=8$

$(x-1)^2+(y-4)^2=\left(\frac{10}{2}\right)^2$

$x^2-2x+1+y^2-8y+16=25$

$x^2-2x+y^2-8y=8$

PTS: 2 REF: 011920geo TOP: Equations of Circles
KEY: write equation, given center and radius

17 ANS:
47°

$\cos B=\frac{17.6}{26}$

$B\approx 47$

PTS: 2 REF: 061806geo TOP: Using Trigonometry to Find an Angle

18 ANS:
$(x-2)^2+(y+4)^2=16$
The line $x=-2$ will be tangent to the circle at $(-2,-4)$. A segment connecting this point and $(2,-4)$ is a radius of the circle with length 4.

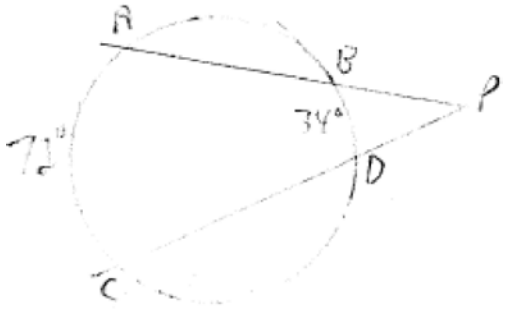
PTS: 2 REF: 012020geo TOP: Equations of Circles
KEY: other

19 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

20 ANS:
19º



$\frac{72-34}{2}=19$

PTS: 2 REF: 061918geo TOP: Chords, Secants and Tangents
KEY: secants drawn from common point, angle

21 ANS:
$\overline{VA}$
$\angle N$ is the smallest angle in $\triangle NYA$, so side $\overline{AY}$ is the shortest side of $\triangle NYA$. $\angle VYA$ is the smallest angle in $\triangle VYA$, so side $\overline{VA}$ is the shortest side of both triangles.

PTS: 2 REF: 011919geo TOP: Angle Side Relationship

22 ANS:
1:4

PTS: 2 REF: 081716geo TOP: Midsegments

23 ANS:

$17\frac{1}{2}$

$\frac{5}{7} = \frac{x}{x+5}$ $12\frac{1}{2} + 5 = 17\frac{1}{2}$

$5x + 25 = 7x$

$2x = 25$

$x = 12\frac{1}{2}$

PTS: 2 REF: 061821geo TOP: Side Splitter Theorem

24 ANS:

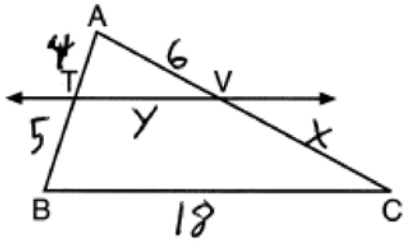
53°

$360 - (82 + 104 + 121) = 53$

PTS: 2 REF: 011801geo TOP: Properties of Transformations
KEY: graph

25 ANS:

44.9



$\frac{4}{5} = \frac{6}{x}$ $\frac{4}{9} = \frac{y}{18}$ $5 + 18 + 7.5 + 8 = 38.5$

$x = 7.5$ $y = 8$

PTS: 2 REF: 082222geo TOP: Side Splitter Theorem

26 ANS:

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

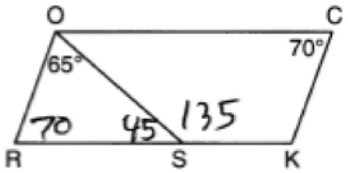
$m = \frac{3}{2}$. $1 = -\frac{2}{3}(-6) + b$

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

$-3 = b$

PTS: 2 REF: 061719geo TOP: Parallel and Perpendicular Lines
KEY: write equation of perpendicular line

27 ANS:
135º



PTS: 2 REF: 081708geo TOP: Interior and Exterior Angles of Polygons

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:
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

30 ANS:
a right cone with a radius of 15 and a height of 8

PTS: 2 REF: 062208geo TOP: Rotations of Two-Dimensional Objects

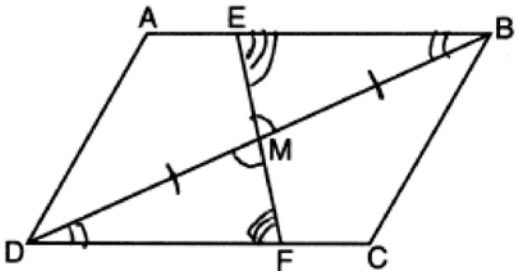
31 ANS:
60º
$6x - 40 + x + 20 = 180 - 3x$ $\text{m}\angle BAC = 180 - (80 + 40) = 60$

$10x = 200$

$x = 20$

PTS: 2 REF: 011809geo TOP: Exterior Angle Theorem

32 ANS:
both ASA and AAS



PTS: 2 REF: 082217geo TOP: Triangle Proofs
KEY: statements

33 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

34 ANS:
Niagara
Broome: $\frac{200536}{706.82} \approx 284$ Dutchess: $\frac{280150}{801.59} \approx 349$ Niagara: $\frac{219846}{522.95} \approx 420$ Saratoga: $\frac{200635}{811.84} \approx 247$

PTS: 2 REF: 061902geo TOP: Density

35 ANS:
28.2

$\sin 16.5 = \frac{8}{x}$

$x \approx 28.2$

PTS: 2 REF: 081806ai TOP: Using Trigonometry to Find a Side

36 ANS:
6

$\frac{4}{x} = \frac{6}{9}$

$x = 6$

PTS: 2 REF: 061915geo TOP: Similarity KEY: basic

37 ANS:
hemisphere

PTS: 2 REF: 011810geo TOP: Rotations of Two-Dimensional Objects

38 ANS:
25

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

PTS: 2 REF: 081704geo TOP: Chords, Secants and Tangents
KEY: parallel lines

39 ANS:

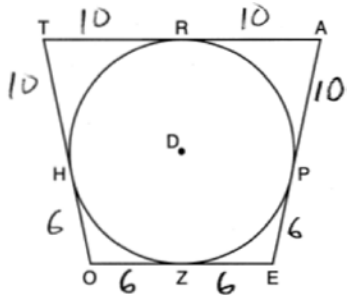
$k=\frac{1}{2}$

$y=\frac{1}{2}x+4 \quad \frac{2}{4}=\frac{1}{2}$

$y=\frac{1}{2}x+2$

PTS: 2 REF: 012008geo TOP: Line Dilations

40 ANS:
64



PTS: 2 REF: 081814geo TOP: Chords, Secants and Tangents
KEY: tangents drawn from common point, length

41 ANS:
20

$12^2=9\cdot GM \quad IM^2=16\cdot 25$

$GM=16 \qquad IM=20$

PTS: 2 REF: 011910geo TOP: Similarity KEY: altitude

42 ANS:
6

$82.8=\frac{1}{3}(4.6)(9)h$

$h=6$

PTS: 2 REF: 061810geo TOP: Volume KEY: pyramids

43 ANS:
12.1
$x^2 = 10.2 \times 14.3$

$x \approx 12.1$

PTS: 2 REF: 012016geo TOP: Similarity KEY: altitude

44 ANS:
12
$\frac{1}{2} \times 24 = 12$

PTS: 2 REF: 012009geo TOP: Midsegments

45 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

46 ANS:
120°
$\frac{x}{360}(15)^2 \pi = 75\pi$

$x = 120$

PTS: 2 REF: 011914geo TOP: Sectors

47 ANS:
(1, –5)
$-8 + \frac{3}{5}(7 - -8) = -8 + 9 = 1 \quad 7 + \frac{3}{5}(-13 - 7) = 7 - 12 = -5$

PTS: 2 REF: 081815geo TOP: Directed Line Segments

48 ANS:
405
$V = \frac{1}{3}\left(\frac{36}{4}\right)^2 \cdot 15 = 405$

PTS: 2 REF: 011822geo TOP: Volume KEY: pyramids

49 ANS:
15

$18^2 = 12(x + 12)$

$324 = 12(x + 12)$

$27 = x + 12$

$x = 15$

PTS: 2 REF: 081920geo TOP: Similarity KEY: altitude

50 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

51 ANS:
25

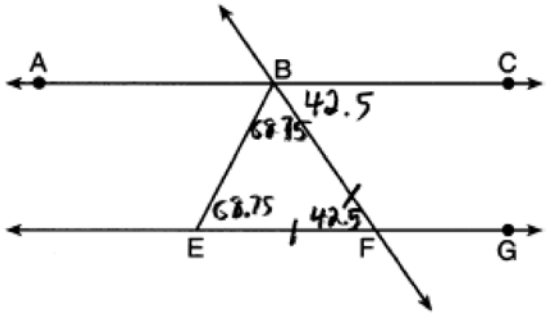
$40 - x + 3x = 90$

$2x = 50$

$x = 25$

PTS: 2 REF: 081721geo TOP: Cofunctions

52 ANS:
68.75°



PTS: 2 REF: 011818geo TOP: Lines and Angles

53 ANS:
68.6

$\sin 32 = \frac{O}{129.5}$

$O \approx 68.6$

PTS: 2 REF: 011804geo TOP: Using Trigonometry to Find a Side

54 ANS:
66
$8 \times 3.5 \times 2.25 \times 1.055 = 66.465$

PTS: 2 REF: 012014geo TOP: Density

55 ANS:
19
$(8 \times 2) + (3 \times 2) - \left(\frac{18}{12} \times \frac{21}{12} \right) \approx 19$

PTS: 2 REF: 081917geo TOP: Compositions of Polygons and Circles
KEY: area

56 ANS:
110°
$90 - 35 = 55 \;\; 55 \times 2 = 110$

PTS: 2 REF: 012015geo TOP: Properties of Transformations
KEY: graphics

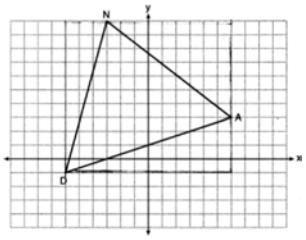
57 ANS:
a right cylinder with a radius of 7 inches

PTS: 2 REF: 081911geo TOP: Rotations of Two-Dimensional Objects

58 ANS:
a translation

PTS: 2 REF: 061803geo TOP: Identifying Transformations
KEY: graphics

59 ANS:
60



$(12 \cdot 11) - \left(\frac{1}{2}(12 \cdot 4) + \frac{1}{2}(7 \cdot 9) + \frac{1}{2}(11 \cdot 3) \right) = 60$

PTS: 2 REF: 061815geo TOP: Polygons in the Coordinate Plane

60 ANS:
rectangle

PTS: 2 REF: 081805geo TOP: Cross-Sections of Three-Dimensional Objects

61 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

62 ANS:
18

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

$x \approx 18$

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

63 ANS:
12.5π

$h = \sqrt{6.5^2 - 2.5^2} = 6$, $V = \frac{1}{3}\pi(2.5)^2 6 = 12.5\pi$

PTS: 2 REF: 011923geo TOP: Volume KEY: cones

64 ANS:
square

PTS: 2 REF: 062202geo TOP: Cross-Sections of Three-Dimensional Objects

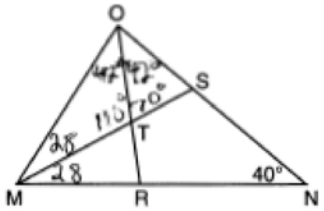
65 ANS:
56

$\sin x = \frac{10}{12}$

$x \approx 56$

PTS: 2 REF: 061922geo TOP: Using Trigonometry to Find an Angle

66 ANS:
70º



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

67 ANS:
4

$\frac{18}{4.5} = 4$

PTS: 2 REF: 011901geo TOP: Line Dilations

68 ANS:
$4\sqrt{10}$
$4\sqrt{(-1-2)^2+(2-3)^2} = 4\sqrt{10}$

PTS: 2 REF: 081808geo TOP: Polygons in the Coordinate Plane

69 ANS:
$\sin A$

PTS: 2 REF: 061703geo TOP: Cofunctions

70 ANS:
$\frac{1}{3}$
$\frac{1}{3}, \frac{3}{9}, \frac{\sqrt{10}}{\sqrt{90}}$

PTS: 2 REF: 082206geo TOP: Dilations

71 ANS:
$y = -3x + 6$
The line $y = -3x + 6$ passes through the center of dilation, so the dilated line is not distinct.

PTS: 2 REF: 061824geo TOP: Line Dilations

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

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

73 ANS:
10°
$\frac{100-80}{2} = 10$

PTS: 2 REF: 062219geo TOP: Chords, Secants and Tangents
KEY: secant and tangent drawn from common point, angle

74 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

75 ANS:
$(5, 1)$
$3 + \frac{2}{5}(8 - 3) = 3 + \frac{2}{5}(5) = 3 + 2 = 5 \;\; 5 + \frac{2}{5}(-5 - 5) = 5 + \frac{2}{5}(-10) = 5 - 4 = 1$

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

76 ANS:
66°
$180 - (48 + 66) = 180 - 114 = 66$

PTS: 2 REF: 012001geo TOP: Lines and Angles

77 ANS:
$45°$
$180 - 40 - 95 = 45$

PTS: 2 REF: 082201geo TOP: Properties of Transformations
KEY: graphics

78 ANS:
I, II, and III

PTS: 2 REF: 081822geo TOP: Medians, Altitudes and Bisectors

79 ANS:
105°

PTS: 2 REF: 081801geo TOP: Lines and Angles

80 ANS:
16
$\frac{2}{4} = \frac{8}{x + 2} \;\; 14 + 2 = 16$
$2x + 4 = 32$
$x = 14$

PTS: 2 REF: 012024geo TOP: Side Splitter Theorem

81 ANS:
area of 54 and perimeter of 36
$6 \cdot 3^2 = 54 \;\; 12 \cdot 3 = 36$

PTS: 2 REF: 081823geo TOP: Dilations

82 ANS:
$(-4, 0)$
$-7 + \frac{1}{3}(2 - -7) = -7 + \frac{1}{3}(9) = -7 + 3 = -4 \;\; 3 + \frac{1}{3}(-6 - 3) = 3 + \frac{1}{3}(-9) = 3 - 3 = 0$

PTS: 2 REF: 082213geo TOP: Directed Line Segments

83 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

84 ANS:

523.7

$V = \frac{1}{2} \times \frac{4}{3}\pi r^3 = \frac{1}{2} \times \frac{4}{3}\pi \cdot \left(\frac{12.6}{2}\right)^3 \approx 523.7$

PTS: 2 REF: 061910geo TOP: Volume KEY: spheres

85 ANS:

$A(-4,-3)$

$-7 + \frac{1}{4}(5 - -7) = -7 + \frac{1}{4}(12) = -7 + 3 = -4$ $-5 + \frac{1}{4}(3 - -5) = -5 + \frac{1}{4}(8) = -5 + 2 = -3$

PTS: 2 REF: 012005geo TOP: Directed Line Segments

86 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

87 ANS:

1.62

$\frac{4}{3}\pi \times \left(\frac{1.68}{2}\right)^3 \times 0.6523 \approx 1.62$

PTS: 2 REF: 081914geo TOP: Density

88 ANS:

$(-3,4)$

$-9 + \frac{1}{3}(9 - -9) = -9 + \frac{1}{3}(18) = -9 + 6 = -3$ $8 + \frac{1}{3}(-4 - 8) = 8 + \frac{1}{3}(-12) = 8 - 4 = 4$

PTS: 2 REF: 081903geo TOP: Directed Line Segments

89 ANS:

54π

$\left(\frac{360 - 120}{360}\right)(\pi)\left(9^2\right) = 54\pi$

PTS: 2 REF: 081912geo TOP: Sectors

90 ANS:
4.76

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

$x \approx 4.76$

PTS: 2 REF: 081715geo TOP: Using Trigonometry to Find an Angle

91 ANS:
center $(4,-3)$ and radius 8

$x^2 - 8x + y^2 + 6y = 39$

$x^2 - 8x + 16 + y^2 + 6y + 9 = 39 + 16 + 9$

$(x-4)^2 + (y+3)^2 = 64$

PTS: 2 REF: 081906geo TOP: Equations of Circles
KEY: completing the square

92 ANS:
9

$108\pi = \frac{6^2 \pi h}{3}$

$\frac{324\pi}{36\pi} = h$

$9 = h$

PTS: 2 REF: 012002geo TOP: Volume KEY: cones

93 ANS:
18.75

$12x = 9^2$ $6.75 + 12 = 18.75$

$12x = 81$

$x = \frac{82}{12} = \frac{27}{4}$

PTS: 2 REF: 062213geo TOP: Similarity KEY: altitude

94 ANS:
center $(-4,6)$ and radius 14

$x^2 + 8x + 16 + y^2 - 12y + 36 = 144 + 16 + 36$

$(x+4)^2 + (y-6)^2 = 196$

PTS: 2 REF: 061920geo TOP: Equations of Circles
KEY: completing the square

95 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

96 ANS:
8.5

$2x - 1 = 16$

$x = 8.5$

PTS: 2 REF: 011902geo TOP: Properties of Transformations
KEY: graphics

97 ANS:
20

PTS: 2 REF: 011918geo TOP: Compositions of Polygons and Circles
KEY: area

98 ANS:
20

$2x + 4 + 46 = 90$

$2x = 40$

$x = 20$

PTS: 2 REF: 061808geo TOP: Cofunctions

99 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

100 ANS:
22

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

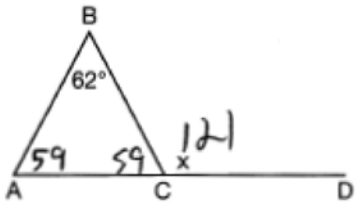
$8x + 64 = 6x + 108$

$2x = 44$

$x = 22$

PTS: 2 REF: 011715geo TOP: Chords, Secants and Tangents
KEY: secants drawn from common point, length

101 ANS:
121°



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

102 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

103 ANS:
rectangle

PTS: 2 REF: 011805geo TOP: Cross-Sections of Three-Dimensional Objects

104 ANS:
45.6
$\frac{1}{3}(4.5)^2(10)(0.676) \approx 45.6$

PTS: 2 REF: 062212geo TOP: Density

105 ANS:
$\frac{3}{2}$
$\frac{9}{6} = \frac{3}{2}$

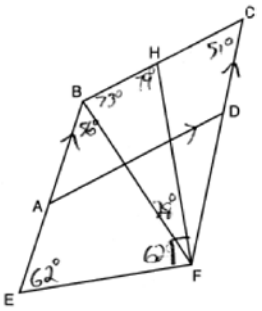
PTS: 2 REF: 061905geo TOP: Line Dilations

106 ANS:
$y - 9 = -\frac{3}{2}(x - 6)$
$m = \frac{-4}{-6} = \frac{2}{3}$

$m_{\perp} = -\frac{3}{2}$

PTS: 2 REF: 011820geo TOP: Parallel and Perpendicular Lines
KEY: write equation of perpendicular line

107 ANS:
79º



$m\angle CBE = 180 - 51 = 129$

PTS: 2 REF: 062221geo TOP: Interior and Exterior Angles of Polygons

108 ANS:
44º

$$\frac{x+72}{2} = 58$$

$$x + 72 = 116$$

$$x = 44$$

PTS: 2 REF: 061817geo TOP: Chords, Secants and Tangents
KEY: intersecting chords, angle

109 ANS:
58

$$V = \frac{1}{3}\left(\frac{60}{12}\right)^2\left(\frac{84}{12}\right) \approx 58$$

PTS: 2 REF: 081819geo TOP: Volume KEY: pyramids

110 ANS:
6

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

$$6 = s$$

PTS: 2 REF: 061716geo TOP: Volume KEY: pyramids

111 ANS:
6.5

$$\frac{30}{360}(5)^2(\pi) \approx 6.5$$

PTS: 2 REF: 081818geo TOP: Sectors

112 ANS:

$y - 8 = -\frac{2}{3}(x - 6)$

$m = \frac{3}{2}$

$m_{\perp} = -\frac{2}{3}$

PTS: 2 REF: 061812geo TOP: Parallel and Perpendicular Lines
KEY: write equation of perpendicular line

113 ANS:

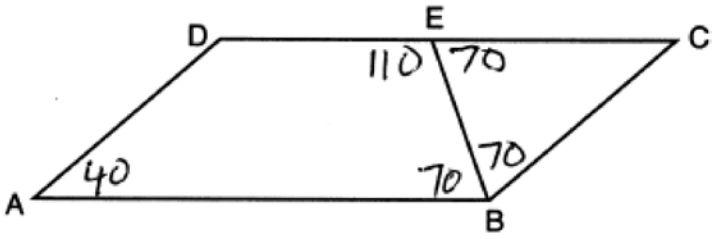
24

Create two congruent triangles by drawing $\overline{BD}$, which has a length of 8. Each triangle has an area of $\frac{1}{2}(8)(3) = 12$.

PTS: 2 REF: 012018geo TOP: Polygons in the Coordinate Plane

114 ANS:

110°



PTS: 2 REF: 082215geo TOP: Interior and Exterior Angles of Polygons

115 ANS:

rectangle

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

116 ANS:

23º

$\cos S = \frac{60}{65}$

$S \approx 23$

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

117 ANS:

17,869

$20 \cdot 12 \cdot 45 + \frac{1}{2}\pi(10)^2(45) \approx 17869$

PTS: 2 REF: 061807geo TOP: Volume KEY: compositions

118 ANS:

$y - 3 = \frac{2}{3}(x - 1)$

$m = \frac{-(-2)}{3} = \frac{2}{3}$

PTS: 2 REF: 061916geo TOP: Parallel and Perpendicular Lines
KEY: write equation of parallel line

119 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

120 ANS:

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

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

PTS: 2 REF: 011721geo TOP: Sectors

121 ANS:

$(4, 8)$

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

PTS: 2 REF: 062201geo TOP: Dilations

122 ANS:

a right triangle

PTS: 2 REF: 081904geo TOP: Centroid, Orthocenter, Incenter and Circumcenter

123 ANS:

46°

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

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

124 ANS:
100

$2(2x+8) = 7x-2 \quad AB = 7(6)-2 = 40$. Since $\overline{EF}$ is a midsegment, $EF = \frac{40}{2} = 20$. Since $\triangle ABC$ is equilateral,

$4x+16 = 7x-2$

$18 = 3x$

$6 = x$

$AE = BF = \frac{40}{2} = 20$. $40+20+20+20 = 100$

PTS: 2 REF: 061923geo TOP: Midsegments

125 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

126 ANS:
3.3

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

$x \approx 3.3$

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

127 ANS:
a cylinder with a radius of 5 inches and a height of 6 inches

PTS: 2 REF: 011911geo TOP: Rotations of Two-Dimensional Objects

128 ANS:
23.8

$5x = 12 \cdot 7 \quad 16.8+7 = 23.8$

$5x = 84$

$x = 16.8$

PTS: 2 REF: 061911geo TOP: Side Splitter Theorem

129 ANS:
$\frac{1}{3}(12\pi)$

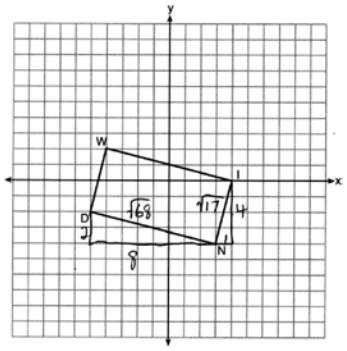
$C = 12\pi \quad \frac{120}{360}(12\pi) = \frac{1}{3}(12\pi)$

PTS: 2 REF: 061822geo TOP: Arc Length KEY: arc length

130 ANS:
$\cos A$

PTS: 2 REF: 011922geo TOP: Cofunctions

131 ANS:
34



$\sqrt{8^2+2^2} \times \sqrt{4^2+1^2} = \sqrt{68} \times \sqrt{17} = \sqrt{4}\sqrt{17} \times \sqrt{17} = 2 \cdot 17 = 34$

PTS: 2 REF: 082214geo TOP: Polygons in the Coordinate Plane

132 ANS:
6.3

$\cos 65 = \frac{x}{15}$

$x \approx 6.3$

PTS: 2 REF: 081924geo TOP: Using Trigonometry to Find a Side

133 ANS:
32,768.0

$\sqrt{40^2 - \left(\frac{64}{2}\right)^2} = 24 \quad V = \frac{1}{3}(64)^2 \cdot 24 = 32768$

PTS: 2 REF: 081921geo TOP: Volume KEY: pyramids

134 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

135 ANS:
44°

$4x + 3x + 13 = 90 \quad 4(11) < 3(11) + 13$

$7x = 77 \qquad 44 < 46$

$x = 11$

PTS: 2 REF: 012021geo TOP: Cofunctions

136 ANS:
I, II, and III

PTS: 2 REF: 061711geo TOP: Special Quadrilaterals

137 ANS:
24

$\sin 10 = \frac{x}{140}$

$x \approx 24$

PTS: 2 REF: 062217geo TOP: Using Trigonometry to Find a Side

138 ANS:
15

$V = \frac{1}{3}\pi r^2 h$

$54.45\pi = \frac{1}{3}\pi(3.3)^2 h$

$h = 15$

PTS: 2 REF: 011807geo TOP: Volume KEY: cones

139 ANS:
cylinder

PTS: 2 REF: 061903geo TOP: Rotations of Two-Dimensional Objects

140 ANS:
33.75π

$\frac{150}{360} \cdot 9^2\pi = 33.75\pi$

PTS: 2 REF: 012013geo TOP: Sectors

141 ANS:
24

$\frac{12}{6.1x - 6.5} = \frac{5}{1.4x + 3}$ $6.1(5) - 6.5 = 24$

$16.8x + 36 = 30.5x - 32.5$

$68.5 = 13.7x$

$5 = x$

PTS: 2 REF: 062211geo TOP: Similarity KEY: basic

142 ANS:
128

$V = \frac{1}{3}(8)^2 \cdot 6 = 128$

PTS: 2 REF: 061906geo TOP: Volume KEY: pyramids

143 ANS:
108
$9 \cdot 3 = 27,\ 27 \cdot 4 = 108$

PTS: 2 REF: 061805geo TOP: Dilations

144 ANS:
8
$\frac{10}{x} = \frac{15}{12}$

$x = 8$

PTS: 2 REF: 081918geo TOP: Side Splitter Theorem

145 ANS:
25

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

146 ANS:
$(-3, 2)$

$M_x = \frac{-5 + -1}{2} = -\frac{6}{2} = -3\ M_y = \frac{5 + -1}{2} = \frac{4}{2} = 2.$

PTS: 2 REF: 081902geo TOP: Quadrilaterals in the Coordinate Plane
KEY: general

147 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

148 ANS:
6

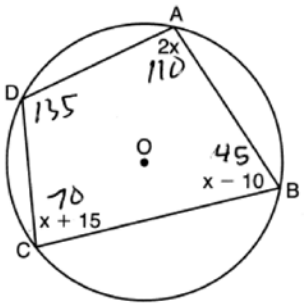
$\frac{2}{4} = \frac{9 - x}{x}$

$36 - 4x = 2x$

$x = 6$

PTS: 2 REF: 061705geo TOP: Side Splitter Theorem

149 ANS:
135°



$2x + x + 15 = 180$ $180 - 45 = 135$

$3x = 165$

$x = 55$

PTS: 2 REF: 082224geo TOP: Inscribed Quadrilaterals

150 ANS:
4.2

$24x = 10^2$

$24x = 100$

$x \approx 4.2$

PTS: 2 REF: 061823geo TOP: Similarity KEY: altitude

151 ANS:
rectangle

PTS: 2 REF: 082211geo TOP: Cross-Sections of Three-Dimensional Objects

152 ANS:
4.7

$\frac{6.5}{10.5} = \frac{5.2}{x}$

$x = 8.4$

PTS: 2 REF: 012006geo TOP: Trapezoids

153 ANS:
30

$ER = \sqrt{17^2 - 8^2} = 15$

PTS: 2 REF: 061917geo TOP: Special Quadrilaterals

154 ANS:
54°

$\sin A = \frac{13}{16}$

$A \approx 54°$

PTS: 2 REF: 082207geo TOP: Using Trigonometry to Find an Angle

155 ANS:
$(-2,-2)$

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

PTS: 2 REF: 011806geo TOP: Directed Line Segments

156 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

157 ANS:
$(-2,2)$

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

PTS: 2 REF: 061814geo TOP: Directed Line Segments

158 ANS:
1,384,188

$V = \frac{1}{3} \cdot 197^2 \cdot 107 = 1,384,188$

PTS: 2 REF: 082208geo TOP: Volume KEY: pyramids

159 ANS:
6.25

$\frac{x}{15} = \frac{5}{12}$

$x = 6.25$

PTS: 2 REF: 011906geo TOP: Side Splitter Theorem

160 ANS:
$x^2 - 10x + y^2 - 4y = -13$

$(x-5)^2 + (y-2)^2 = 16$

$x^2 - 10x + 25 + y^2 - 4y + 4 = 16$

$x^2 - 10x + y^2 - 4y = -13$

PTS: 2 REF: 061820geo TOP: Equations of Circles
KEY: write equation, given graph

161 ANS:
$(1,1)$

$-8+\frac{3}{8}(16--8)=-8+\frac{3}{8}(24)=-8+9=1 \quad -2+\frac{3}{8}(6--2)=-2+\frac{3}{8}(8)=-2+3=1$

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

162 ANS:
I

PTS: 2 REF: 012022geo TOP: Compositions of Transformations
KEY: grids

163 ANS:
25

$\frac{24}{40}=\frac{15}{x}$

$24x=600$

$x=25$

PTS: 2 REF: 011813geo TOP: Side Splitter Theorem

164 ANS:
$(0,1)$

$-4+\frac{2}{5}(6--4)=-4+\frac{2}{5}(10)=-4+4=0 \quad -1+\frac{2}{5}(4--1)=-1+\frac{2}{5}(5)=-1+2=1$

PTS: 2 REF: 062222geo TOP: Directed Line Segments

165 ANS:
15π

$\frac{54}{360}\cdot 10^2\pi=15\pi$

PTS: 2 REF: 062224geo TOP: Sectors

166 ANS:
$28°$

$\cos C=\frac{15}{17}$

$C\approx 28$

PTS: 2 REF: 012007geo TOP: Using Trigonometry to Find an Angle

167 ANS:
$4\sqrt{3}$

$x^2=12(12-8)$

$x^2=48$

$x=4\sqrt{3}$

PTS: 2 REF: 011823geo TOP: Similarity KEY: altitude

168 ANS:
$(2,1)$

$-1+\frac{1}{3}(8--1)=-1+\frac{1}{3}(9)=-1+3=2 \quad -3+\frac{1}{3}(9--3)=-3+\frac{1}{3}(12)=-3+4=1$

PTS: 2 REF: 011915geo TOP: Directed Line Segments

169 ANS:

$y+4=\frac{6}{5}(x-1)$

$\left(\frac{-5+7}{2},\frac{1-9}{2}\right)=(1,-4) \quad m=\frac{1--9}{-5-7}=\frac{10}{-12}=-\frac{5}{6} \quad m_{\perp}=\frac{6}{5}$

PTS: 2 REF: 062220geo TOP: Parallel and Perpendicular Lines
KEY: perpendicular bisector

170 ANS:
16.2

$\triangle CFB \sim \triangle CAD \quad \frac{CB}{CF}=\frac{CD}{CA}$

$\frac{x}{21.6}=\frac{7.2}{9.6}$

$x=16.2$

PTS: 2 REF: 061804geo TOP: Similarity KEY: basic

171 ANS:
$\overline{AN} \parallel \overline{SC}$

PTS: 2 REF: 081810geo TOP: Triangle Proofs
KEY: statements

172 ANS:
640

$8\times 8\times 9+\frac{1}{3}(8\times 8\times 3)=640$

PTS: 2 REF: 011909geo TOP: Volume KEY: compositions

173 ANS:
32.8

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

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

174 ANS:
$(4,0)$

$-8+\frac{2}{3}(10--8)=-8+\frac{2}{3}(18)=-8+12=4 \quad 4+\frac{2}{3}(-2-4)=4+\frac{2}{3}(-6)=4-4=0$

PTS: 2 REF: 061919geo TOP: Directed Line Segments

175 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

176 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

177 ANS:
32π

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

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

178 ANS:
the vertical line of symmetry

$v = \pi r^2 h$ (1) $6^2 \cdot 10 = 360$

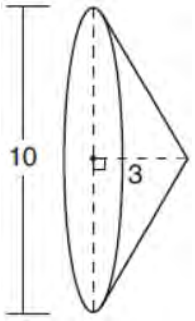
$150\pi = \pi r^2 h$ (2) $10^2 \cdot 6 = 600$

$150 = r^2 h$ (3) $5^2 \cdot 6 = 150$

(4) $3^2 \cdot 10 = 900$

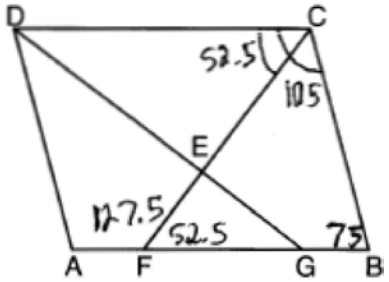
PTS: 2 REF: 081713geo TOP: Rotations of Two-Dimensional Objects

179 ANS:



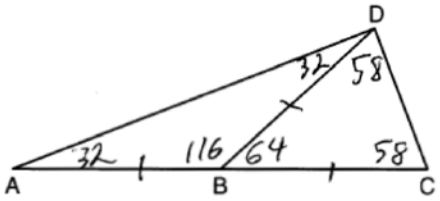
PTS: 2 REF: 061816geo TOP: Rotations of Two-Dimensional Objects

180 ANS:
127.5°



PTS: 2 REF: 081907geo TOP: Interior and Exterior Angles of Polygons

181 ANS:
58º



PTS: 2 REF: 081905geo TOP: Exterior Angle Theorem

182 ANS:
a reflection over the line $y = x$

PTS: 2 REF: 011803geo TOP: Identifying Transformations
KEY: graphics

183 ANS:
23°

$\cos x = \frac{12}{13}$

$x \approx 23$

PTS: 2 REF: 081809ai TOP: Using Trigonometry to Find an Angle

Geometry Regents Bimodal Worksheets
Answer Section

184 ANS:
reflection over the *x*-axis

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

185 ANS:
11

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

$x = 15$

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

186 ANS:
center $(-1, 8)$ and radius 4

$x^2 + 2x + 1 + y^2 - 16y + 64 = -49 + 1 + 64$

$(x + 1)^2 + (y - 8)^2 = 16$

PTS: 2 REF: 012314geo TOP: Equations of Circles
KEY: completing the square

187 ANS:
9

$\frac{36}{4} = 9$

PTS: 2 REF: 012321geo TOP: Midsegments

188 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

189 ANS:
324

$\frac{1}{3}(36)(10)(2.7) = 324$

PTS: 2 REF: 082312geo TOP: Density

190 ANS:
8

$\frac{x}{x+3} = \frac{14}{21}$ $14 - 6 = 8$

$21x = 14x + 42$

$7x = 42$

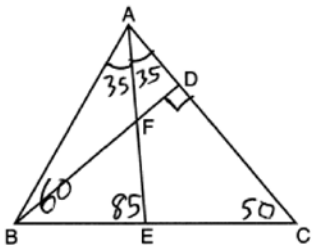
$x = 6$

PTS: 2 REF: 081812geo TOP: Side Splitter Theorem

191 ANS:
A

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

192 ANS:
85º



PTS: 2 REF: 012305geo TOP: Interior and Exterior Angles of Triangles

193 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

194 ANS:
133

$19.9 = \pi d$ $\frac{4}{3}\pi\left(\frac{19.9}{2\pi}\right)^3 \approx 133$

$\frac{19.9}{\pi} = d$

PTS: 2 REF: 012310geo TOP: Volume KEY: spheres

195 ANS:
$y = -2x + 2$

$3y = -6x + 3$

$y = -2x + 1$

PTS: 2 REF: 062319geo TOP: Line Dilations

196 ANS:
25.9

$\sin 18 = \frac{8}{x}$

$x \approx 25.9$

PTS: 2 REF: 062316geo TOP: Using Trigonometry to Find a Side

197 ANS:
$A'(-9,3)$ and $B'(7,-1)$

A: $(-3-3,4-5) \rightarrow (-6,-1) \rightarrow (-12,-2) \rightarrow (-12+3,-2+5)$

B: $(5-3,2-5) \rightarrow (2,-3) \rightarrow (4,-6) \rightarrow (4+3,-6+5)$

PTS: 2 REF: 012322geo TOP: Line Dilations

198 ANS:
trapezoid

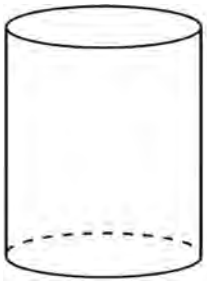
$\frac{-2-1}{-1--3} = \frac{-3}{2}$ $\frac{3-2}{0-5} = \frac{1}{-5}$ $\frac{3-1}{0--3} = \frac{2}{3}$ $\frac{2--2}{5--1} = \frac{4}{6} = \frac{2}{3}$

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

199 ANS:
$m\angle DFK = m\angle KLF$

PTS: 2 REF: 062318geo TOP: Lines and Angles

200 ANS:



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

201 ANS:
25

$\frac{x}{10} = \frac{12}{8}$ $15 + 10 = 25$

$x = 15$

PTS: 2 REF: 082314geo TOP: Side Splitter Theorem

202 ANS:

$-\frac{7}{8}$

$m_{\overline{AB}} = \frac{-3-5}{-1-6} = \frac{-8}{-7} = \frac{8}{7}$

PTS: 2 REF: 062315geo TOP: Polygons in the Coordinate Plane

203 ANS:

71

$\cos x = \frac{8}{25}$

$x \approx 71$

PTS: 2 REF: 082303geo TOP: Using Trigonometry to Find an Angle

204 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

205 ANS:

7π

$\frac{70}{360} \cdot 6^2 \pi = 7\pi$

PTS: 2 REF: 082309geo TOP: Sectors

206 ANS:

cone

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

207 ANS:

102

$V = 12 \cdot 8.5 \cdot 4 = 408$

$W = 408 \cdot 0.25 = 102$

PTS: 2 REF: 061507geo TOP: Density

208 ANS:

$(-3, 8)$

$m_{\overline{AD}} = \frac{3-1}{-2-2} = \frac{2}{-4} = -\frac{1}{2}$ A pair of opposite sides is parallel.

$m_{\overline{BC}} = \frac{8-4}{-3-5} = \frac{4}{-8} = -\frac{1}{2}$

PTS: 2 REF: 082321geo TOP: Quadrilaterals in the Coordinate Plane

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

PTS: 2 REF: 061523geo TOP: Circumference

210 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

211 ANS:
$y = x - 1$
$m_{\overline{TA}} = -1 \quad y = mx + b$
$m_{\overline{EM}} = 1 \quad 1 = 1(2) + b$
$-1 = b$

PTS: 2 REF: 081614geo TOP: Quadrilaterals in the Coordinate Plane
KEY: general

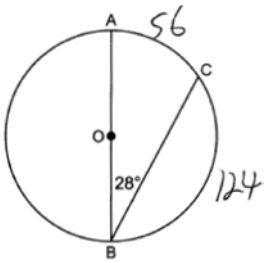
212 ANS:
$(4,-3)$
$-5 + \frac{3}{4}(7 - -5) = -5 + \frac{3}{4}(12) = -5 + 9 = 4 \quad 3 + \frac{3}{4}(-5 - 3) = 3 + \frac{3}{4}(-8) = 3 - 6 = -3$

PTS: 2 REF: 082302geo TOP: Directed Line Segments

213 ANS:
25°
$\cos S = \frac{12.3}{13.6}$
$S \approx 25°$

PTS: 2 REF: 062304geo TOP: Using Trigonometry to Find an Angle

214 ANS:
124°



PTS: 2 REF: 062305geo TOP: Chords, Secants and Tangents
KEY: inscribed

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

PTS: 2 REF: 081606geo TOP: Cofunctions

216 ANS:
25

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

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

217 ANS:
17.5

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

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

218 ANS:
8

$x(x-6) = 4^2$

$x^2 - 6x - 16 = 0$

$(x-8)(x+2) = 0$

$x = 8$

PTS: 2 REF: 081807geo TOP: Similarity KEY: altitude

219 ANS:
17.3

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

PTS: 2 REF: 081608geo TOP: 30-60-90 Triangles

220 ANS:
sphere

PTS: 2 REF: 012302geo TOP: Rotations of Two-Dimensional Objects

221 ANS:
20

$24^2 = 4x \cdot 9x \quad 5 \cdot 4 = 20$

$576 = 36x^2$

$16 = x^2$

$4 = x$

PTS: 2 REF: 012312geo TOP: Chords, Secants and Tangents
KEY: secant and tangent drawn from common point, length

222 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

223 ANS:
11

$\frac{x}{10} = \frac{6}{4} \quad \overline{CD} = 15 - 4 = 11$

$x = 15$

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

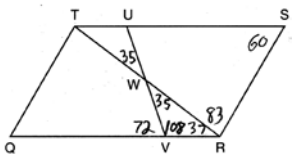
224 ANS:
5

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

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

PTS: 2 REF: 081509geo TOP: Equations of Circles
KEY: completing the square

225 ANS:
72º



PTS: 2 REF: 011603geo TOP: Interior and Exterior Angles of Polygons

226 ANS:

$\frac{\pi}{5}$

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

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

227 ANS:

3.5

$\frac{1\,\text{l}}{1.2\,\text{oz}}\left(\frac{16\,\text{oz}}{1\,\text{lb}}\right) = \frac{13.\bar{3}\,\text{l}}{\text{lb}}\ \frac{13.\bar{3}\,\text{l}}{\text{lb}}\left(\frac{1\,\text{g}}{3.785\,\text{l}}\right) \approx \frac{3.5\,\text{g}}{1\,\text{lb}}$

PTS: 2 REF: 061618geo TOP: Density

228 ANS:

dilation

PTS: 2 REF: 081602geo TOP: Identifying Transformations
KEY: basic

229 ANS:

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

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

PTS: 2 REF: 061612geo TOP: Parallel and Perpendicular Lines
KEY: perpendicular bisector

230 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

231 ANS:

$6\sqrt{10}$

$h^2 = 30 \cdot 12$

$h^2 = 360$

$h = 6\sqrt{10}$

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

232 ANS:
144

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

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

233 ANS:
12.5

$7 \times 4 - \frac{1}{2}\left((7)(1) + (3)(4) + (4)(3)\right) = 28 - \frac{7}{2} - 6 - 6 = 12.5$

PTS: 2 REF: 012407geo TOP: Polygons in the Coordinate Plane

234 ANS:
$x(x + 5) = 36$

PTS: 2 REF: 082320geo TOP: Chords, Secants and Tangents
KEY: secants drawn from common point, length

235 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

236 ANS:
triangle

PTS: 2 REF: 062301geo TOP: Cross-Sections of Three-Dimensional Objects

237 ANS:
40

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

PTS: 2 REF: 081621geo TOP: Line Dilations

238 ANS:
40º

PTS: 2 REF: 012409geo TOP: Dilations

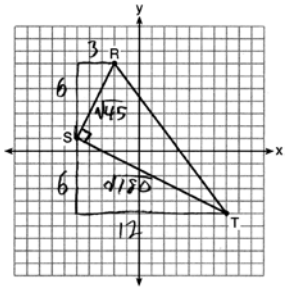
239 ANS:
34.1

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

240 ANS:
45



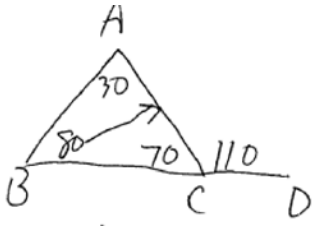
$\sqrt{45} = 3\sqrt{5}$ $a = \frac{1}{2}\left(3\sqrt{5}\right)\left(6\sqrt{5}\right) = \frac{1}{2}(18)(5) = 45$
$\sqrt{180} = 6\sqrt{5}$

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

241 ANS:
cylinder

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

242 ANS:
$\overline{AC}$



PTS: 2 REF: 082310geo TOP: Angle Side Relationship

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

PTS: 2 REF: 061602geo TOP: Line Dilations

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

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

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

245 ANS:
44°
$180 - (68 \cdot 2)$

PTS: 2 REF: 081624geo TOP: Interior and Exterior Angles of Polygons

246 ANS:
$14.64

$3 \times 10 \times \frac{3}{12} = 7.5 \text{ ft}^3 \quad \frac{7.5}{2} = 3.75 \quad 4 \times 3.66 = 14.64$

PTS: 2 REF: 062311geo TOP: Volume KEY: prisms

247 ANS:
6π

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

PTS: 2 REF: 081518geo TOP: Sectors

248 ANS:
triangle

PTS: 2 REF: 081613geo TOP: Cross-Sections of Three-Dimensional Objects

249 ANS:
108°

PTS: 2 REF: 081515geo TOP: Inscribed Quadrilaterals

250 ANS:
10

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

$f = 10$

PTS: 2 REF: 061617geo TOP: Lines and Angles

251 ANS:
$\sin C$

PTS: 2 REF: 082311geo TOP: Cofunctions

252 ANS:
39

$2 \times \frac{40 \times 16}{33\frac{1}{3}} = 38.4$

PTS: 2 REF: 012404geo TOP: Area of Polygons

253 ANS:

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

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

254 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

255 ANS:
20

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

PTS: 2 REF: 011619geo TOP: Density

256 ANS:

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

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

$1 = -4 + b$

$5 = b$

PTS: 2 REF: 081510geo TOP: Parallel and Perpendicular Lines
KEY: write equation of parallel line

257 ANS:
$2\sqrt{10}$

$x^2 = 4 \cdot 10$

$x = \sqrt{40}$

$x = 2\sqrt{10}$

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

258 ANS:
55

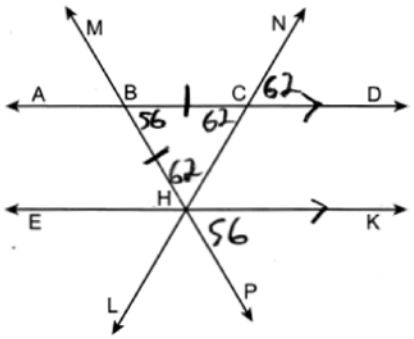
$\frac{\frac{4}{3}\pi\left(\frac{9.5}{2}\right)^3}{\frac{4}{3}\pi\left(\frac{2.5}{2}\right)^3} \approx 55$

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

259 ANS:
$\angle DCB$

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

260 ANS:
56º



PTS: 2 REF: 012421geo TOP: Lines and Angles

261 ANS:
circle

PTS: 2 REF: 082301geo TOP: Cross-Sections of Three-Dimensional Objects

262 ANS:
84°
$180 - (180 - 42 - 42)$

PTS: 2 REF: 062317geo TOP: Exterior Angle Theorem

263 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

264 ANS:
$\overline{AD} \cong \overline{CE}$

PTS: 2 REF: 081622geo TOP: Triangle Proofs
KEY: statements

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

PTS: 2 REF: 011618geo TOP: Triangles in the Coordinate Plane

266 ANS:
12

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

$12x = 144$

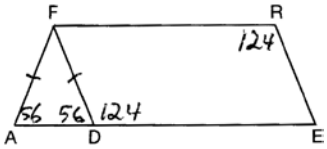
$x = 12$

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

267 ANS:
cylinder

PTS: 2 REF: 082307geo TOP: Rotations of Two-Dimensional Objects

268 ANS:
68°



PTS: 2 REF: 081508geo TOP: Interior and Exterior Angles of Polygons

269 ANS:
4.4

$\frac{7.5}{3.5} = \frac{9.5}{x}$

$x \approx 4.4$

PTS: 2 REF: 012303geo TOP: Side Splitter Theorem

270 ANS:
31.5π

$\frac{140}{360} \cdot 9^2 \pi = 31.5\pi$

PTS: 2 REF: 012317geo TOP: Sectors

271 ANS:
50

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

$A \approx 50°$

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

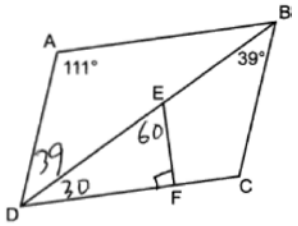
272 ANS:
37.5

$\sin 30 = \frac{x}{75}$

$x = 37.5$

PTS: 2 REF: 012411geo TOP: Using Trigonometry to Find a Side

273 ANS:
60º



PTS: 2 REF: 062306geo TOP: Interior and Exterior Angles of Polygons

274 ANS:
$y = 3x - 3$

Another equation of line t is $y = 3x - 6$. $-6 \bullet \frac{1}{2} = -3$

PTS: 2 REF: 012319geo TOP: Line Dilations

275 ANS:
(2,–3)

$x_0 = \frac{kx_1 - x_2}{k-1} = \frac{\frac{1}{3}(-4) - 0}{\frac{1}{3} - 1} = \frac{\frac{-4}{3}}{\frac{-2}{3}} = 2 \quad y_0 = \frac{ky_1 - y_2}{k-1} = \frac{\frac{1}{3}(0) - -2}{\frac{1}{3} - 1} = \frac{2}{\frac{-2}{3}} = -3$

PTS: 2 REF: 062313geo TOP: Dilations

276 ANS:
7.5

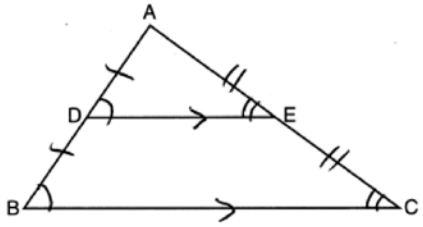
$\frac{10}{x} = \frac{8}{6}$

$8x = 60$

$x = 7.5$

PTS: 2 REF: 012402geo TOP: Side Splitter Theorem

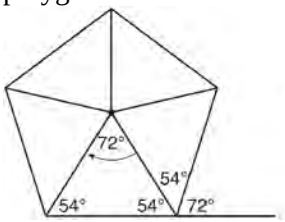
277 ANS:
I, II, and III



AA from diagram; SSS as the three corresponding sides are proportional; SAS as two corresponding sides are proportional and an angle is equal.

PTS: 2 REF: 012324geo TOP: Similarity Proofs

278 ANS:
72º
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

279 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

280 ANS:
(1,–1)

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

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

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

$1 \qquad -1$

PTS: 2 REF: spr1401geo TOP: Directed Line Segments

281 ANS:
47.1
$V = \frac{1}{3}\pi \cdot (2.5)^2 \cdot 7.2 \cong 47.1$

PTS: 2 REF: 062303geo TOP: Volume KEY: cones

282 ANS:
40°
$\frac{x}{360} \cdot 3^2\pi = 2\pi \quad 180 - 80 = 100$

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

PTS: 2 REF: 011612geo TOP: Sectors

283 ANS:
20
$5x - 10 = 4x - 4 \quad 4(6) - 4 = 20$

$x = 6$

PTS: 2 REF: 012408geo TOP: Properties of Transformations
KEY: graphics

284 ANS:
$y - 3 = -\frac{5}{4}(x + 2)$
$m = \frac{-4}{-5} = \frac{4}{5}$

$m_{\perp} = -\frac{5}{4}$

PTS: 2 REF: 082308geo TOP: Parallel and Perpendicular Lines
KEY: write equation of perpendicular line

285 ANS:
$(4, -1)$
$3 - 1 = 2$

$1 - 2 = -1$

PTS: 2 REF: 082317geo TOP: Reflections

286 ANS:
$\frac{12}{20}$
$\sin N = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{12}{20}$

PTS: 2 REF: 012307geo TOP: Trigonometric Ratios

287 ANS:
14

$.5 \text{ ft}^3 \times \frac{1728 \text{ in}^3}{1 \text{ ft}^3} = 864 \text{ in}^3 \quad \frac{43 \text{ in} \times 30 \text{ in} \times 9 \text{ in}}{864 \text{ in}^3} \approx 13.4$

PTS: 2 REF: 012419geo TOP: Volume KEY: prisms

288 ANS:
$y = -x + 2$

PTS: 2 REF: 012416geo TOP: Line Dilations

289 ANS:
Step 2

PTS: 2 REF: 061603geo TOP: Equations of Circles
KEY: find center and radius | completing the square

290 ANS:
10

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

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

291 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

292 ANS:
2

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

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

PTS: 2 REF: 061519geo TOP: Surface Area

293 ANS:
9

$6^2 = 4x$

$x = 9$

PTS: 2 REF: 012412geo TOP: Similarity KEY: altitude

294 ANS:
14.3
$\frac{9}{5} = \frac{9.2}{x}$ $5.1 + 9.2 = 14.3$

$9x = 46$

$x \approx 5.1$

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

295 ANS:
230
$2592276 = \frac{1}{3} \cdot s^2 \cdot 146.5$

$230 \approx s$

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

296 ANS:
48°
$\frac{136 - x}{2} = 44$

$136 - x = 88$

$48 = x$

PTS: 2 REF: 012414geo TOP: Chords, Secants and Tangents
KEY: secants drawn from common point, angle

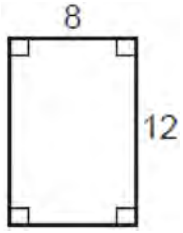
297 ANS:
$5\sqrt{10}$
$\sqrt{(-1-2)^2 + (4-3)^2} = \sqrt{10}$

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

298 ANS:
5264
$V = \pi(8)^2(4 - 0.5)(7.48) \approx 5264$

PTS: 2 REF: 012320geo TOP: Volume KEY: cylinders

299 ANS:



PTS: 2 REF: 012415geo TOP: Cross-Sections of Three-Dimensional Objects

300 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

301 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

302 ANS:
$\angle CDF \cong \angle ACB$

Since $\overline{AD} \parallel \overline{BC}$, $\overset{\frown}{AB} \cong \overset{\frown}{CD}$. $\text{m}\angle ACB = \frac{1}{2}\text{m}\overset{\frown}{AB}$

$\text{m}\angle CDF = \frac{1}{2}\text{m}\overset{\frown}{CD}$

PTS: 2 REF: 012323geo TOP: Chords, Secants and Tangents
KEY: chords and tangents

303 ANS:
$\sqrt{72}$

$x^2 = 3 \times 24$

$x = \sqrt{72}$

PTS: 2 REF: 012315geo TOP: Similarity KEY: altitude

304 ANS:
628

$V = \pi r^2 h = \pi \cdot 5^2 \cdot 8 \approx 200\pi$

PTS: 2 REF: 082304geo TOP: Volume KEY: cylinders

305 ANS:
320π

$r = 8$, forming an 8-15-17 triple. $V = \frac{1}{3}\pi(8)^2 15 = 320\pi$

PTS: 2 REF: 082318geo TOP: Volume KEY: cones

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

PTS: 2 REF: 011623geo TOP: Circumference

307 ANS:
octagon
$\frac{360°}{45°} = 8$

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

308 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: Inscribed Quadrilaterals

309 ANS:
$21.40
$24 \text{ ht}\left(\frac{0.75 \text{ in}^3}{\text{ht}}\right)\left(\frac{0.323 \text{ lb}}{1 \text{ in}^3}\right)\left(\frac{\$3.68}{\text{lb}}\right) \approx \$21.40$

PTS: 2 REF: 012306geo TOP: Density

310 ANS:
$\frac{2}{3}$
$\frac{4}{6} = \frac{3}{4.5} = \frac{2}{3}$

PTS: 2 REF: 081523geo TOP: Dilations

311 ANS:
center $(-3, 1)$ and radius 3
$x^2 + 6x + y^2 - 2y = -1$

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

$(x + 3)^2 + (y - 1)^2 = 9$

PTS: 2 REF: 062309geo TOP: Equations of Circles
KEY: completing the square

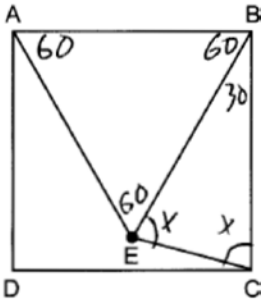
312 ANS:
$y = -2x + 4$
The given line *h*, $2x + y = 1$, does not pass through the center of dilation, the origin, because the *y*-intercept is at $(0,1)$. The slope of the dilated line, *m*, will remain the same as the slope of line *h*, -2. All points on line *h*, such as $(0,1)$, the *y*-intercept, 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

313 ANS:
$\frac{CE}{AE} = \frac{AE}{ET}$

PTS: 2 REF: 012418geo TOP: Similarity KEY: altitude

314 ANS:
75º



$30 + 2x = 180$
$2x = 150$
$x = 75$

PTS: 2 REF: 082315geo TOP: Interior and Exterior Angles of Polygons

315 ANS:
$y = 2x + 9$
$\left(\frac{-4+0}{2}, \frac{6+4}{2}\right) \rightarrow (-2,5)$; $\frac{6-4}{-4-0} = \frac{2}{-4} = -\frac{1}{2}$; $m_{\perp} = 2$; $y - 5 = 2(x + 2)$
$y = 2x + 4 + 5$
$y = 2x + 9$

PTS: 2 REF: 062324geo TOP: Parallel and Perpendicular Lines
KEY: perpendicular bisector

316 ANS:
a cone

PTS: 2 REF: 061501geo TOP: Rotations of Two-Dimensional Objects

317 ANS:

$-\frac{5}{3}$

The slope of a line in standard form is $-\frac{A}{B}$ so the slope of this line is $\frac{3}{5}$ Perpendicular lines have slope that are the opposite and reciprocal of each other.

PTS: 2 REF: 012313geo TOP: Parallel and Perpendicular Lines
KEY: find slope of perpendicular line

318 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

319 ANS:

24

$\frac{100000 \text{ g}}{7.48 \text{ g/ft}^3} = \pi(r^2)(30 \text{ ft})$

$11.92 \text{ ft} \approx r$

$23.8 \approx d$

PTS: 2 REF: 012424geo TOP: Volume KEY: cylinders

320 ANS:

center $(-6,0)$ and radius 3

$x^2 + 12x + 36 + y^2 = -27 + 36$

$(x+6)^2 + y^2 = 9$

PTS: 2 REF: 082313geo TOP: Equations of Circles
KEY: completing the square

321 ANS:

$\frac{EC}{EA}$

PTS: 2 REF: 061518geo TOP: Line Dilations

322 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: Triangles in the Coordinate Plane

323 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

324 ANS:

rotation

PTS: 2 REF: 081513geo TOP: Identifying Transformations
KEY: graphics

325 ANS:

73

$\cos 47 = \frac{50}{x}$

$x \approx 73$

PTS: 2 REF: 012406geo TOP: Using Trigonometry to Find a Side

326 ANS:

Beth and Carl

PTS: 2 REF: 081619geo TOP: Sectors

327 ANS:

$(-1, 1)$

$5 + \frac{2}{5}(-10 - 5) = 5 + \frac{2}{5}(-15) = 5 - 6 = -1$ $7 + \frac{2}{5}(-8 - 7) = 7 + \frac{2}{5}(-15) = 7 - 6 = 1$

PTS: 2 REF: 012410geo TOP: Directed Line Segments