Geometry 10. 5 - 10. 7

Use the diagram (not drawn to scale) and the given information.

1. \( \overline{BCD} = 114^\circ, \overline{DEF} = 94^\circ, \overline{FGH} = 136^\circ, \) and \( \overline{HAB} = 16^\circ \)
   Find \( \angle FPD \).
   a. 39°  
   b. 21°  
   c. 16°  
   d. 98°

2. \( \overline{BCD} = 111^\circ, \overline{DEF} = 100^\circ, \overline{FGH} = 127^\circ, \) and \( \overline{HAB} = 22^\circ \)
   Find \( \angle FPD \).

3. \( \overline{AB} = 82^\circ, \overline{CD} = 30^\circ \)
   Find \( \angle DOC \).
   a. 112°  
   b. 56°  
   c. 26°  
   d. 52°

4. A park maintenance person stands 15 m from a circular monument. If you draw two tangents from the maintenance person to each side of the monument, they make an angle of 37°. What is the measure of the arc created where the lines intersect the monument?
   a. 143°  
   b. 106°  
   c. 127°  
   d. 53°
Use the diagram (not draw to scale) and the given information.

5. Find the value of $x$ if $m\widehat{AB} = 20^\circ$ and $m\widehat{CD} = 62^\circ$.
   a. $41^\circ$  
   b. $43^\circ$  
   c. $21^\circ$  
   d. $20.5^\circ$

6. Find the value of $x$ if $m\widehat{AB} = 59^\circ$ and $m\widehat{CD} = 47^\circ$.

7. Given $m\widehat{SQ} = 106^\circ$, $m\widehat{PR} = 120^\circ$, find $x$.
   a. $113^\circ$  
   b. $134^\circ$  
   c. $226^\circ$  
   d. $67^\circ$

8. A hummingbird is flying toward a large tree that has a radius of 6 feet. When it is 31 feet from the center of the tree, its lines of sight form two tangents. What is the measure of the arc on the tree that the hummingbird can see?
   a. $158.68^\circ$  
   b. $157.68^\circ$  
   c. $78.84^\circ$  
   d. $79.84^\circ$
9. Find the measure of \( \angle 1 \).

10. Write an equation that can be used to find \( x \). Then solve the equation for \( x \).

11. Find the measure of \( \angle 1 \).

12. Suppose you stand at a distance from a circular building. Assuming your lines of sight form tangents to the building and make an angle of 22°, what is the measure of the arc of the building that your lines of sight intersect?

Use the diagram (not drawn to scale) and the given information to find the diameter of the circle. Round your answer to the nearest tenth.

13. \( BC = 18 \) and \( DC = 22 \).
   a. 44.9
   b. 8.9
   c. 7.3
   d. 6.2
Find the value of $x$.

14.

- $x$ in the circle with the following measurements:
  - Diameter: 24 ft
  - Other side: 8 ft

a. 4  
   b. 8  
   c. 24  
   d. 12

15.

- $x$ in the circle with the following measurements:
  - Diameter: 40 ft

a. 3  
   b. 5  
   c. none of these  
   d. 8

16.

- $x$ in the circle with the following measurements:
  - Diameter: 15 ft
  - Other side: 9 ft

17.

- $x$ in the circle with the following measurements:
  - Diameter: 20 ft
  - Other side: 10 ft

18. A footbridge is in the shape of an arc of a circle. The bridge is 7 ft tall and 23 ft long, horizontally. What is the radius of the circle that contains the bridge? Round your answer to the nearest tenth.

a. 5.9 ft  
   b. 18.9 ft  
   c. 25.9 ft  
   d. 12.9 ft
19. Write the standard equation of a circle with its center at the origin and radius 3.
   a. \( x^2 + y^2 = 6 \)
   b. \( \frac{x^2}{6} + \frac{y^2}{6} = 1 \)
   c. \( x^2 + y^2 = 9 \)
   d. \( x^2 + y^2 = 3 \)

20. Write the standard equation of a circle with center \((-3, -4)\) and radius 6.
   a. \((x - 3)^2 - (y - 4)^2 = 6\)
   b. \((x - 3)^2 + (y - 4)^2 = 6\)
   c. \((x + 3)^2 + (y - 4)^2 = 36\)
   d. \((x + 3)^2 + (y + 4)^2 = 36\)

21. The standard equation of a circle with center \((-4, 3)\) and radius 7 is ______.
   a. \((x - 4)^2 + (y + 3)^2 = 7\)
   b. \((x - 4)^2 + (y + 3)^2 = 49\)
   c. \((x + 4)^2 + (y - 3)^2 = 49\)
   d. \((x + 4) + (y - 3) = 7\)

22. A small messenger company can deliver only in a small part of the city. Write an equation for the boundary where the company delivers, and find its radius. Each unit represents one block.
   a. \((x + 2)^2 + (y + 5)^2 = 50; \ r = 25 \text{ blocks}\)
   b. \((x + 2)^2 + (y + 5)^2 = 50; \ r = 5 \text{ blocks}\)
   c. \((x - 5)^2 + (y - 2)^2 = 25; \ r = 25 \text{ blocks}\)
   d. \((x - 5)^2 + (y - 2)^2 = 25; \ r = 5 \text{ blocks}\)

23. Write the standard equation of a circle with center \((-4, -4)\) and radius 4.

24. Write the standard equation of a circle with center \((-3, 5)\) and radius \(\frac{5}{2}\).
25. Sketch the graph of the equation \((x - 2)^2 + (y + 1)^2 = 13\). Label the coordinates of the center and the y-intercepts.
## Answer Section

1. **ANS: A**  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Application**  
   **REF: DJAM1012**  
   **KEY: angle | arc | degrees**  
   **NOT: 978-0-618-65613-4**

2. **ANS:** 39°  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Application**  
   **REF: MLGE0261**  
   **KEY: angle | measure | arc**  
   **NOT: 978-0-618-65613-4**

3. **ANS: C**  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Application**  
   **REF: MLGE0461**  
   **KEY: angle | measure | arc**  
   **NOT: 978-0-618-65613-4**

4. **ANS: A**  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Analysis**  
   **REF: MLGE0101**  
   **STA: MI.MIGLC.MTH.06.9-12.G1.6.2**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **KEY: word | circle | tangent | arc**  
   **NOT: 978-0-618-65613-4**

5. **ANS: A**  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Comprehension**  
   **REF: MLGE0108**  
   **KEY: circle | chord | angle**  
   **NOT: 978-0-618-65613-4**

6. **ANS:** 53°  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Comprehension**  
   **REF: MLGE0107**  
   **KEY: circle | chord | angle**  
   **NOT: 978-0-618-65613-4**

7. **ANS: A**  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Application**  
   **REF: MLGE0462**  
   **KEY: angle | measure | arc**  
   **NOT: 978-0-618-65613-4**

8. **ANS: B**  
   **PTS: 1**  
   **DIF: Level C**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Synthesis**  
   **REF: MLGE0249**  
   **STA: MI.MIGLC.MTH.06.9-12.G1.6.2**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **KEY: word | trigonometric inverse**  
   **NOT: 978-0-618-65613-4**

9. **ANS:** 121°  
   **PTS: 1**  
   **DIF: Level B**  
   **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
   **BLM: Knowledge**  
   **REF: HLGM0004**  
   **KEY: angle | measure**  
   **NOT: 978-0-618-65613-4**

10. **ANS:**  
    \[
    \frac{1}{2} (36° + x) = 65°, \ x = 94°
    \]  
    **PTS: 1**  
    **DIF: Level B**  
    **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
    **BLM: Analysis**  
    **REF: MLGE0984**  
    **NAT: NCTM 9-12.REP.2 | NCTM 9-12.PRS.3**  
    **STA: MI.MIGLC.MTH.06.9-12.A1.2.1**  
    **TOP: Lesson 10.5 Apply Other Angle Relationships in Circles**  
    **KEY: solve | equation | arc**  
    **NOT: 978-0-618-65613-4**
11. ANS: 56°

PTS: 1  DIF: Level A  REF: HLGM1005  TOP: Lesson 10.5 Apply Other Angle Relationships in Circles  KEY: angle | measure  BLM: Knowledge  NOT: 978-0-618-65613-4

12. ANS: 158°


16. ANS: $x = 27$


17. ANS: $x = 16$


20. ANS: D

21. ANS: C

22. ANS: D

23. ANS:

\[(x + 4)^2 + (y + 4)^2 = 16\]

24. ANS:

\[(x + 3)^2 + (y - 5)^2 = \frac{25}{4}\]

25. ANS:

![Diagram of a circle with labeled points and axes](image)