Ch 12 Study Guide

Short Answer

1. *Combine like terms*
   $4c - 4d + 8c - 3d$

2. $3y + 20 = 3 + 2y$

3. $0.125r - 0.0625 + 0.25r = 0.25 + r$

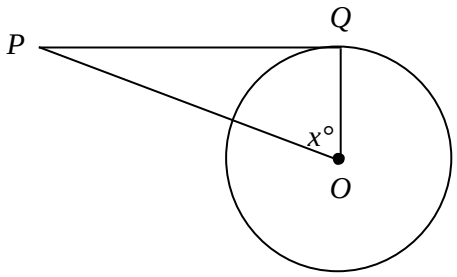
4. $-5y - 9 = -(y - 1)$

5. $S = 5r^2t$, for t

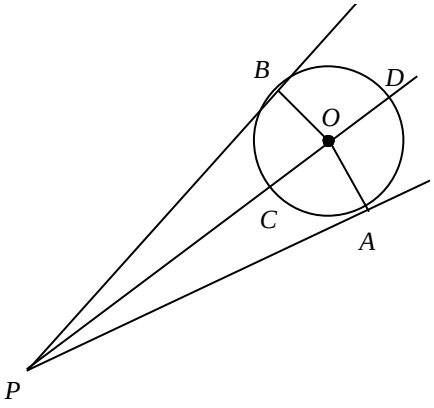
6. $26 + 6b \geq 2(3b + 4)$

   Assume that lines that appear to be tangent are tangent. *O* is the center of the circle. Find the value of *x*. (Figures are not drawn to scale.)

7. $m\angle P = 12$



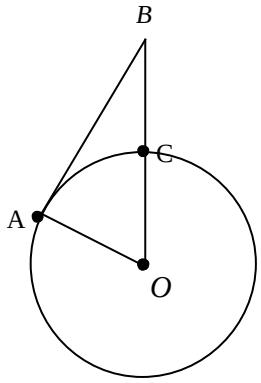
In the figure, $\overrightarrow{PA}$ and $\overrightarrow{PB}$ are tangent to circle *O* and $\overrightarrow{PD}$ bisects $\angle BPA$. The figure is not drawn to scale.



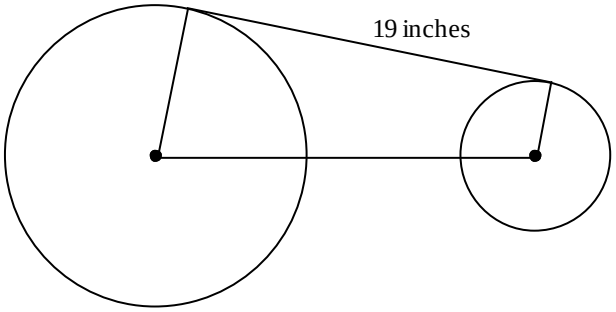
8. For $m\angle AOC = 46$, find $m\angle POB$.

9. For $m\angle AOC = 50$, find $m\angle BPO$.

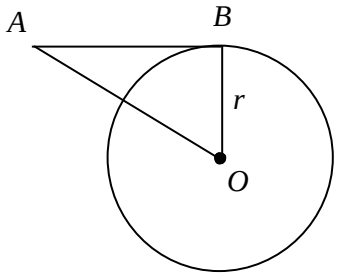
10. $\overline{AB}$ is tangent to $\odot O$. If $AO = 24$ and $BC = 50$, what is AB?
The diagram is not to scale.



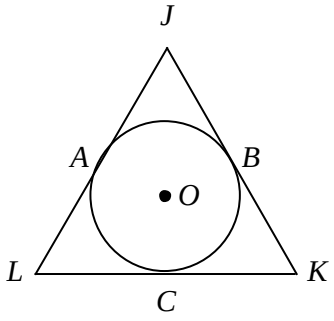
11. A chain fits tightly around two gears as shown. The distance between the centers of the gears is 20 inches. The radius of the larger gear is 11 inches. Find the radius of the smaller gear. Round your answer to the nearest tenth, if necessary. The diagram is not to scale.



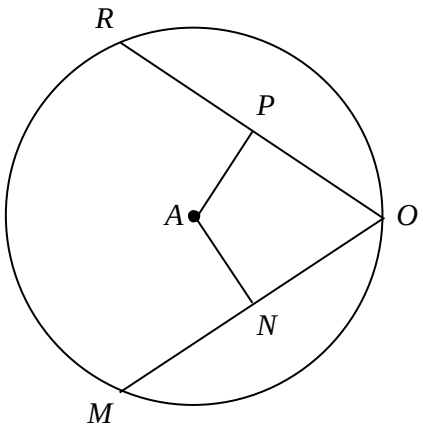
12. $\overline{AB}$ is tangent to circle *O* at *B*. Find the length of the radius *r* for *AB* = 5 and *AO* = 8.6. Round to the nearest tenth if necessary. The diagram is not to scale.



13. $\overline{JK}$, $\overline{KL}$, and $\overline{LJ}$ are all tangent to *O* (not drawn to scale). *JA* = 9, *AL* = 10, and *CK* = 14. Find the perimeter of $\triangle JKL$.

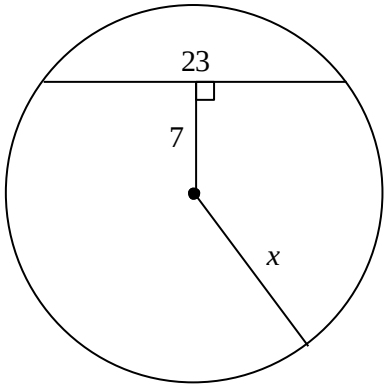


14. $\overline{NA} \cong \overline{PA}$, $\overline{MO} \perp \overline{NA}$, $\overline{RO} \perp \overline{PA}$, $MO = 3$ ft
What is PO?

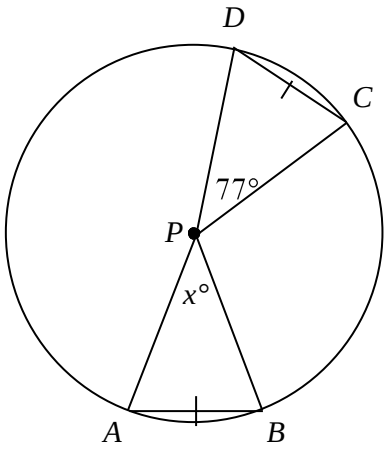


Find the value of x. If necessary, round your answer to the nearest tenth. The figure is not drawn to scale.

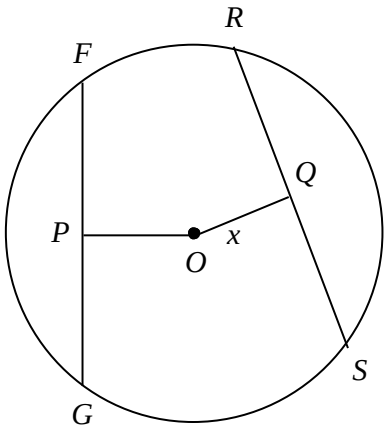
15.



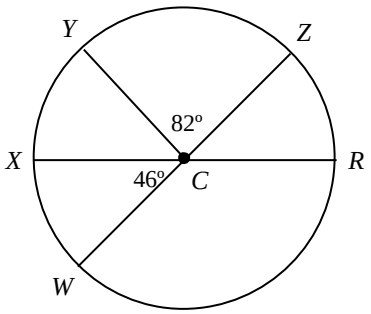
16.



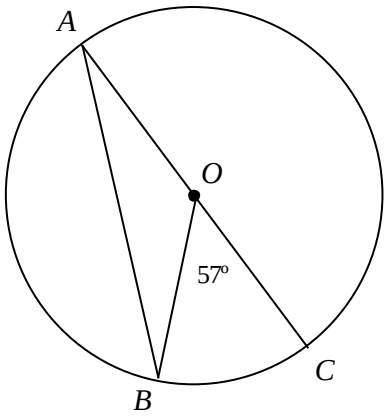
17. $\overline{FG} \perp \overline{OP}$, $\overline{RS} \perp \overline{OQ}$, $FG = 40$, $RS = 37$, $OP = 19$



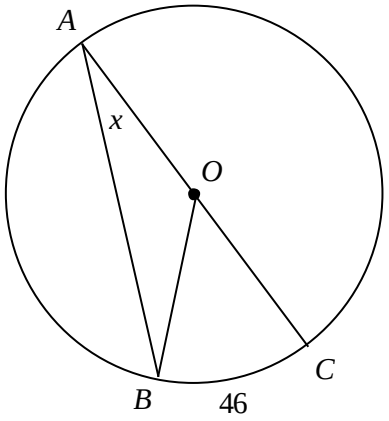
18. $\overline{WZ}$ and $\overline{XR}$ are diameters. Find the measure of $\overset{\frown}{ZWX}$. (The figure is not drawn to scale.)



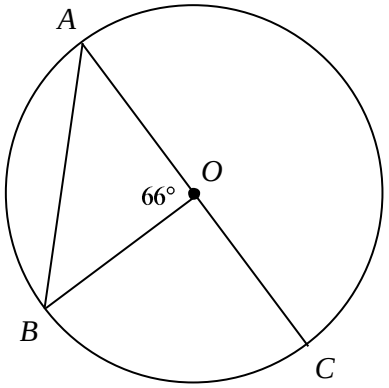
19. Find the measure of $\angle BAC$. (The figure is not drawn to scale.)



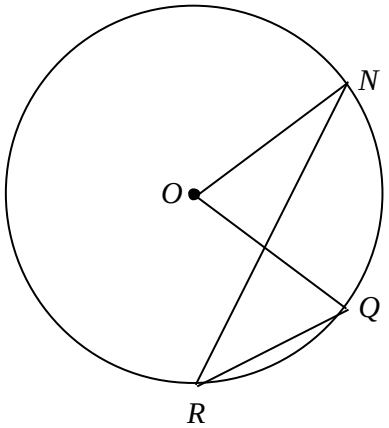
20. Find x. (The figure is not drawn to scale.)



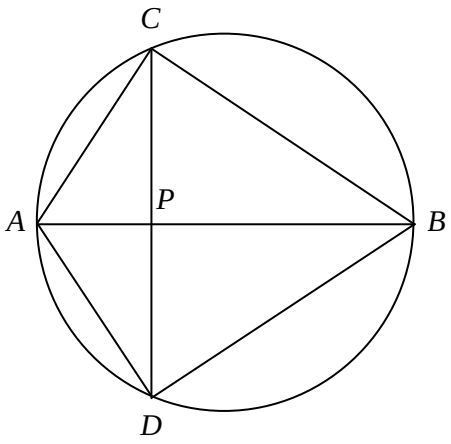
21. Find $m\angle BAC$. (The figure is not drawn to scale.)



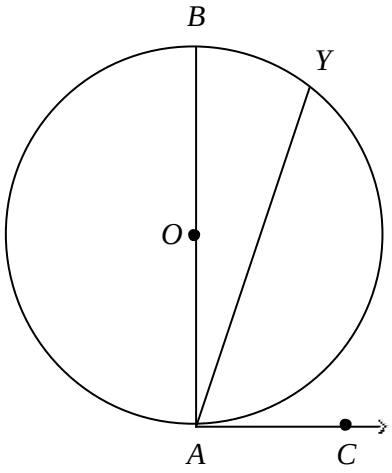
22. $m\angle R = 22$. Find $m\angle O$. (The figure is not drawn to scale.)



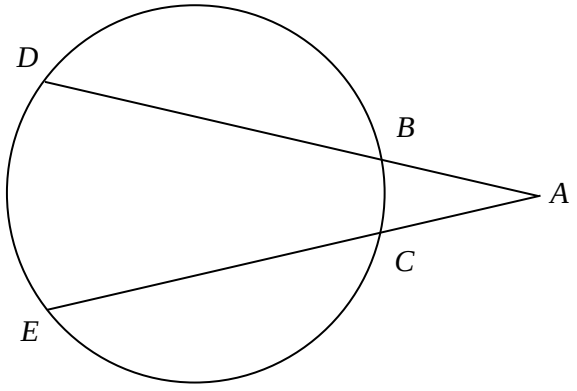
23. If $m\angle CDB = 31$, what is $m\angle CAB$?



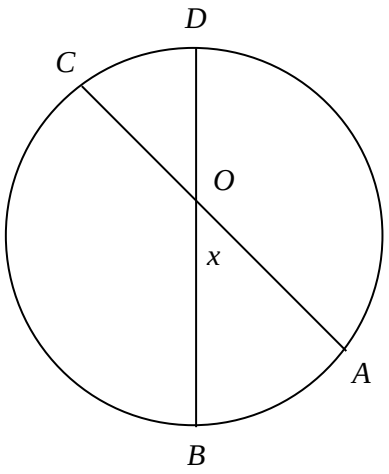
24. If $m\overset{\frown}{BY} = 26$, what is $m\angle YAC$? (The figure is not drawn to scale.)



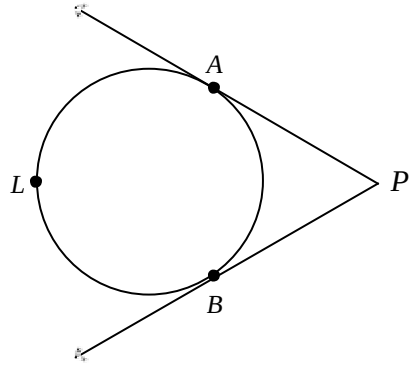
25. $m\overset{\frown}{DE} = 128$ and $m\overset{\frown}{BC} = 63$. Find $m\angle A$. (The figure is not drawn to scale.)



26. Find the value of x for $m\overset{\frown}{AB} = 46$ and $m\overset{\frown}{CD} = 25$. (The figure is not drawn to scale.)

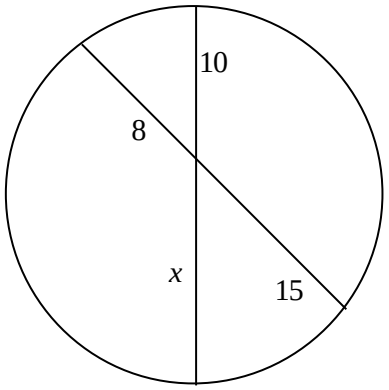


27. Find the measure of value of $\overset{\frown}{AB}$ for $m\angle P = 50$. (The figure is not drawn to scale.)

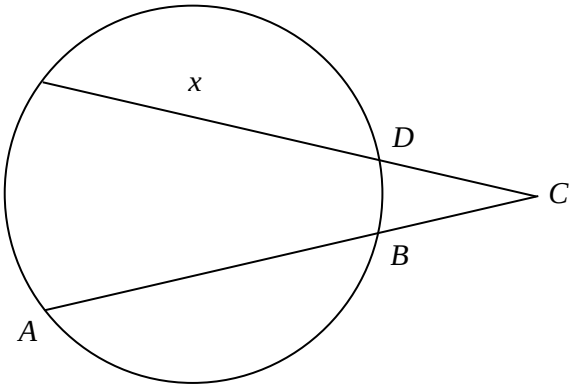


Find the value of x. If necessary, round your answer to the nearest tenth. The figure is not drawn to scale.

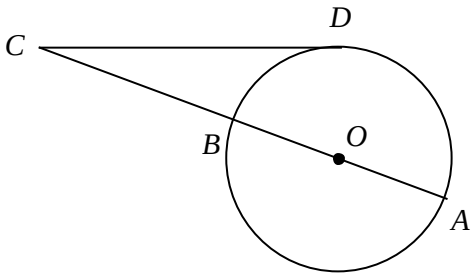
28.



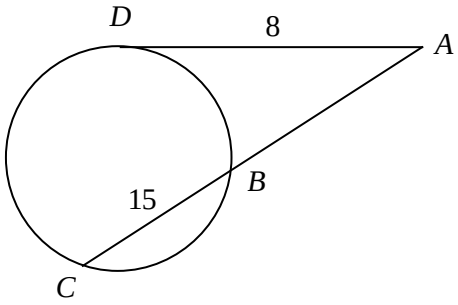
29. $AB = 20$, $BC = 6$, and $CD = 8$



30. Find the diameter of the circle for $BC = 13$ and $DC = 24$. Round to the nearest tenth. (The diagram is not drawn to scale.)



31. Find AB. Round to the nearest tenth if necessary.



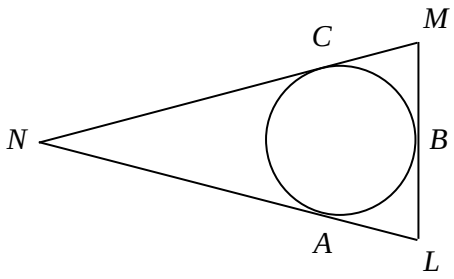
Write the standard equation for the circle.

32. center (–6, 9), $r = 3$

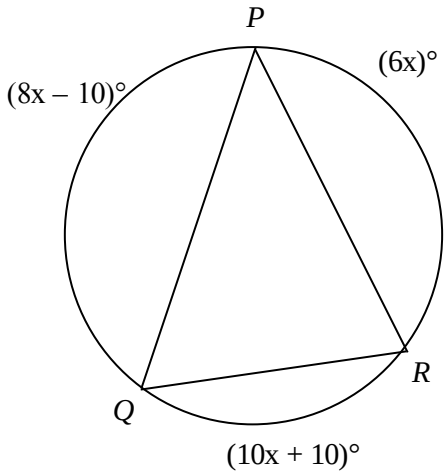
33. Find the center and radius of the circle with equation $(x + 2)^2 + (y + 10)^2 = 4$.

34. What is the equation of the circle with center (0, 0) that passes through the point (5, –4)?

35. In $\triangle NML$, $NL = NM$, and the perimeter is 52 cm. A, B, and C are points of tangency to the circle. $MC = 6$ cm. Find NL. Explain your reasoning. (The figure is not drawn to scale.)



36. **a.** Find x. (The figure is not drawn to scale.)
b. Is the triangle equilateral, isosceles, or scalene? Explain.



Ch 12 Study Guide
Answer Section

SHORT ANSWER

1. ANS:
   $12c - 7d$

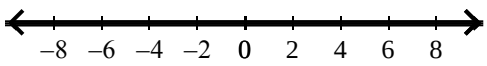
   OBJ: 1-3.2 To simplify algebraic expressions
2. ANS:
   –17

   OBJ: 1-4.1 To solve equations
3. ANS:
   –0.5

   OBJ: 1-4.1 To solve equations
4. ANS:
   $-2\frac{1}{2}$

   OBJ: 1-4.1 To solve equations
5. ANS:
   $t = \frac{S}{5r^2}$

   OBJ: 1-4.1 To solve equations
6. ANS:
   all real numbers

   OBJ: 1-5.1 To solve and graph inequalities
7. ANS:
   78

   OBJ: 12-1.1 Use properties of a tangent to a circle
8. ANS:
   46

   OBJ: 12-1.1 Use properties of a tangent to a circle
9. ANS:
   40

   OBJ: 12-1.1 Use properties of a tangent to a circle
10. ANS:
    70

OBJ: 12-1.1 Use properties of a tangent to a circle

11. ANS:
4.8 inches

OBJ: 12-1.1 Use properties of a tangent to a circle

12. ANS:
7

OBJ: 12-1.1 Use properties of a tangent to a circle

13. ANS:
66

OBJ: 12-1.1 Use properties of a tangent to a circle

14. ANS:
1.5 ft

OBJ: 12-2.2 Use perpendicular bisectors to chords

15. ANS:
13.5

OBJ: 12-2.2 Use perpendicular bisectors to chords

16. ANS:
77

OBJ: 12-2.1 Use congruent chords, arcs, and central angles

17. ANS:
20.5

OBJ: 12-2.1 Use congruent chords, arcs, and central angles

18. ANS:
226

OBJ: 12-2.1 Use congruent chords, arcs, and central angles

19. ANS:
28.5

OBJ: 12-3.1 Find the measure of an inscribed angle

20. ANS:
23

OBJ: 12-3.1 Find the measure of an inscribed angle

21. ANS:
57

OBJ: 12-3.1 Find the measure of an inscribed angle

22. ANS:
44

OBJ: 12-3.1 Find the measure of an inscribed angle

23. ANS:

OBJ: 12-3.1 Find the measure of an inscribed angle

24. ANS:
77

OBJ: 12-3.2 Find the measure of an angle formed by a tangent and a chord

25. ANS:
32.5

OBJ: 12-4.1 Find measures of angles formed by chords, secants, and tangents

26. ANS:
35.5

OBJ: 12-4.1 Find measures of angles formed by chords, secants, and tangents

27. ANS:
130

OBJ: 12-4.1 Find measures of angles formed by chords, secants, and tangents

28. ANS:
12

OBJ: 12-4.2 Find the lengths of segments associated with circles

29. ANS:
11.5

OBJ: 12-4.2 Find the lengths of segments associated with circles

30. ANS:
31.3

OBJ: 12-4.2 Find the lengths of segments associated with circles

31. ANS:
3.5

OBJ: 12-4.2 Find the lengths of segments associated with circles

32. ANS:
$(x + 6)^2 + (y - 9)^2 = 9$

OBJ: 12-5.1 Write the equation of a circle

33. ANS:
center $(-2, -10)$; $r = 2$

OBJ: 12-5.2 Find the center and radius of a circle

34. ANS:
$x^2 + y^2 = 41$

OBJ: 12-5.2 Find the center and radius of a circle

35. ANS:

$NM = NL$ and, by the Tangent Theorem, $NC = NA$. By subtraction, $MC = LA$. Also by the Tangent Theorem, $MC = MB$ and $LA = LB$, so $6 = MC = MB = LB = LA$. The perimeter is 52 cm, so $52 = NC + MC + MB + LB + LA + NA$. By substitution, $52 = NA + 6 + 6 + 6 + 6 + NA$, so $NA = 14$. Because $NL = NA + LA$, $NL = 14 \text{ cm} + 6 \text{ cm}$, or 20 cm.

OBJ: 12-1.1 Use properties of a tangent to a circle

36. ANS:

a. 15

b. Scalene; the arc measures are 110°, 90°, and 160°. Because the arcs are not congruent, neither are the chords that intercept them.

OBJ: 12-2.1 Use congruent chords, arcs, and central angles