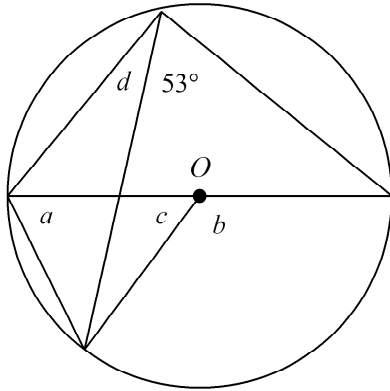


GEOMETRY B: CIRCLE TEST PRACTICE

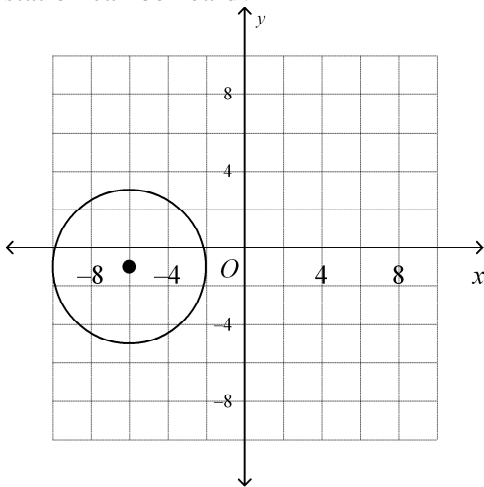
Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Find the measures of the indicated angles. Which statement is NOT true? (The figure is not drawn to scale.)

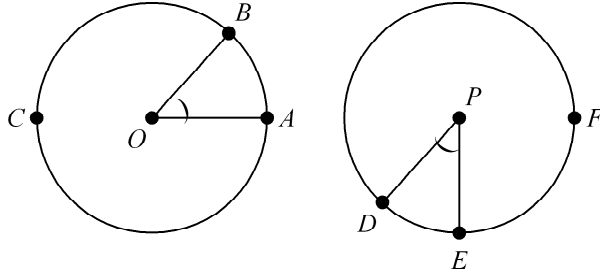


- a. $a = 53^\circ$ b. $b = 106^\circ$ c. $c = 73^\circ$ d. $d = 37^\circ$
- _____ 2. A low-wattage radio station can be heard only within a certain distance from the station. On the graph below, the circular region represents that part of the city where the station can be heard, and the center of the circle represents the location of the station. Which equation represents the boundary for the region where the station can be heard?



- a. $(x - 6)^2 + (y - 1)^2 = 32$ c. $(x - 6)^2 + (y - 1)^2 = 16$
 b. $(x + 6)^2 + (y + 1)^2 = 32$ d. $(x + 6)^2 + (y + 1)^2 = 16$

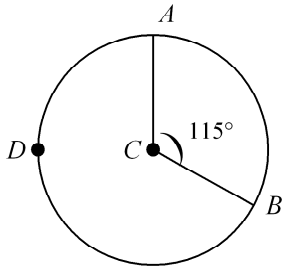
3. The circles are congruent. What can you conclude from the diagram?



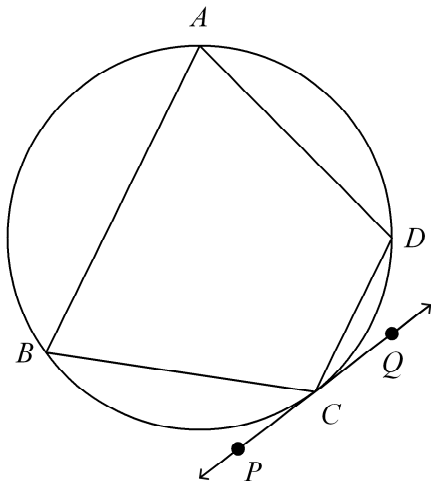
- a. $\text{arc } CAB \cong \text{arc } FDE$
- b. $\text{arc } DF \cong \text{arc } AC$
- c. $\text{arc } AB \cong \text{arc } DE$
- d. none of these

Short Answer

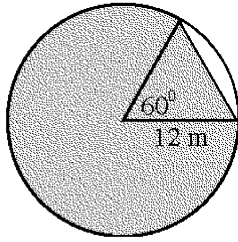
4. Name the minor arc and find its measure.



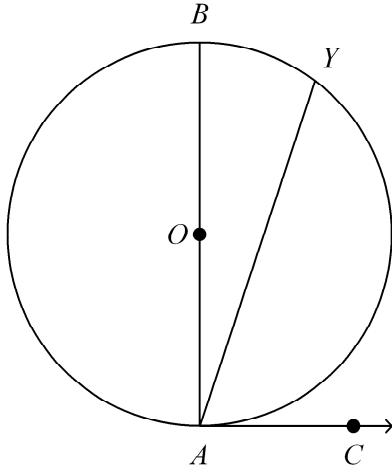
5. In the circle, $m(\text{arc } AD) = 82$, and $m\angle D = 79$. Find $m\angle DCQ$.
(The figure is not drawn to scale.)



6. Find the area of the shaded region. Leave your answer in terms of π and in simplest radical form.

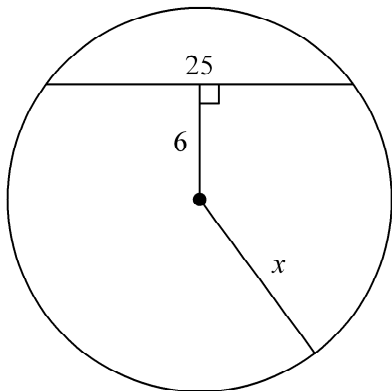


7. If $m(\text{arc } BY) = 45$, what is $m\angle YAC$? (The figure is not drawn to scale.)

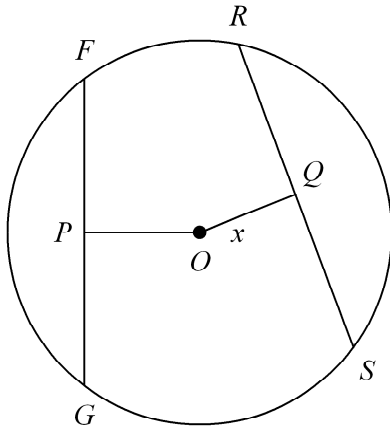


Find the value of x . If necessary, round your answer to the nearest tenth. The figure is not drawn to scale.

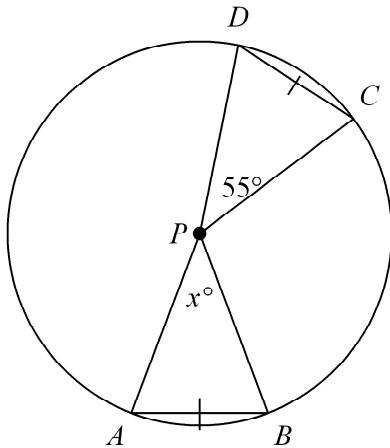
- 8.



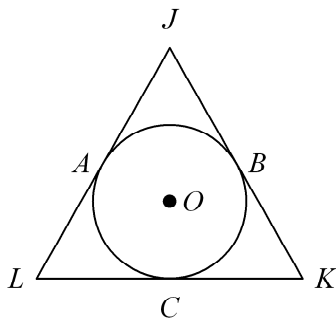
9. $FG \perp OP$, $RS \perp OQ$, $FG = 20$, $RS = 32$, $OP = 18$



- 10.

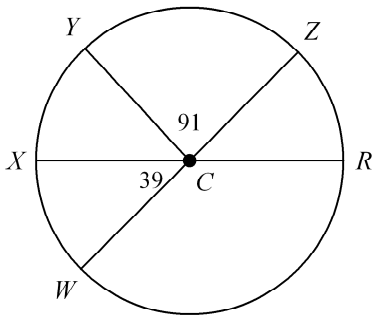


11. \overline{JK} , \overline{KL} , and \overline{LJ} are all tangent to O (not drawn to scale). $JA = 5$, $AL = 9$, and $CK = 15$. Find the perimeter of $\triangle JKL$.



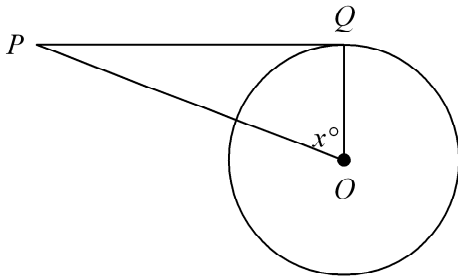
12. The circumference of a circle is 44π cm. Find the diameter, the radius, and the length of an arc of 200° .

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

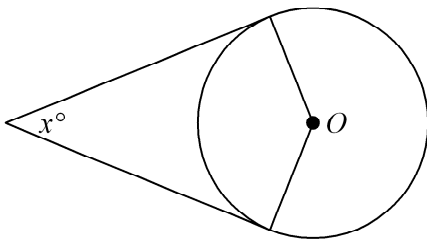


Assume that lines that appear to be tangent are tangent. O is the center of the circle. Find the value of x . (Figures are not drawn to scale.)

14. $m\angle P = 24$

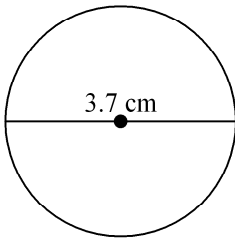


15. $m\angle O = 152$

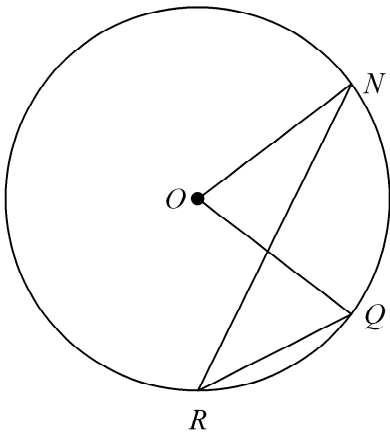


Find the circumference. Leave your answer in terms of π .

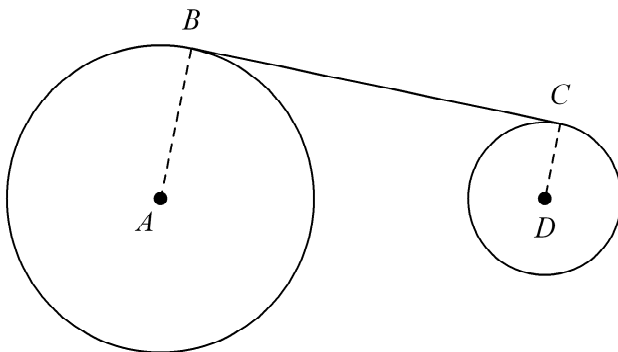
16.



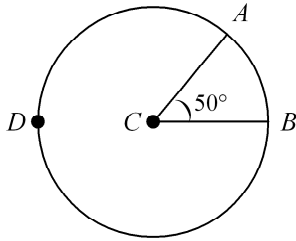
17. $m\angle R = 39$. Find $m\angle O$. (The figure is not drawn to scale.)



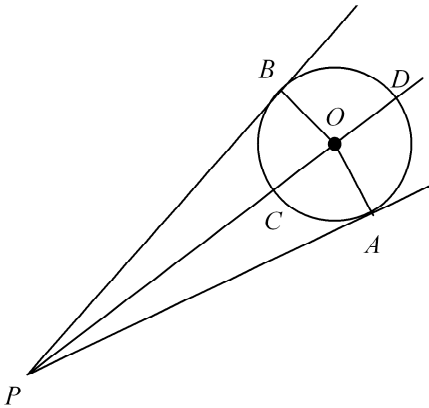
18. \overline{BC} is tangent to circle A at B and to circle D at C (not drawn to scale). $AB = 9$, $BC = 30$, and $DC = 3$. Find AD to the nearest tenth.



19. Name the major arc and find its measure.

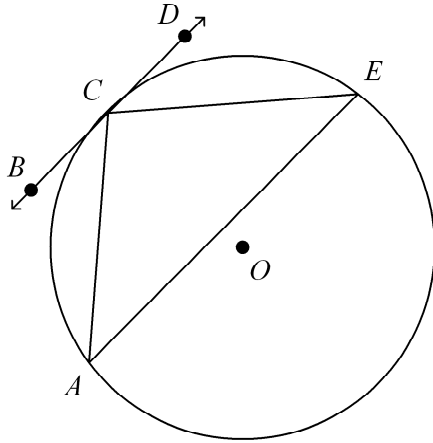


In the figure, \overrightarrow{PA} and \overrightarrow{PB} are tangent to circle O and \overrightarrow{PD} bisects $\angle BPA$. The figure is not drawn to scale.



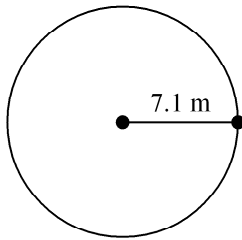
20. For $m\angle AOC = 61$, find $m\angle BPO$.
21. For $m\angle AOC = 40$, find $m\angle POB$.
22. The center of a circle is $(h, 7)$ and the radius is 10. The circle passes through $(3, -1)$. Find all possible values of h .

23. \overleftrightarrow{BD} is tangent to circle O at C , $m(\text{arc } AEC) = 270$, and $m\angle ACE = 98$. Find $m\angle DCE$.
 (The figure is not drawn to scale.)

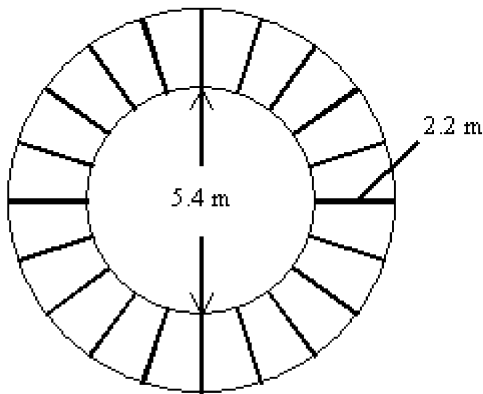


Find the area of the circle. Leave your answer in terms of π .

- 24.



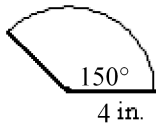
25. The figure represents the overhead view of a deck surrounding a hot tub. What is the area of the deck? Round to the nearest tenth.



Write the standard equation for the circle.

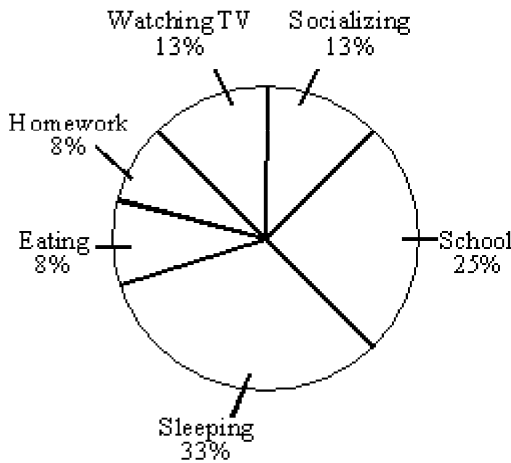
26. center $(-8, 6)$, $r = 4$

27. Find the area of the figure to the nearest tenth.



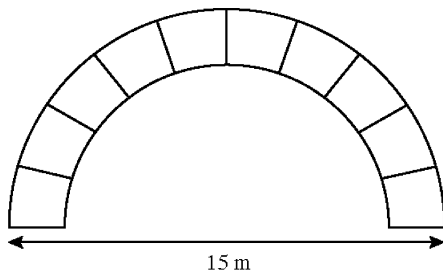
28. Find the center and radius of the circle with equation $(x + 10)^2 + (y + 5)^2 = 64$.
29. Grade 7 students were surveyed to determine how many hours a day they spent on various activities. The results are shown in the circle graph below. Find the measure of each central angle in the circle graph.
- Sleeping
 - Eating

How Students Spend Their Time



Essay

30. Jason designed an arch made of wrought iron for the top of a mall entrance. The 11 segments between the two concentric circles are each 1.25 m long. Find the total length of wrought iron used to make the structure. Round the answer to the nearest meter.



GEOMETRY B: CIRCLE TEST PRACTICE**Answer Section****MULTIPLE CHOICE**

1. ANS: C PTS: 1 DIF: L3 REF: 12-3 Inscribed Angles
 OBJ: 12-3.1 Finding the Measure of an Inscribed Angle NAT: NAEP 2005 G3e | ADP K.4
 TOP: 12-3 Example 2
 KEY: circle | inscribed angle | intercepted arc | inscribed angle-arc relationship
2. ANS: D PTS: 1 DIF: L2
 REF: 12-5 Circles in the Coordinate Plane
 OBJ: 12-5.2 Finding the Center and Radius of a Circle NAT: NAEP 2005 G4d | ADP K.10.4
 TOP: 12-4 Example 4
 KEY: center | circle | coordinate plane | radius | equation of a circle | word problem
3. ANS: C PTS: 1 DIF: L2 REF: 12-2 Chords and Arcs
 OBJ: 12-2.1 Using Congruent Chords, Arcs, and Central Angles
 NAT: NAEP 2005 G3e | ADP K.4 TOP: 12-2 Example 1
 KEY: arc | central angle | congruent circles

SHORT ANSWER

4. ANS:
 arc AB ; 115°
- PTS: 1 DIF: L2 REF: 10-6 Circles and Arcs
 OBJ: 10-6.1 Central Angles and Arcs NAT: NAEP 2005 M1h | ADP K.4
 TOP: 10-6 Example 3 KEY: measure of an arc | minor arc | arc
5. ANS:
 60
- PTS: 1 DIF: L2 REF: 12-3 Inscribed Angles
 OBJ: 12-3.2 The Angle Formed by a Tangent and a Chord NAT: NAEP 2005 G3e | ADP K.4
 TOP: 12-3 Example 3
 KEY: circle | inscribed angle | tangent-chord angle | intercepted arc | arc measure | angle measure
6. ANS:
 $(120\pi + 36\sqrt{3}) \text{ m}^2$
- PTS: 1 DIF: L3 REF: 10-7 Areas of Circles and Sectors
 OBJ: 10-7.1 Finding Areas of Circles and Parts of Circles
 NAT: NAEP 2005 M1h | ADP I.4.1 | ADP J.1.6 | ADP K.4 | ADP K.8.2
 TOP: 10-7 Example 3 KEY: sector | circle | area | central angle

7. ANS:
67.5

PTS: 1 DIF: L2 REF: 12-3 Inscribed Angles
OBJ: 12-3.2 The Angle Formed by a Tangent and a Chord NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-3 Example 3
KEY: circle | inscribed angle | tangent-chord angle | intercepted arc | arc measure | angle measure

8. ANS:
13.9

PTS: 1 DIF: L2 REF: 12-2 Chords and Arcs
OBJ: 12-2.2 Lines Through the Center of a Circle NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-2 Example 3
KEY: bisected chords | circle | perpendicular | perpendicular bisector | Pythagorean Theorem

9. ANS:
13

PTS: 1 DIF: L3 REF: 12-2 Chords and Arcs
OBJ: 12-2.1 Using Congruent Chords, Arcs, and Central Angles
NAT: NAEP 2005 G3e | ADP K.4 TOP: 12-2 Example 3
KEY: circle | radius | chord | congruent chords | right triangle | Pythagorean Theorem

10. ANS:
55

PTS: 1 DIF: L2 REF: 12-2 Chords and Arcs
OBJ: 12-2.1 Using Congruent Chords, Arcs, and Central Angles
NAT: NAEP 2005 G3e | ADP K.4 TOP: 12-2 Example 1
KEY: arc | central angle | congruent arcs

11. ANS:
58

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.2 Using Multiple Tangents NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-1 Example 5 KEY: properties of tangents | tangent to a circle | triangle

12. ANS:
44 cm; 22 cm; 24.4π cm

PTS: 1 DIF: L3 REF: 10-6 Circles and Arcs
OBJ: 10-6.2 Circumference and Arc Length NAT: NAEP 2005 M1h | ADP K.4
TOP: 10-6 Example 4 KEY: circumference | radius

13. ANS:
219

PTS: 1 DIF: L2 REF: 12-2 Chords and Arcs
OBJ: 12-2.1 Using Congruent Chords, Arcs, and Central Angles
NAT: NAEP 2005 G3e | ADP K.4 TOP: 12-2 Example 1
KEY: arc | central angle | congruent arcs | arc measure | arc addition | diameter

14. ANS:
66

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.1 Using the Radius-Tangent Relationship NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-1 Example 1
KEY: tangent to a circle | point of tangency | angle measure | properties of tangents | central angle

15. ANS:
28

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.1 Using the Radius-Tangent Relationship NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-1 Example 1
KEY: tangent to a circle | point of tangency | properties of tangents | central angle

16. ANS:
 3.7π cm

PTS: 1 DIF: L2 REF: 10-6 Circles and Arcs
OBJ: 10-6.2 Circumference and Arc Length NAT: NAEP 2005 M1h | ADP K.4
TOP: 10-6 Example 4 KEY: circumference | diameter

17. ANS:
78

PTS: 1 DIF: L2 REF: 12-3 Inscribed Angles
OBJ: 12-3.1 Finding the Measure of an Inscribed Angle NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-3 Example 2
KEY: circle | inscribed angle | intercepted arc | inscribed angle-arc relationship

18. ANS:
30.6

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.1 Using the Radius-Tangent Relationship NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-1 Example 2
KEY: tangent to a circle | point of tangency | properties of tangents | Pythagorean Theorem

19. ANS:
arc ADB ; 310°

PTS: 1 DIF: L2 REF: 10-6 Circles and Arcs
OBJ: 10-6.1 Central Angles and Arcs NAT: NAEP 2005 M1h | ADP K.4
TOP: 10-6 Example 3 KEY: major arc | measure of an arc | arc

20. ANS:
29

PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.2 Using Multiple Tangents NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-1 Example 4
KEY: properties of tangents | tangent to a circle | Tangent Theorem

21. ANS:
40
- PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
OBJ: 12-1.2 Using Multiple Tangents NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-1 Example 4
KEY: properties of tangents | tangent to a circle | Tangent Theorem
22. ANS:
9, -3
- PTS: 1 DIF: L4 REF: 12-5 Circles in the Coordinate Plane
OBJ: 12-5.1 Writing an Equation of a Circle NAT: NAEP 2005 G4d | ADP K.10.4
KEY: equation of a circle | center | radius | point on the circle | algebra
23. ANS:
37
- PTS: 1 DIF: L2 REF: 12-3 Inscribed Angles
OBJ: 12-3.2 The Angle Formed by a Tangent and a Chord NAT: NAEP 2005 G3e | ADP K.4
TOP: 12-3 Example 3
KEY: circle | inscribed angle | tangent-chord angle | intercepted arc
24. ANS:
 $50.41\pi \text{ m}^2$
- PTS: 1 DIF: L2 REF: 10-7 Areas of Circles and Sectors
OBJ: 10-7.1 Finding Areas of Circles and Parts of Circles
NAT: NAEP 2005 M1h | ADP I.4.1 | ADP J.1.6 | ADP K.4 | ADP K.8.2
TOP: 10-7 Example 1 KEY: area of a circle | radius
25. ANS:
 89.8 m^2
- PTS: 1 DIF: L3 REF: 10-7 Areas of Circles and Sectors
OBJ: 10-7.1 Finding Areas of Circles and Parts of Circles
NAT: NAEP 2005 M1h | ADP I.4.1 | ADP J.1.6 | ADP K.4 | ADP K.8.2
TOP: 10-7 Example 1 KEY: area of a circle | radius
26. ANS:
 $(x + 8)^2 + (y - 6)^2 = 16$
- PTS: 1 DIF: L2 REF: 12-5 Circles in the Coordinate Plane
OBJ: 12-5.1 Writing an Equation of a Circle NAT: NAEP 2005 G4d | ADP K.10.4
TOP: 12-5 Example 1 KEY: equation of a circle | center | radius
27. ANS:
 20.9 in.^2
- PTS: 1 DIF: L2 REF: 10-7 Areas of Circles and Sectors
OBJ: 10-7.1 Finding Areas of Circles and Parts of Circles
NAT: NAEP 2005 M1h | ADP I.4.1 | ADP J.1.6 | ADP K.4 | ADP K.8.2
TOP: 10-7 Example 2 KEY: sector | circle | area

28. ANS:
center $(-10, -5)$; $r = 8$
- PTS: 1 DIF: L2 REF: 12-5 Circles in the Coordinate Plane
OBJ: 12-5.2 Finding the Center and Radius of a Circle NAT: NAEP 2005 G4d | ADP K.10.4
TOP: 12-5 Example 3 KEY: center | circle | coordinate plane | radius
29. ANS:
 118.8° ; 28.8°
- PTS: 1 DIF: L2 REF: 10-6 Circles and Arcs
OBJ: 10-6.1 Central Angles and Arcs NAT: NAEP 2005 M1h | ADP K.4
TOP: 10-6 Example 1
KEY: central angle | circle graph | multi-part question | word problem | problem solving

ESSAY

30. ANS:
[4] Answers may vary. Sample: The total length of wrought iron used is the sum of the outer circumference plus the inner circumference plus the eleven segments.

$$\begin{aligned} & \frac{1}{2} C_o + \frac{1}{2} C_i + 11(1.25) = \\ & \frac{1}{2} \cdot \pi \cdot 15 + \frac{1}{2} \cdot \pi \cdot 13.75 + 11(1.25) = \\ & 7.5\pi + 6.875\pi + 13.75 = \\ & 14.375\pi + 13.75 \approx 59 \end{aligned}$$

The length of wrought iron used is approximately 59 meters.

- [3] correct methods used, but with computational error
[2] error in method
[1] correct answer with no work shown

PTS: 1 DIF: L3 REF: 10-6 Circles and Arcs
OBJ: 10-6.2 Circumference and Arc Length NAT: NAEP 2005 M1h | ADP K.4
TOP: 10-6 Example 5
KEY: circumference | concentric circles | extended response | rubric-based question | word problem | problem solving