

St. Thomas Aquinas – Geometry Test-Out Review

For 1-3, use the diagram at the right to answer the following questions.

1. Find AB. Simplify the radical if necessary.

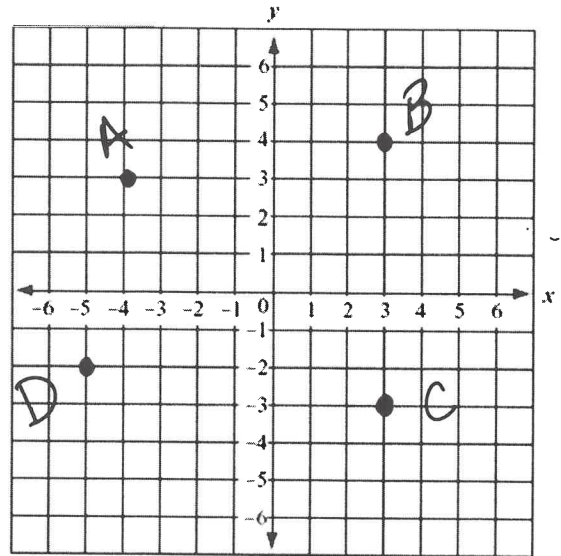
$$5\sqrt{2}$$

2. G is the midpoint of \overline{CD} , find G.

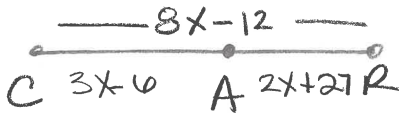
$$\left(-1, \frac{-5}{2}\right)$$

3. D is the midpoint of \overline{AE} , find E.

$$(-6, -7)$$

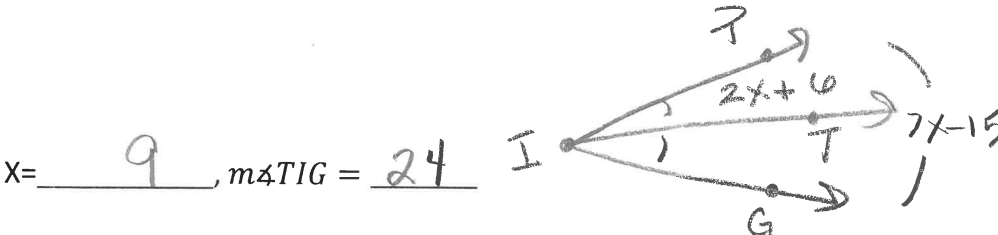


4. A is between C and R. $CA = 3x - 6$, $CR = 8x - 12$, $AR = 2x + 27$. Draw and label the picture.



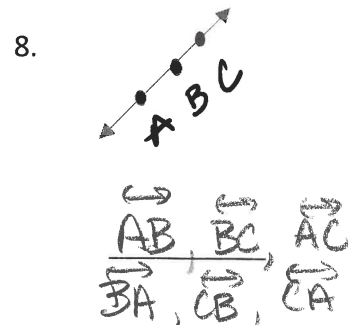
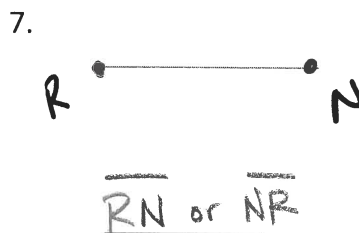
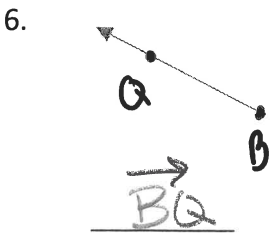
$x = 11$, $CA = 27$, $AR = 49$

5. \overline{IT} is the angle bisector of $\angle PIG$. $m\angle PIT = 2x + 6$, $m\angle PIG = 7x - 15$. Draw and label the picture.



$x = 9$, $m\angle TIG = 24$

Give the notation for each picture. If there is more than one answer, just give one.

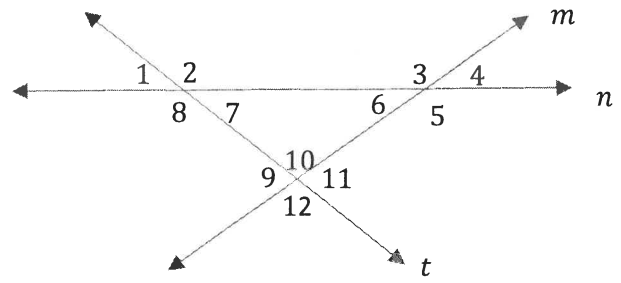


9. The measure of an angle is 63 more than two times the measure of the complement. Find the measure of the two angles.

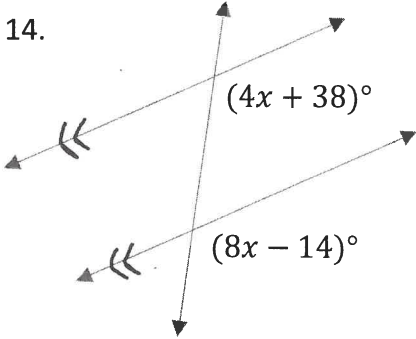
9, 81

Name the indicated angle pair and also state the transversal.

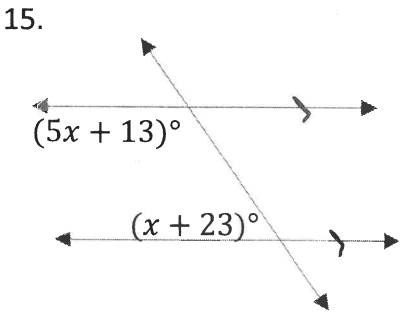
10. $\angle 3$ and $\angle 7$ alternate interior, n
 11. $\angle 1$ and $\angle 8$ Linear Pair, none
 12. $\angle 4$ and $\angle 9$ Alternate exterior, m
 13. $\angle 8$ and $\angle 9$ Same-side int, t
or
Consecutive int



For each problem, name the angle pair, find the value of x , and then find the value of the angles.

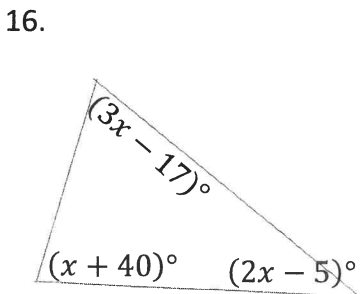


Name: Corresponding
 $x =$ 13

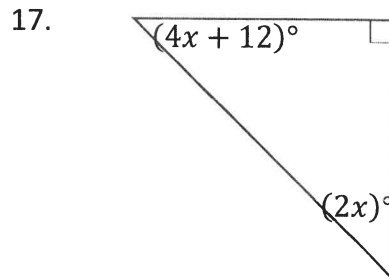


Name: Same-side int
or
Consecutive int
 $x =$ 24

Find the value of the variable(s) in each picture. Show work.



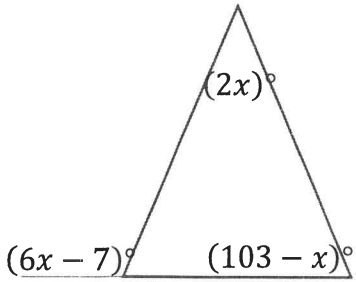
$x =$ 27



$x =$ 13

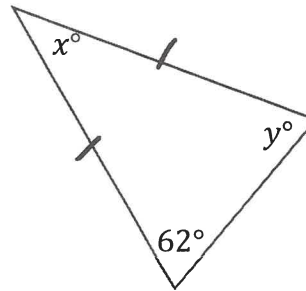
Find the value of the variable(s) in each picture. Show work.

18.



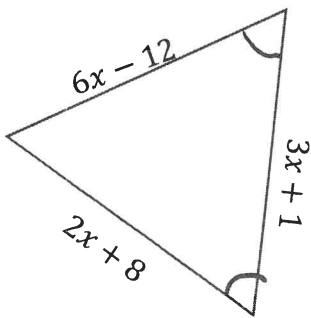
$x = \underline{22}$

19.



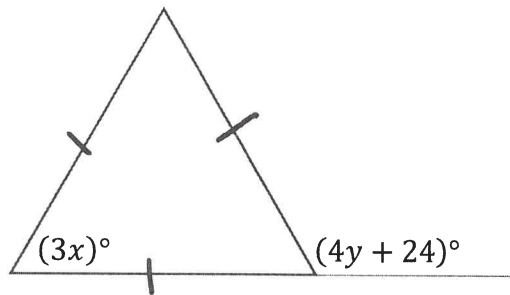
$x = \underline{56}, y = \underline{102}$

20.



$x = \underline{5}$

21.

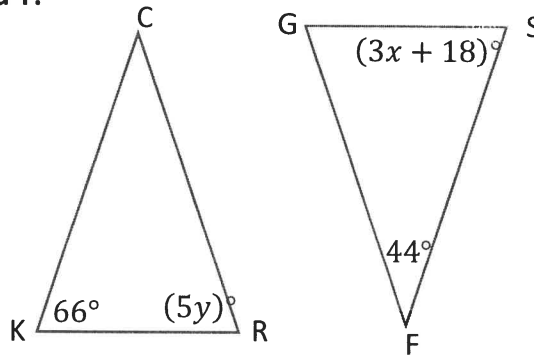


$x = \underline{20}, y = \underline{24}$

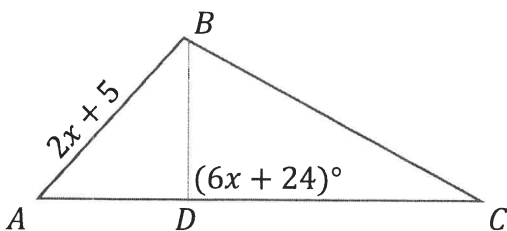
Given $\triangle KCR \cong \triangle SFG$, find the value of X and Y .

22. $X = \underline{110}$

23. $Y = \underline{14}$

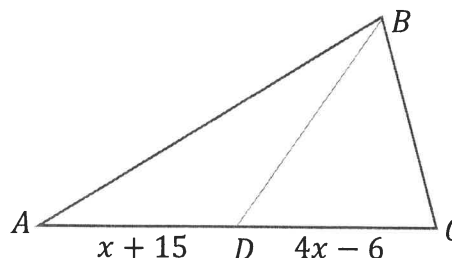


24. \overline{BD} is an altitude of $\triangle ABC$.



$x = \underline{11} \quad AB = \underline{27}$

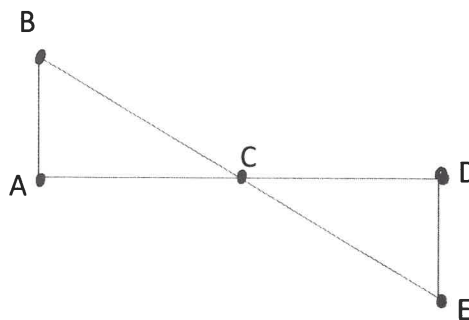
25. \overline{BD} is a median of $\triangle ABC$.



$x = \underline{7} \quad AC = \underline{44}$

Fill in the blanks to complete the proof.

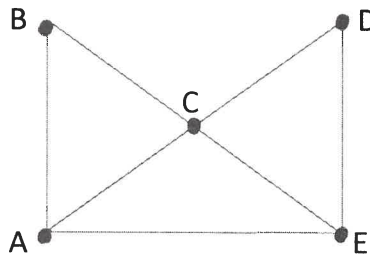
26. **Given:** $\overline{BA} \perp \overline{AD}$, $\overline{ED} \perp \overline{AD}$, C is the midpoint of \overline{AD}
Prove: $\triangle ABC \cong \triangle DEC$



Statements	Reasons
1. $\overline{BA} \perp \overline{AD}$, $\overline{ED} \perp \overline{AD}$	1. Given
2. $\angle A$ and $\angle D$ are right \angle 's	2. Definition of perpendicular lines
3. $\angle A \cong \angle D$	3. Right \angle Congruence thm
4. C is the mdpt of \overline{AD}	4 Given
5. $\overline{AC} \cong \overline{CD}$	5. Def. of a midpoint
6. $\angle BCA \cong \angle DCE$	6. Vertical Angle Theorem
7. $\triangle ABC \cong \triangle DEC$	7. ASA

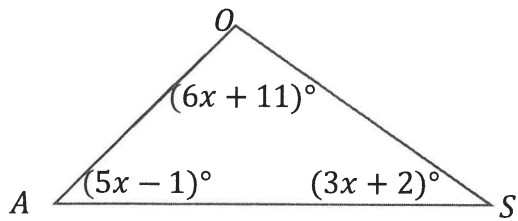
Write a two-column proofs.

27. **Given:** $\overline{BE} \cong \overline{AD}$, $\overline{BA} \perp \overline{AE}$, $\overline{DE} \perp \overline{AE}$
Prove: $\angle B \cong \angle D$



Statements	Reasons
① $\overline{BE} \cong \overline{AD}$	① Given
② $\overline{BA} \perp \overline{AE}$, $\overline{DE} \perp \overline{AE}$	② Given
③ $\angle BAE$ & $\angle DEA$ are rt \angle 's	③ Def of perp. lines
④ $\overline{AE} \cong \overline{AE}$	④ Reflexive
⑤ $\triangle BAE \cong \triangle DEA$	⑤ HL
⑥ $\angle B \cong \angle D$	⑥ CPCTC

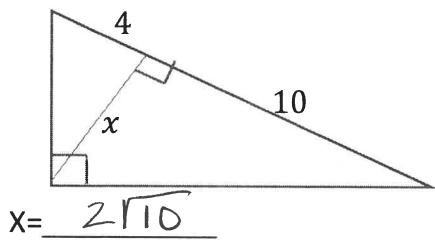
28. Fill in the blanks, then list the sides from *least to greatest*.



$x = 12$, $m\angle A = 59$, $m\angle O = 83$, $m\angle S = 38$ Sides \overline{AO} , \overline{OS} , \overline{AS}

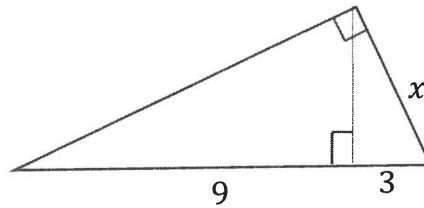
Find the value of the variable(s) in the pictures. Exact answers only...**NO DECIMALS!**

29.



$x = 2\sqrt{10}$

30.



$x = 6$

Given $\triangle FLY \sim \triangle COW$, use the picture to answer the following questions.

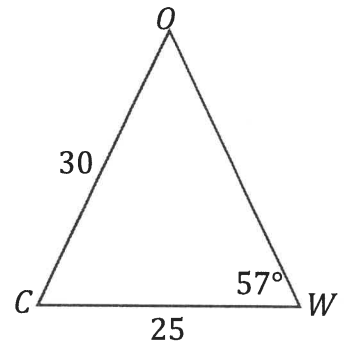
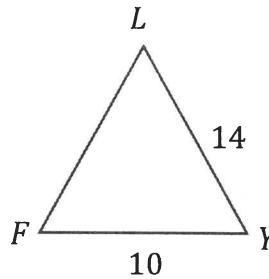
31. What is the scale factor? $\frac{2}{5}$

32. $m\angle Y = 57$

33. $FL = 12$

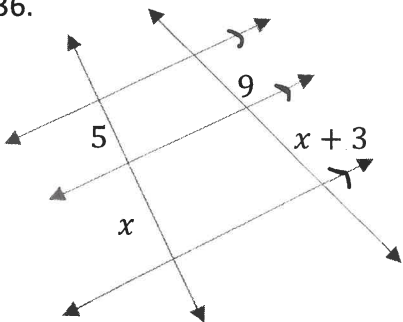
34. $OW = 35$

35. What is the ratio of the two perimeters? $\frac{2}{5}$ or $2:5$



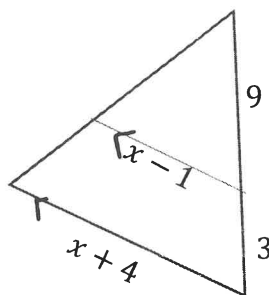
Find the value of X. If necessary, round answers to the nearest 10th.

36.



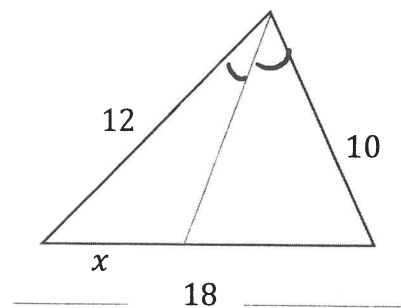
$x = 3.8$

37.



$x = 16$

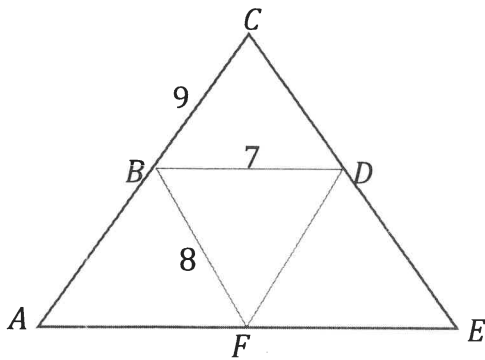
38.



$x = 9.8$

Find the indicated values.

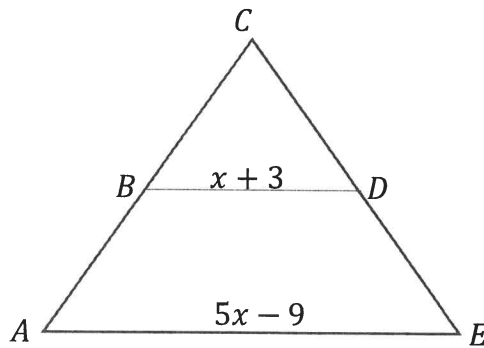
39. \overline{BD} , \overline{DF} , \overline{BF} are midsegments



Perimeter of $\triangle BDF = \underline{24}$

Perimeter of $\triangle ACE = \underline{48}$

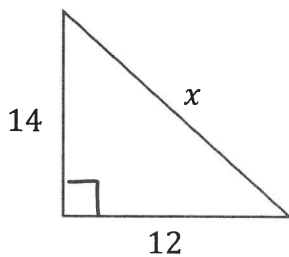
40. \overline{BD} is a midsegment.



$x = \underline{5}$, $BD = \underline{8}$, $AE = \underline{16}$

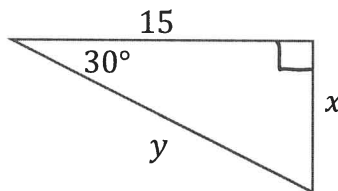
Find the value of variables in each picture. When appropriate, leave answers as simplified radicals or fractions.

41.



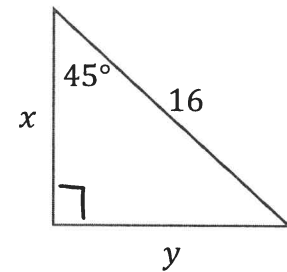
$x = \underline{2\sqrt{85}}$

42.



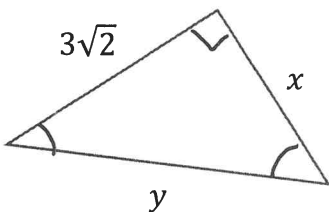
$x = \underline{5\sqrt{3}}$, $y = \underline{10\sqrt{3}}$

43.



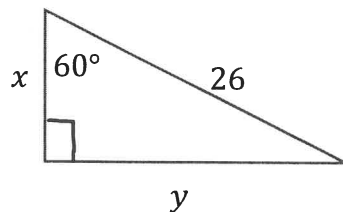
$x = \underline{8\sqrt{2}}$, $y = \underline{8\sqrt{2}}$

44.



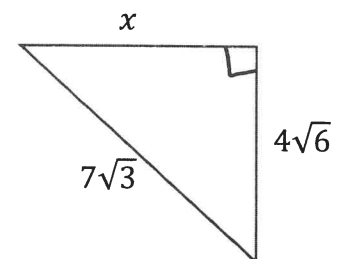
$x = \underline{3\sqrt{2}}$, $y = \underline{6}$

45.



$x = \underline{13}$, $y = \underline{13\sqrt{3}}$

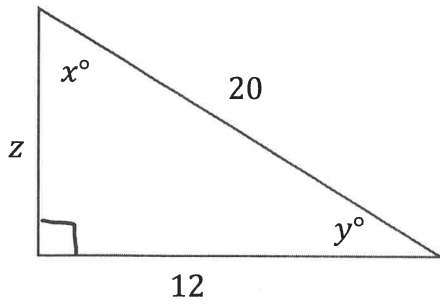
46.



$x = \underline{\sqrt{51}}$

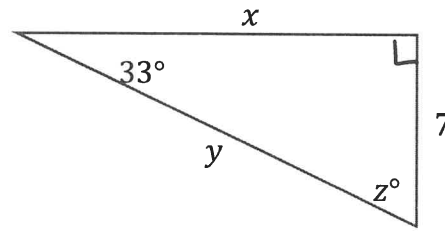
Find the value of the variables. Round sides to the nearest 100th and angles to the nearest whole degree.

47.



$x = \underline{37}$, $y = \underline{53}$, $z = \underline{16}$

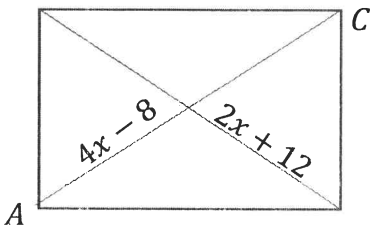
48.



$x = \underline{10.78}$, $y = \underline{12.85}$, $z = \underline{57}$

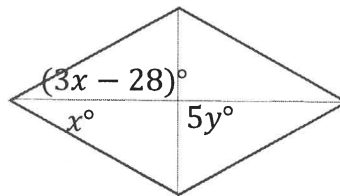
Find the value of the variables in each picture.

49. Rectangle



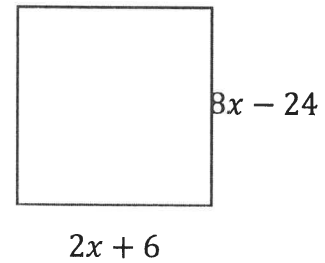
$x = \underline{10}$, $AC = \underline{64}$

50. Rhombus



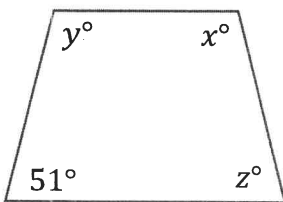
$x = \underline{14}$, $y = \underline{18}$

51. Square



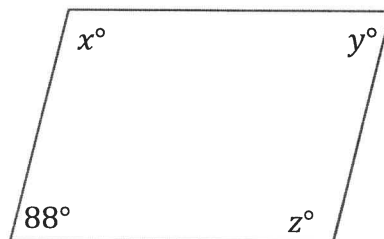
$x = \underline{5}$, Perimeter = $\underline{64}$

52. Isosceles trapezoid



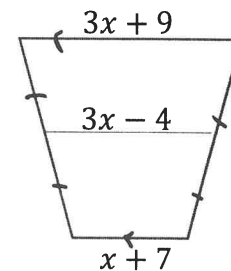
$x = \underline{129}$, $y = \underline{129}$, $z = \underline{51}$

53. Parallelogram



$x = \underline{92}$, $y = \underline{88}$, $z = \underline{92}$

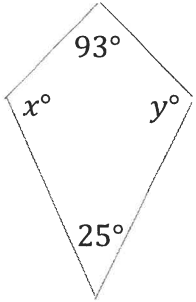
54.



$x = \underline{12}$

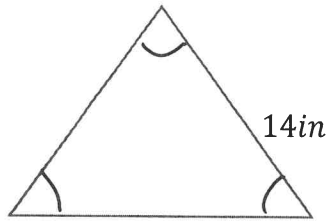
Find the indicated values in each picture.

55. Kite



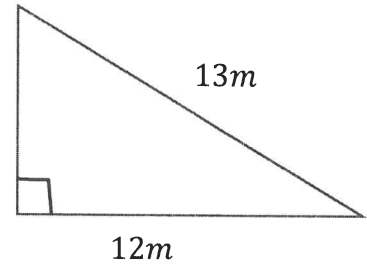
$x = 121$, $y = 121$

56.



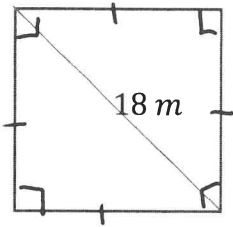
Area = $49\sqrt{3} \text{ in}^2$ (exact)

57.



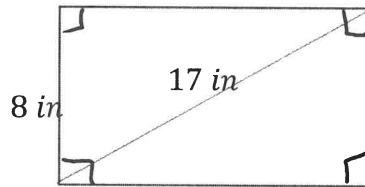
Area = 30 m^2

58.



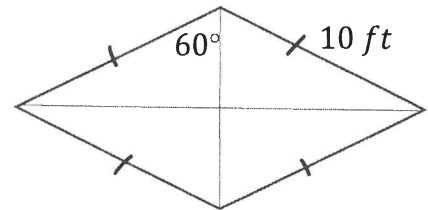
$A = 102 \text{ m}^2$

59.



$A = 120 \text{ in}^2$

60.



$A = 50\sqrt{3} \text{ ft}^2$ (exact)

61. What is the measure of one exterior angle in a regular 18-gon.

$n - 2 = 20$

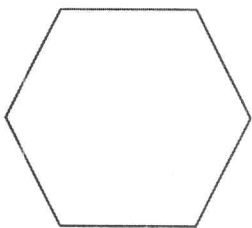
62. The interior angle of a regular polygon is 140° . Find the number of sides.

9 sides

63. Find the sum of the interior angles in a regular dodecagon.

1800

64. Fill in the blanks for the regular hexagon. Exact answers only.



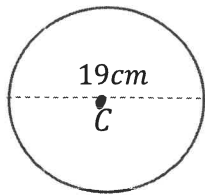
$a = 21 \text{ in}$

Radius = $14\sqrt{3} \text{ in}$

Side = $14\sqrt{3} \text{ in}$

Area = $882\sqrt{3} \text{ in}^2$

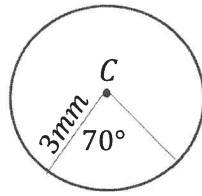
65. Exact answers only.



Circumference = 19π cm

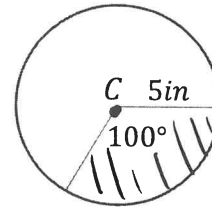
Area = $\frac{361\pi}{4}$ cm²

66. Exact answers only.



$\widehat{AB} = \frac{7\pi}{6}$ mm

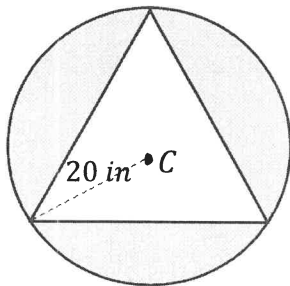
67. Exact answers only.



Shaded area = $\frac{125\pi}{18}$ in²

Find the probability of picking a point in the shaded area. Round your answer to the nearest whole percent.

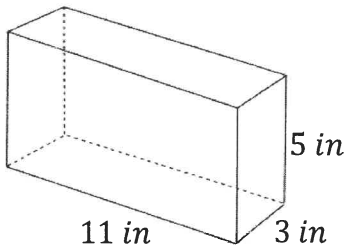
68.



Geometric Probability 59%

Fill in the blanks for each figure. Label all of you answers. Exact answers only...no decimals!!

69.

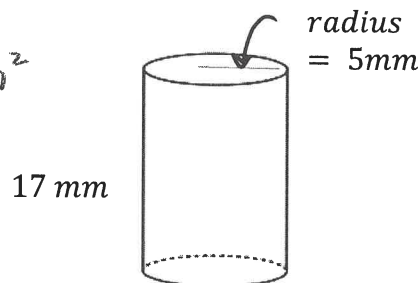


LA = 140 or 176 in²

SA = 206 in²

Vol = 165 in³

70.

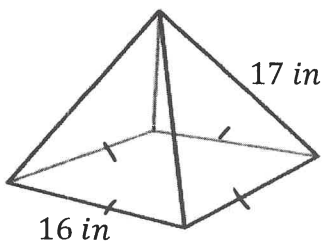


LA = 170π mm²

SA = 220π mm²

Vol = 425π mm³

71.

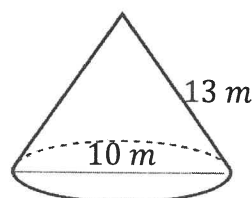


LA = 480 in²

SA = 736 in²

Vol = $\frac{2560\sqrt{10}}{3}$ in³

72.

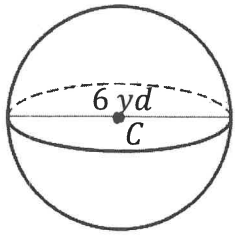


LA = 105π m²

SA = 90π m²

Vol = 100π m³

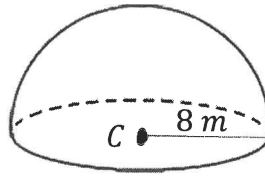
73.



$$SA = 36\pi yd^2$$

$$Vol = 36\pi yd^3$$

74.



$$SA = 192\pi m^2$$

$$Vol = \frac{1024\pi}{3} m^3$$

75. Write the equation of the circle that has a center of $(-7, 4)$ and the diameter is 12.

Equation $(x+7)^2 + (y-4)^2 = 36$

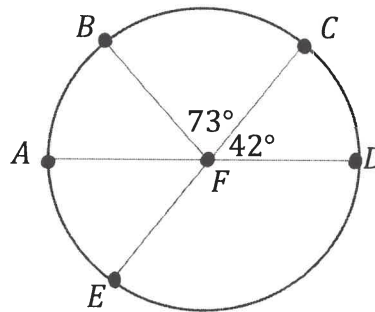
Find the measure of the arc. Then classify that arc as major, minor or semicircle. F is the center of the circle.

76. $m\widehat{AB} = 65$, minor

77. $m\widehat{BED} = 245$, major

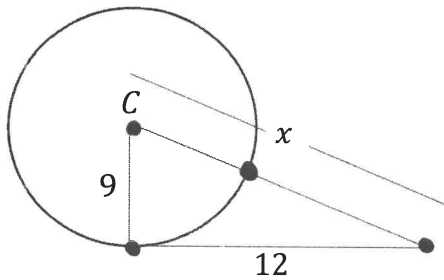
78. $m\widehat{EC} = 180$, semi

79. $m\widehat{CED} = 318$, major



Find the indicated value for each picture. Any segment that appears tangent is tangent. C is the center of both circles.

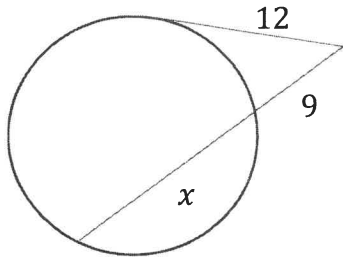
80.



$x = 15$

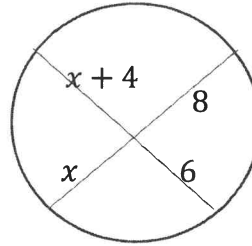
Find the value of X in each picture. Any segment that appears tangent, is tangent.

81.



$x = \underline{7}$

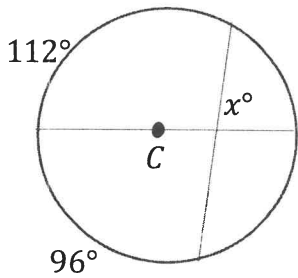
82. Segments do not intersect at the center.



$x = \underline{12}$

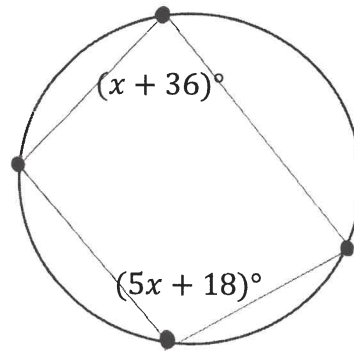
Find the value of the variable(s) in each picture. Any segment that appears tangent, is tangent. When C is marked, it is the center of the circle.

83.



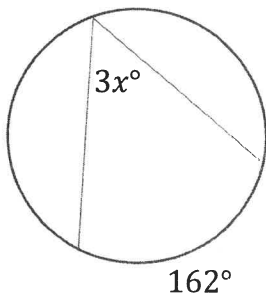
$x = \underline{82}$

84.



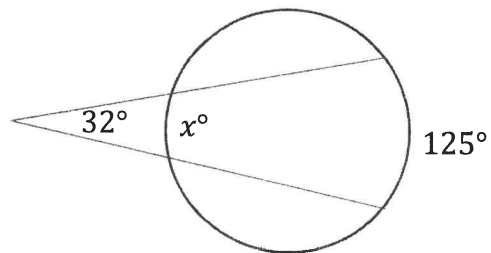
$x = \underline{21}$

85.



$x = \underline{27}$

86.



$x = \underline{61}$