NAME Key DATE _____ PER. _____

GEOMETRY PRE-AP SPRING FINAL EXAM REVIEW

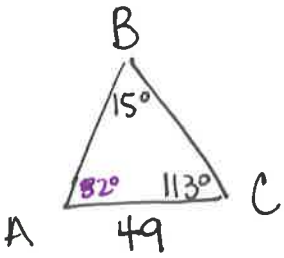
LAW OF SINES & COSINES

$m\angle A =$ 52°

$a =$ 149

$b =$ 174

1. Solve the triangle if $\angle B = 15°, \angle C = 113°$, side $b = 49$. Round answers to the nearest whole number.



① $m\angle A = 180° - (15° + 113°) = 52°$

② $\frac{\sin 15°}{49} = \frac{\sin 52°}{a}$

$a \approx 149$ units

③ $\frac{\sin 15°}{49} = \frac{\sin 113}{c}$

$c \approx 174$

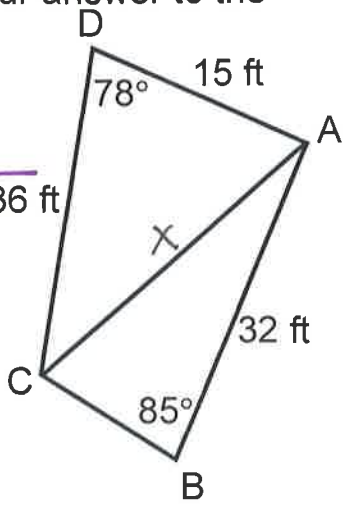
AC = 36ft

2. Would you use Law of Sines or Law of Cosines to find the length of $\overline{AC}$? Find the length. Round your answer to the nearest foot.

Law of cosines:

$\sqrt{x^2} = \sqrt{15^2 + 36^2 - 2(15)(36)\cos 78°}$ 36 ft

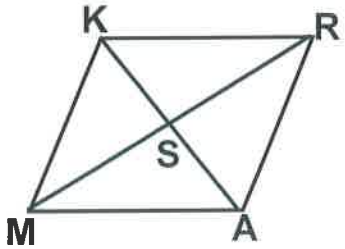
$x = 36$



QUADRILATERALS

Complete each statement about ~~quadrilateral~~ parallelogram MARK and explain your answer.

3. $\angle MKR \cong$ $\angle MAR$	Why? Opposite $\angle$s are $\cong$ in a parallelogram.
4. $\overline{AS} \cong$ $\overline{KS}$	Why? diagonals bise each other in a parallelogram.
5. $\angle ARK$ and $\angle MAR$ are supplementary.	Why? consecutive angles are supplementary in a parallelogram.

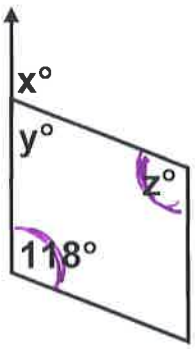


For each parallelogram, find the values of 'x', 'y', and 'z'.

6. x = 118

y = 62

z = 118°

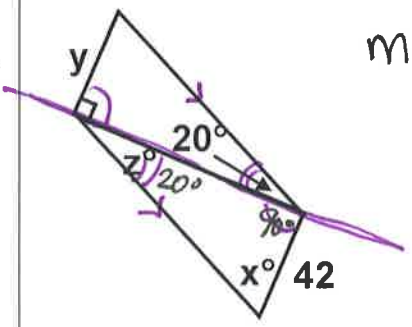


$m\angle y = 180° - 118° = 62°$

7. x = 70

y = 42

z = 20°



$m\angle x = 180° - (20° + 90°) = 70°$

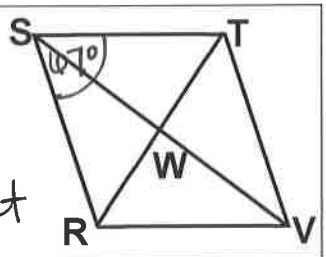
Use rhombus RSTV and the given information to find each value.

8. m∠RSW = 33.5°

If m∠RST = 67°, find the m∠RSW.

$\frac{67°}{2} = 33.5°$

In a rhombus diagonal bisect opposite ∠s

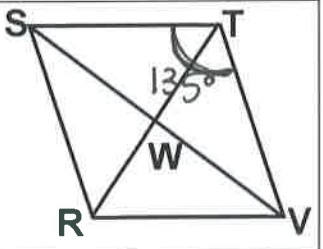


9. m∠STV = 22.5°

Find m∠SVT if m∠STV = 135°

$m\triangle RVT = 180° - 135° = 45°$

$m\triangle SVT = \frac{45°}{2} = 22.5°$



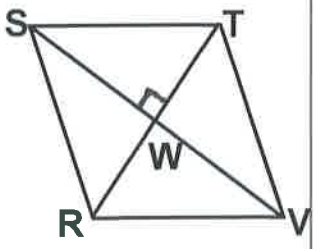
10. x = 41

If m∠SWT = (2x + 8)°, find the value of 'x'.

$2x + 8 = 90$

$2x = 82$

$x = 41$



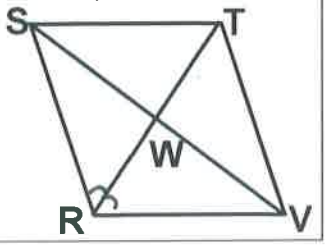
11. x = 17

What is the value of 'x' if m∠WRV = (5x + 15)° and m∠WRS = (7x – 19)°?

$7x - 19 = 5x + 15$

$2x = 34$

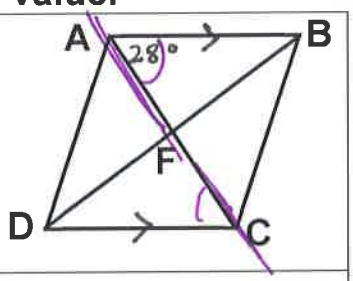
$x = 17$



Use rhombus ABCD and the given information to find each value.

12. 28°

If m∠BAF = 28°, find m∠ACD.



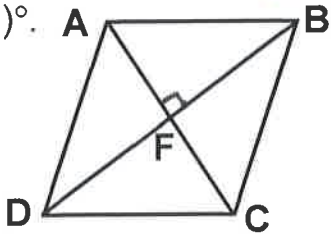
13. x = 4

Find the value of 'x' if m∠AFB = (16x + 26)°.

$16x + 26 = 90$

$16x = 64$

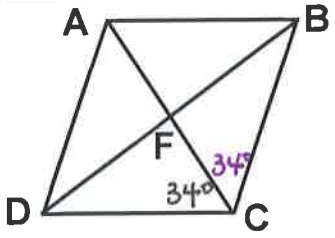
$x = 4$



14. m∠ABC = 112°

If m∠ACD = 34°, find m∠ABC.

$m\angle ABC = 180° - 68° = 112°$



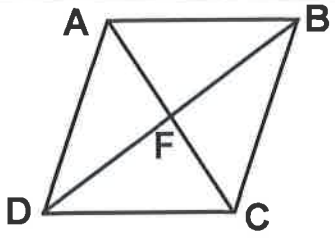
15. x = 21

Find the value of 'x' if m∠BFC = (4x + 6)°.

$4x + 6 = 90°$

$4x = 84$

$x = 21$



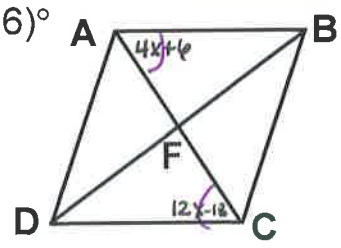
16. x = 3

What is the value of 'x' if m∠BAC = (4x + 6)° and m∠ACD = (12x – 18)°?

$12x - 18 = 4x + 6$

$8x = 24$

$x = 3$



WXYZ is an isosceles trapezoid with bases $\overline{WZ}$ and $\overline{XY}$ and median $\overline{MN}$. Use the given information to solve each problem.

17. MN = 7

Find MN if WZ = 11 and XY = 3.

$MN = \frac{11+3}{2} = 7$

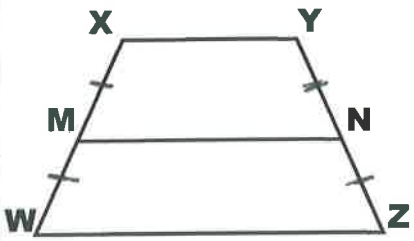
18. XY = 6

If MN = 10 and WZ = 14, find XY.

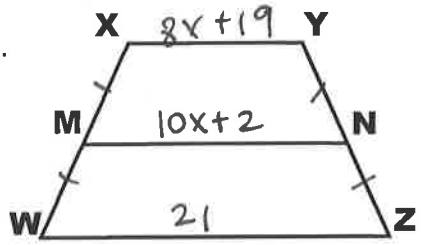
$10 = \frac{14 + x}{2}$

$20 = 14 + x$

$6 = x$

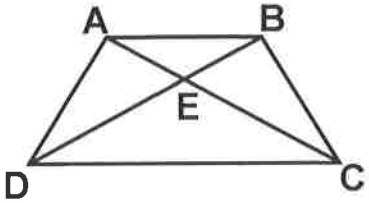


19. x = 3	If MN = 10x + 2, WZ = 21, and XY = 8x +19, find the value of 'x'. $10x+2 = \frac{8x+19+21}{2}$ $20x+4 = 8x+40$ $12x = 36 \rightarrow x = 3$



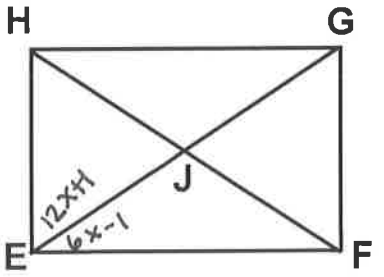
ABCD is an isosceles trapezoid. Determine if each statement is TRUE or FALSE (circle one) and explain your reasoning.

20. AC = BD (TRUE) or FALSE	Explain: Diagonals are $\cong$ in an isosceles trapezoid.
21. $\overline{AD} \cong \overline{CB}$ (TRUE) or FALSE	Explain: Legs are $\cong$ in an isosceles trapezoid.
22. $\overline{CA}$ and $\overline{BD}$ bisect each other. TRUE or (FALSE)	Explain: Diagonals do not bisect one another in trapezoids.

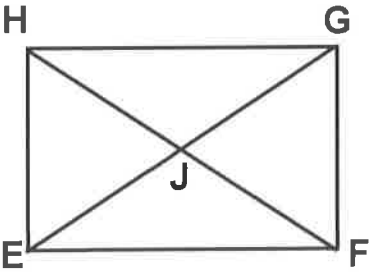


Quadrilateral EFGH is a rectangle. Find the value of 'x'.

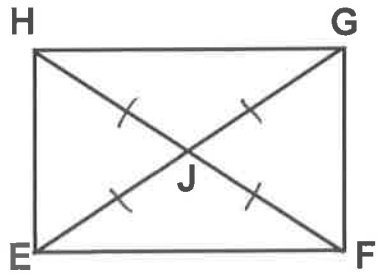
23. x = 5	m∠HEG = (12x + 1)° and m∠GEF = (6x – 1)° $12x+1+6x-1 = 90$ $18x = 90$ $x = 5$



24. x = 6	HF = 5x – 4 and EG = 6x – 10 $6x-10 = 5x-4$ $x = 6$

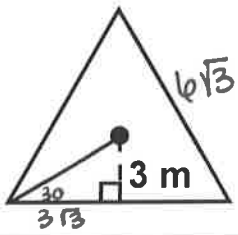
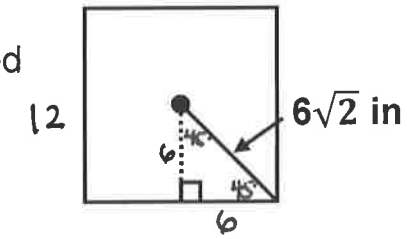
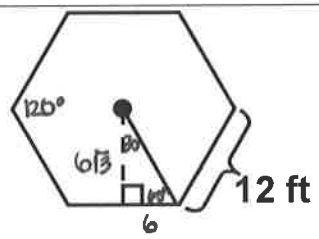


25. x = 2	JF = 8x + 4 and EG = 24x – 8 $\frac{24x-8}{2} = 8x+4$ $12x-4 = 8x+4$ $4x = 8$ $x = 2$



PERIMETER & AREA OF POLYGONS

Find the EXACT area of each regular polygon. Write your final, EXACT answer, with appropriate units, in the blank provided.

26. A = $27\sqrt{3}$ m^2 apothem = 3 Perimeter = $18\sqrt{3}$	Find the area of the equilateral triangle with the indicated apothem length: $A = \frac{1}{2}(3)(18\sqrt{3}) = 27\sqrt{3}$ 
27. A = 144 in^2	Find the area of the regular quadrilateral with the indicated radius: $A = 12(12) = 144$ 
28. A = $216\sqrt{3}$ ft^2 $a = 6\sqrt{3}$ $P = 72$	Find the area of the regular polygon with the given side length: $\frac{180(6-2)}{6} = 120$ $A = 1/2(6\sqrt{3})(72) = 216\sqrt{3}$ 

CIRCLE BASICS

Write the term that best describes the following definitions.

29. Chord	A segment with both endpoints on the circle.
30. Diameter	A chord that goes through the center of a circle.
31. Secant	A line or ray that intersects a circle at two points.
32. Tangent	A line or ray that intersects a circle at exactly one point.

Find the EXACT answer for each of the following and write it in the space provided. Leave your answers in simplest form.

33. 96 cm	In a given circle, the radius is 48 cm. Find the measure of the circle's diameter.
34. $r = 6$ units	In a given circle, the area is 36π. Find the measure of the circles' radius.

35. 8π cm

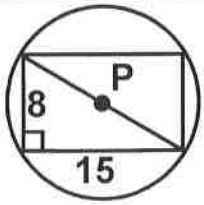
In a given circle, the diameter is 8 cm. Find the circumference of the circle.

36. 72.25π u²

Find the area of circle P.

$d = 17 \quad r = 8.5$

$A = \pi(8.5)^2$



37. 32π in²

Find the area of the circle:

$r = 4\sqrt{2}$

$A = \pi(4\sqrt{2})^2 = \pi(4\sqrt{2})(4\sqrt{2})$

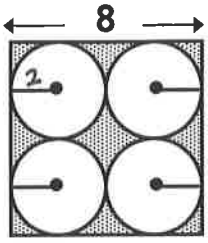
$= \pi(16)(2)$

38. $64 - 16\pi$ units²

Find the EXACT area of the shaded region.

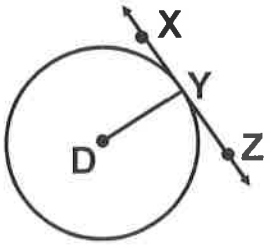
$A_{\square} = 8(8) = 64$

$A_{\circ} = \pi(2)^2 = 4\pi \times 4 = 16\pi$



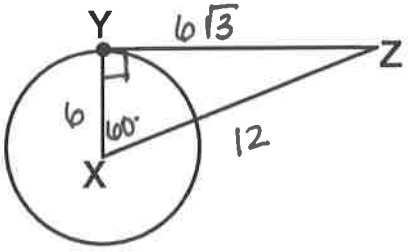
39. 90°

$\overrightarrow{XZ}$ is a tangent to circle D at Y. $\overline{DY}$ is a radius. Find the measure of ∠DYZ.



40. $XZ = 12$

$\overline{ZY}$ is tangent to circle X.
∠YXZ = 60°, YZ = $6\sqrt{3}$.
Find the length of $\overline{XZ}$.



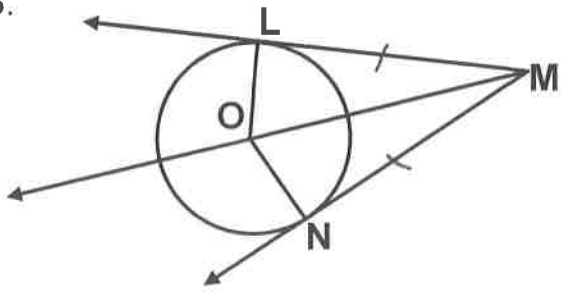
41. $x = 6$

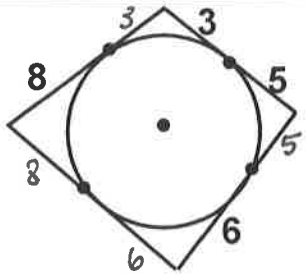
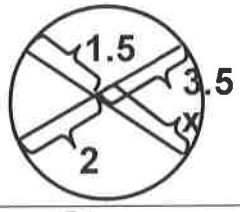
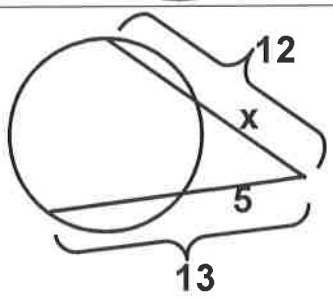
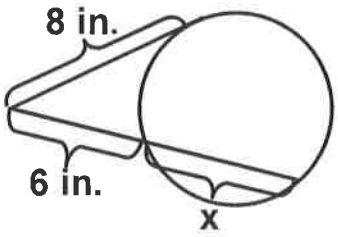
$\overrightarrow{ML}$ and $\overrightarrow{MN}$ are tangent to circle O.
LM = 6x + 2 and NM = 38.
Find the value of 'x'.

$6x + 2 = 38$

$6x = 36$

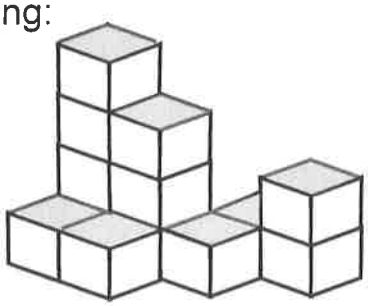
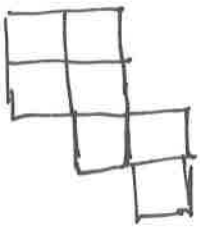
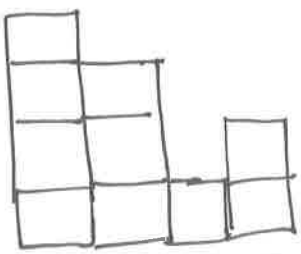
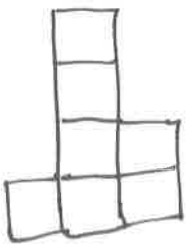
$x = 6$



44 units 42.	Find the perimeter of the quadrilateral. $6+10+12+16=44$	
$X=\frac{14}{3}$ 43.	Find the value of 'x'. $1.5(x)=2(3.5)$ $1.5x=7$	
$X=\frac{65}{12}$ 44.	Find the value of 'x'. $12(x)=13(5)$ $\frac{12x}{12}=\frac{65}{12}$	
$X=14/3$ 45.	Find the value of 'x'. $8^2=(6+x)6$ $64=36+6x$ $\frac{28}{6}=\frac{6x}{6}$	

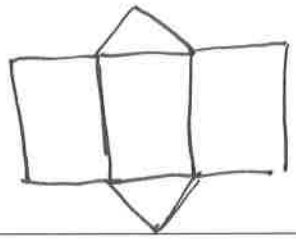
PRISMS & PYRAMIDS

Draw the indicated views for the isometric drawing below.

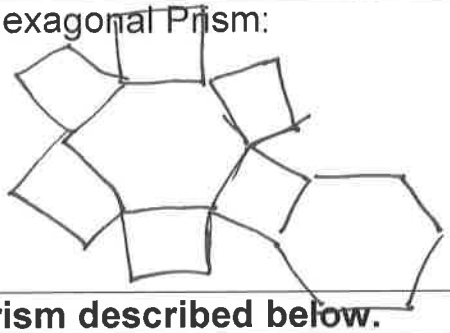
Isometric Drawing:  **Front**	46. Top View: 
47. Left View: 	48. Front View: 

Draw a net that would produce the indicated three-dimensional figure.

49. Triangular Prism:

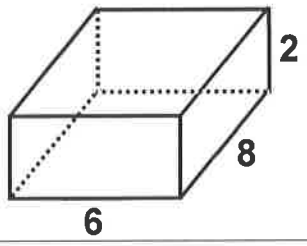


50. Hexagonal Prism:



Find the indicated measure for each of the prism described below.

51. V = 96 units^3



$V = 6(8)(2)$

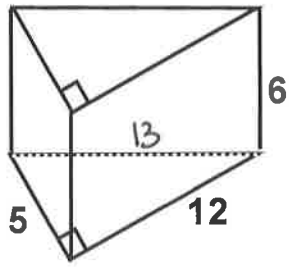
52. V = 27 cm^3

Find the volume of a cube with a base edge of 3 cm.

$V = 3(3)(3) = 27$

53. TA = 240 units^2

Find the Total Area of the right triangular prism.



$TA = Ph + 2B$

$TA = 30(6) + 2(30)$

$= 240$

$P = 5 + 12 + 13 = 30$

$h = 6$

$B = \frac{1}{2}(5)(12) = 30$

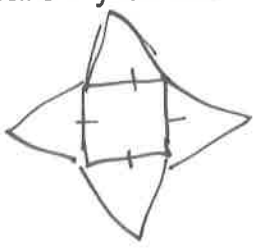
54. V = 8ft^3

The volume of a rectangular prism is 64 cubic feet. If one dimension were reduced to one-sixteenth it original length, a second dimension were doubled, and a third dimension remained unchanged, what would be its new volume?

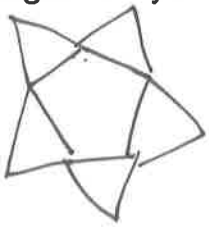
$\left(\frac{1}{16}\right)(2)(1) = \frac{1}{8}$ $64 \cdot \frac{1}{8} = 8$

Draw a net that would form the indicated three-dimensional object.

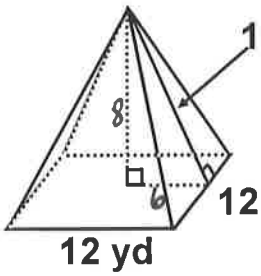
55. Square Pyramid:



56. Pentagonal Pyramid:



Find the indicated measure for each of the following pyramids. Leave answers EXACT and in simplest form.

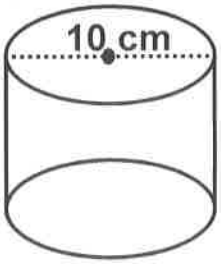
57. LA = $240\ yd^2$	Find the Lateral Area of the square pyramid.  $LA = \frac{1}{2}Pl$ $P = 4(12) = 48$ $LA = \frac{1}{2}(48)(10)$ $l = 10$ $= 240$
58. V = $384\ yd^3$	Find the Volume of the square pyramid from #65. $V = \frac{1}{3}Bh$ $B = 12(12) = 144$ $V = \frac{1}{3}(144)(8)$ $h = 8$ $= 384$

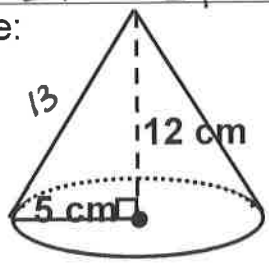
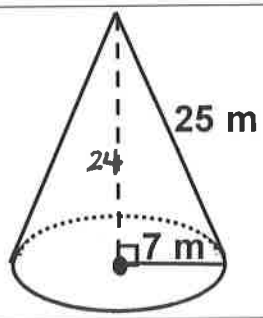
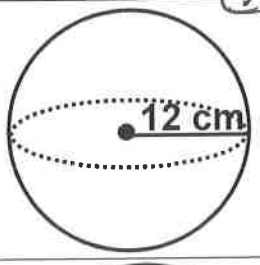
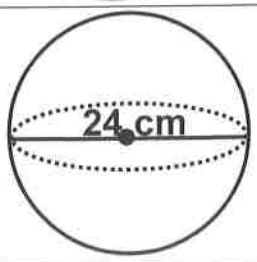
Find the correct answer for each of the following. Write your final answer, with corresponding units, in the blank provided.

59. V = 3 units^3	The Volume of a rectangular pyramid is 192 cubic units. If its dimensions are reduced to one-fourth their original length. What is the Volume of the smaller pyramid? $(\frac{1}{4})(\frac{1}{4})(\frac{1}{4}) = \frac{1}{64}$ $192 \cdot \frac{1}{64} = 3$
60. Factor = 9/4	If the dimensions of a pyramid were increased to three-halves their original length, by what factor would you multiply the original area to obtain the area of the larger pyramid? $(\frac{3}{2})(\frac{3}{2}) = \frac{9}{4}$

CYLINDERS, CONES, & SPHERES

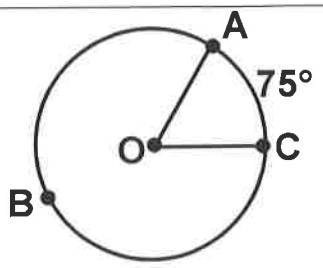
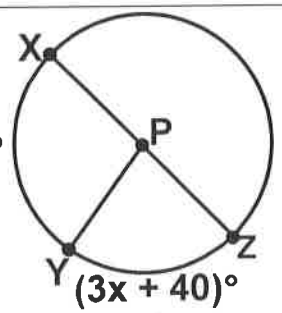
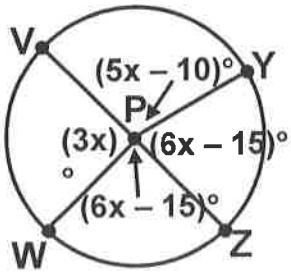
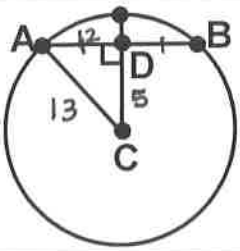
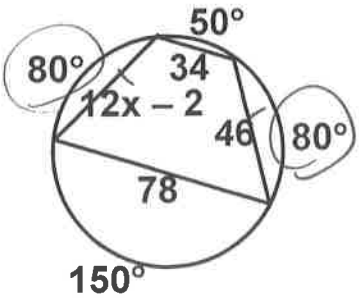
Find the correct answer for each of the following. Write your final, EXACT answer, with its corresponding units, in the blank provided.

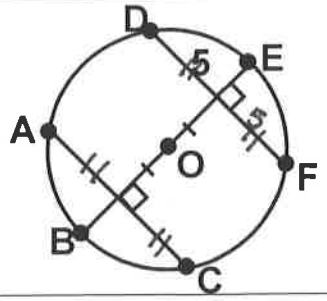
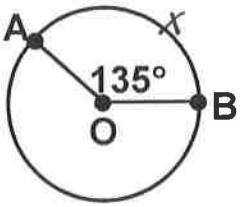
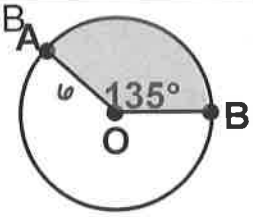
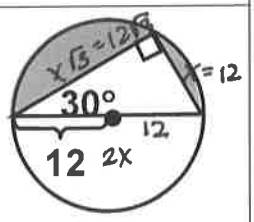
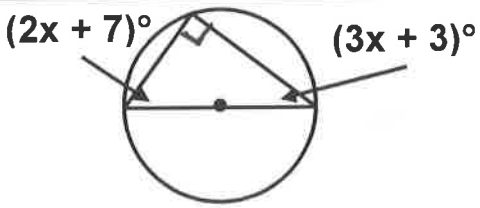
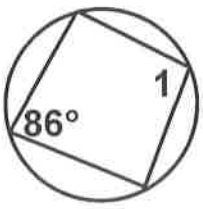
$200\pi\ cm^3$ 61.	Find the Volume of the cylinder:  $V = Bh = \pi r^2 h$ $V = \pi(5)^2(8) = 200\pi$

5 m 62.	The Lateral Area of a right circular cylinder is 60π square meters. The height is 12 m. Find the diameter of the base. $LA = Ph = 2\pi rh = 60\pi$ $r = 2.5$ $2\pi r(12) = 60\pi$ $\frac{24\pi r}{24} = \frac{60\pi}{24}$
$65\pi cm^2$ 63.	Find the Lateral Area of the right circular cone: $LA = \pi r l$ $LA = \pi(5)(13)$ 
$392\pi m^3$ 64.	Find the Volume of the right circular cone: $V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(7)^2(24) = 392\pi$ 
$6\sqrt{3}$ cm 65.	The Volume of a right circular cone is 72π cubic centimeters, and its height is 2 cm. Find the length of the radius. $V = \frac{1}{3}\pi r^2 h \rightarrow 72\pi = \frac{1}{3}\pi r^2(2)$ $\frac{3}{2} \cdot 72\pi = \left(\frac{2}{3}\pi r^2\right)^{3/2}$ $\sqrt{108} = \sqrt{r^2}$ $\sqrt{108} = 6\sqrt{3}$ 2 54 2 27 3 9 3 3
$576\pi cm^2$ 66.	Find the Total Area of the sphere: $TA = 4\pi r^2$ $TA = 4\pi(12)^2 = 576\pi$ 
$2304\pi cm^3$ 67.	Find the Volume of the sphere: $V = \frac{4}{3}\pi r^3$ $V = \frac{4}{3}\pi(12)^3 = 2304\pi$ 
12 cm 68.	The Total Area of a sphere is 144π square centimeters. Find its diameter. $TA = 4\pi r^2 \rightarrow \frac{144\pi}{4} = \frac{4\pi r^2}{4}$ $\sqrt{36} = \sqrt{r^2}$ $6 = r$

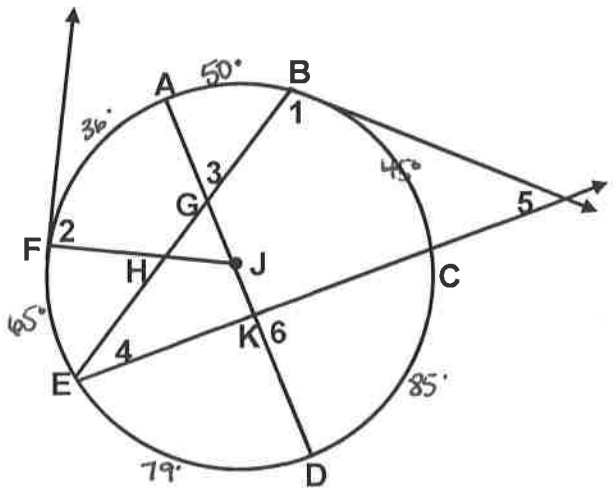
$15\pi m^3$ 69.	The Volume of a cylinder is 120π m^3. If it's dimensions are reduced to one-half their original length, what would its new Volume be? $\left(\frac{1}{2}\right)^3 = \frac{1}{8}$ $120\pi \cdot \frac{1}{8} = 15\pi$

ARCS, CIRCLES, & ANGLES
Write your final answer in the blank provided. Leave answers as EXACT.

285° 70.	In the diagram the measure of $\overset{\frown}{ABC}$ = ? 360° - 75° 
91° 71. 3(17) + 40	Given that $\overline{XZ}$ is a diameter, find $\overset{\frown}{YZ}$. 4X + 21 + 3X + 40 = 180 7X + 61 = 180 7X = 119 $\frac{7X}{7} = \frac{119}{7}$ X = 17 
90° 72. 5(20) - 10 100 - 10	Find the m∠VPY. 5X - 10 + 3X + 6X - 15 + 6X - 15 20X - 40 20X - 40 = 360 20X = 400 X = 20 
24 73.	If AC = 13 and CD = 5, then find AB. 
X = 4 74.	Find the value of 'x'. 12X - 2 = 46 12X = 48 X = 4 

10 75.	Find AC. 
4.5π cm 76.	If r = 6 cm, find the EXACT length of $\overset{\frown}{AB}$.  $\frac{X}{2\pi(6)} = \frac{135}{360}$ $\frac{360X}{360} = \frac{1620\pi}{360}$ $X = 4.5\pi$
13.5π cm^2 77.	If r = 6 cm, find the EXACT area of sector AOB  $\frac{X}{36\pi} = \frac{135}{360}$ $\frac{360X}{360} = \frac{4860\pi}{360}$ $X = 13.5\pi$
$72\pi - 72\sqrt{3}$ units^2 78.	Find the EXACT area of the shaded region.  $A_{\odot} = \frac{\pi(12)^2}{2} = 72\pi$ $A_{\triangle} = \frac{1}{2}\,12(12\sqrt{3}) = 72\sqrt{3}$
$X = 16$ 79.	Find the value of 'x'.  $2X+7+3X+3 = 90$ $5X+10 = 90$ $\frac{5X}{5} = \frac{80}{5}$
$94°$ 80.	Find the measure of $\angle 1$.  $m\angle 1 = 180 - 86 = 94°$

Use for problems 81 - 87. F and B are points of tangency.
$m\widehat{AB}$ = 50°, $m\widehat{CD}$ = 85°, $m\widehat{AF}$ = 36°, and $m\widehat{ED}$ =79°. $\overline{AD}$ is a diameter.

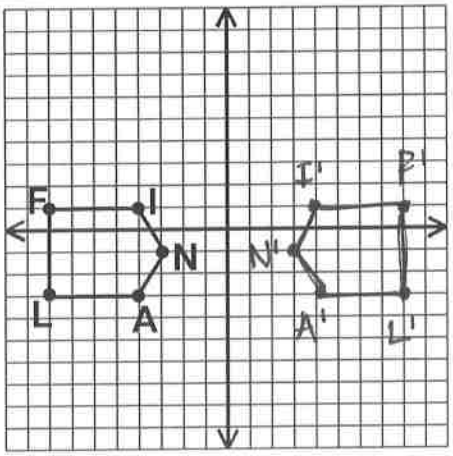


45° 81.	Find $m\widehat{BC}$. 180° - 50° - 85°
65° 82.	Find $m\widehat{EF}$. 180° - 36° - 79°
104.5° 83.	Find m∠1. $\frac{1}{2}(45° + 85° + 79°)$
90° 84.	Find m∠2.
64.5° 85.	Find m∠3. 1/2(50° + 79°)
22.5° 86.	Find m∠4. 1/2 (45°)
53° 87.	Find m∠5. 1/2 (65+36+50 -45)

TRANSFORMATIONS. Map the image and give the new coordinates

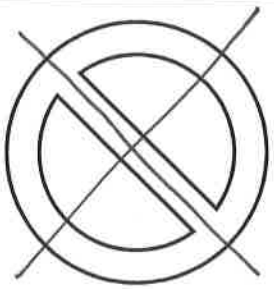
88. F'(8 , 1)
I'(4 , 1)
N'(3 , -1)
A'(4 , -3)
L'(8 , -3)

Reflect the image below across the x-axis and write the coordinates of the vertices of the new polygon.



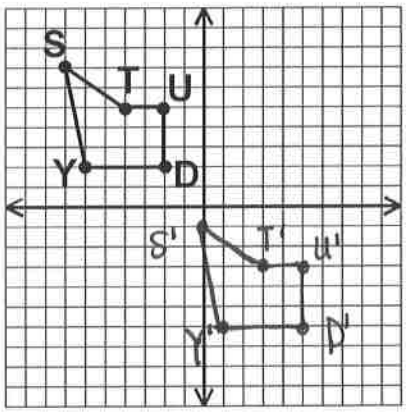
89. 2

Draw the line(s) of symmetry for the object, then write how many total lines of symmetry it has in the blank at left.



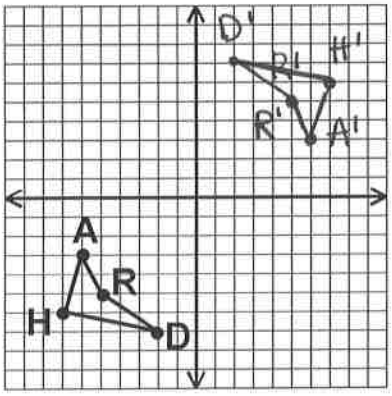
90. S'(0 , -1)
T'(3 , -3)
U'(5 , -3)
D'(5 , -6)
Y'(1 , -6)

Translate the polygon 7 units right and 8 units down, then state the coordinates of the new polygon.



91. H'(7 , 6)
A'(6 , 3)
R'(5 , 5)
D'(2 , 7)

Rotate the figure below 180°, then state the new coordinates of its vertices.



92. N'(6 , 0)
D'(0 , -9)

Dilate the figure below using E as your center and a scale factor of 3.