

Circles

Foundation to Challenge

Practice should make the test feel easier, not merely familiar.

Work without the answer key first. Check answers through the SAT Practice Library after completing the set.

FOUNDATION

- 1 A circle has diameter 12. A central angle is 150° . What is the length of the corresponding minor arc?

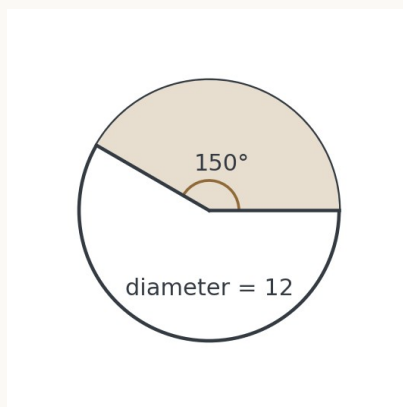


Diagram not drawn to scale.

- A. 4π
- B. 5π
- C. 6π
- D. 10π

STANDARD

- 2 An equilateral triangle is inscribed in a circle of area 49π . What is the length of one minor arc between adjacent vertices?

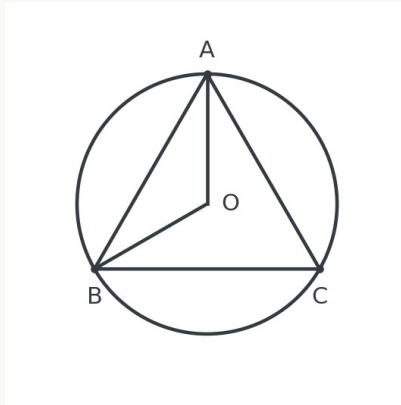


Diagram not drawn to scale.

- A. $7\pi/3$
- B. $14\pi/3$
- C. 7π
- D. 14π

FOUNDATION

- 3 An inscribed angle measures 35° . What fraction of the circle circumference is its intercepted minor arc?

- A. $\frac{7}{36}$
- B. $\frac{7}{18}$
- C. $\frac{35}{360}$
- D. $7/72$

STANDARD

- 4 AC is a diameter of a circle of radius 2, and chord AB has length 2. What is $\angle BAC$?

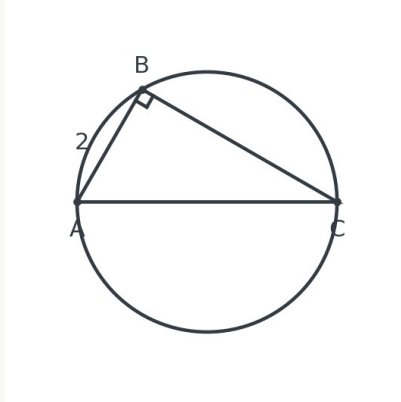


Diagram not drawn to scale.

ADVANCED

- 5 KLMN is cyclic. If $\angle NLM = 62^\circ$ and $\angle LKM = 47^\circ$, what is $\angle LMN$?

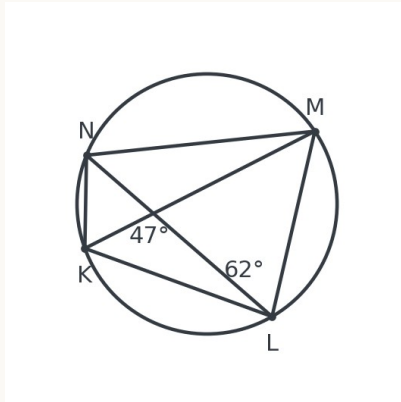


Diagram not drawn to scale.

FOUNDATION

- 6 An equilateral triangle ABC is inscribed in a circle with center D . What is $\angle ADB$ in radians?

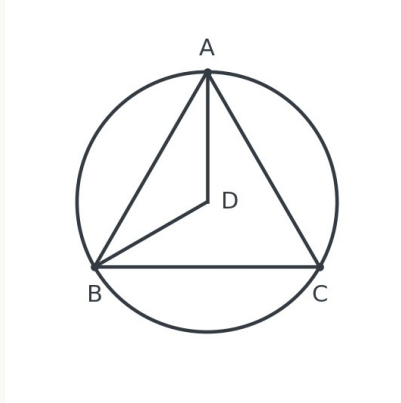


Diagram not drawn to scale.

- A. $2\pi/3$
- B. $3\pi/4$
- C. $4\pi/5$
- D. $5\pi/6$

STANDARD

- 7 A sector has radius 9 and area 27π . What is its central angle in radians?

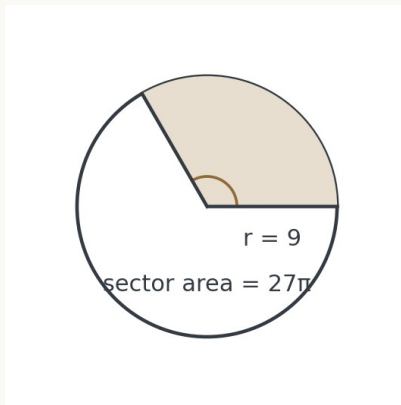


Diagram not drawn to scale.

- A. $\pi/3$
- B. $2\pi/3$
- C. $3\pi/4$
- D. $4\pi/5$

- 8 A circle is inscribed in a square whose diagonal is 6. What is the circle area?

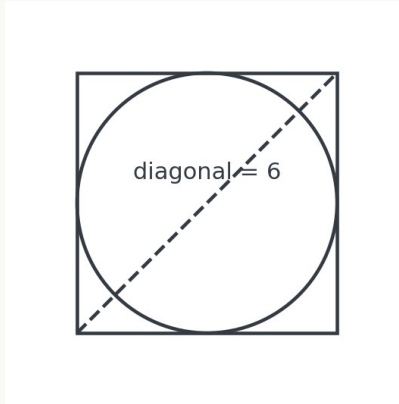


Diagram not drawn to scale.

- A. $9\pi/4$
- B. $9\pi/2$
- C. 9π
- D. 18π

ADVANCED

- 9 A circle of radius 3 has a 60° sector. What is sector area minus the area of the triangle formed by the two radii?

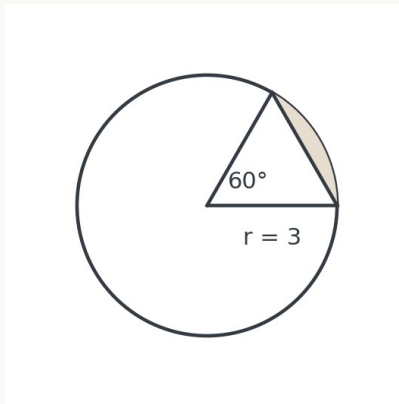


Diagram not drawn to scale.

- A. $3\pi/2 - 9\sqrt{3}/4$
- B. $3\pi - 9\sqrt{3}/4$
- C. $3\pi/2 - 3\sqrt{3}/2$
- D. $9\pi/2 - 9\sqrt{3}/4$

STANDARD

- 10 A circle has area 64π and is divided into 8 congruent sectors. What is the perimeter of one sector?

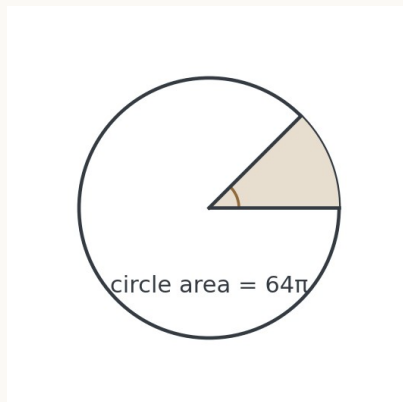


Diagram not drawn to scale.

- A. $8 + 2\pi$
- B. $16 + 2\pi$
- C. $16 + 4\pi$
- D. $8 + 4\pi$

FOUNDATION

- 11 Angle X is $7\pi/9$ radians. Angle Y is $\pi/3$ radians greater. What is Y in degrees?

- 12** A tangent segment from A to a circle is 15 and the distance from A to the center is 17. What is the radius?

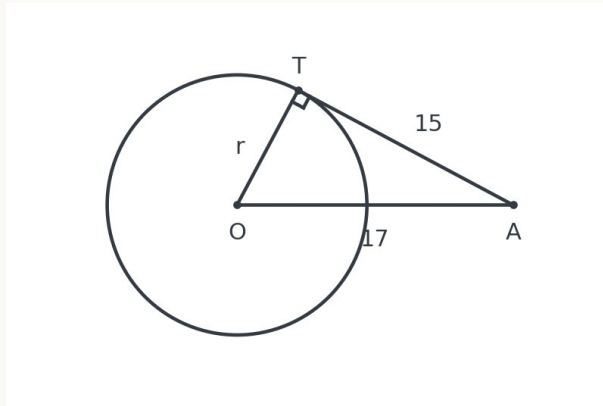


Diagram not drawn to scale.

ADVANCED

- 13** Around a circle center O , $\angle AOB = 35^\circ$ and $\angle COD = 55^\circ$. A and D lie at opposite ends of a diameter, with B and C on the same semicircle. What is $\angle BOC$ in radians?

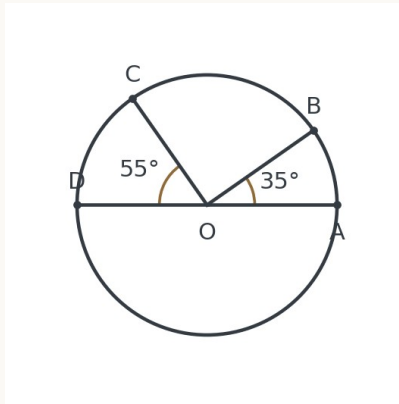
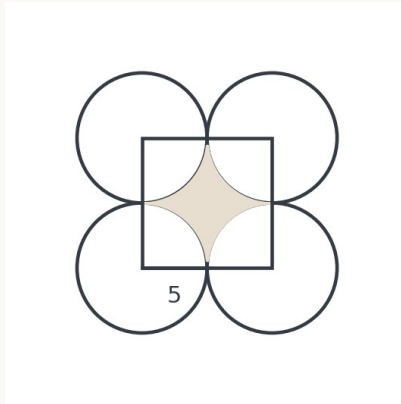


Diagram not drawn to scale.

- A. $\pi/2$
- B. $5\pi/9$
- C. $2\pi/3$
- D. $7\pi/12$

- 14** Four circles of radius 5 are tangent in a 2-by-2 arrangement. What is the area of the central gap?

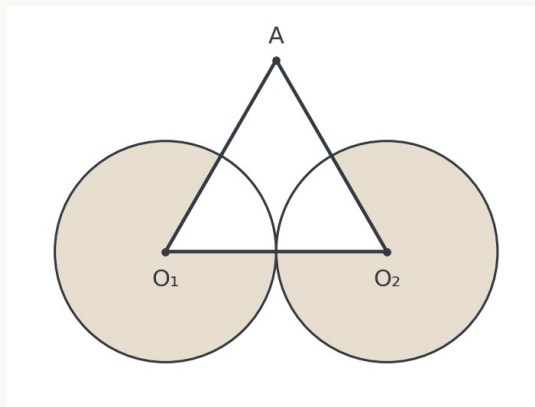


Shaded region is the central gap.

- A. $100 - 25\pi$
- B. $100 - 20\pi$
- C. $50 - 25\pi$
- D. $25\pi - 50$

CHALLENGE

- 15** Two tangent circles each have radius 4. An equilateral triangle has the centers as two vertices. What is the total area inside the circles but outside the triangle sectors?

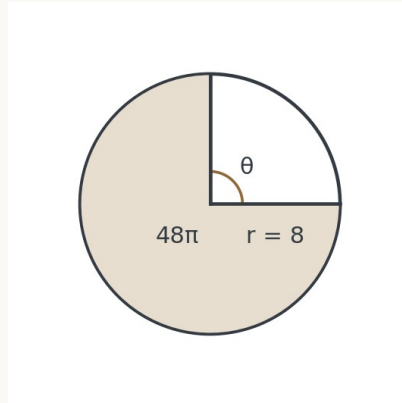


Shaded regions are inside the circles and outside the triangle.

- A. $(80\pi/3)$
- B. $(64\pi/3)$
- C. 24π
- D. 32π

STANDARD

- 16 A circle of radius 8 has a shaded major sector of area 48π . What is the unshaded central angle in degrees?

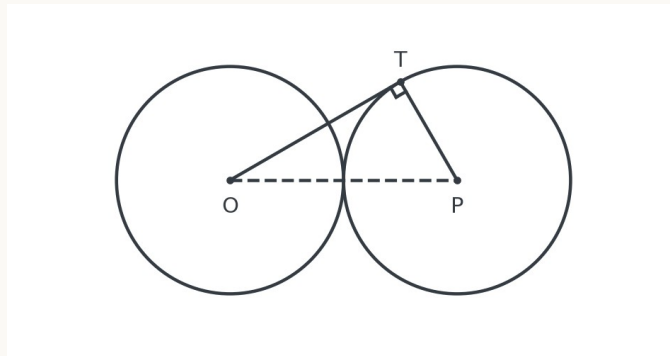


Shaded major sector; find the unshaded angle θ .

- A. 60
- B. 90
- C. 120
- D. 135

ADVANCED

- 17 Two circles of radius 5 are externally tangent. From the center of one circle, a tangent is drawn to the other circle. What is the tangent length?



Both radii are 5. OT is tangent to the circle centered at P.

- A. $5\sqrt{2}$
- B. $5\sqrt{3}$
- C. 10
- D. $10\sqrt{3}$

STANDARD

- 18 A circle centered at $(-2, 3)$ is tangent at $(1, 7)$. What is the slope of the tangent line?

FOUNDATION

- 19 $x^2 + 10x + y^2 - 12y = 11$ defines a circle. What is its center?

- A. $(-5, 6)$
- B. $(5, -6)$
- C. $(-5, -6)$
- D. $(5, 6)$

- 20 Circle $C: (x+1)^2 + (y-4)^2 = 16$. Circle D has the same center and twice the radius. In $(x+1)^2 + (y-4)^2 = m$, what is m ?

STANDARD

- 21 For $(x-4)^2 + (y+3)^2 = 9$, which statements are true? I. center is $(4, -3)$. II. circle is tangent to x-axis. III. circle is tangent to y-axis.

- A. I and II only
- B. I and III only
- C. II only
- D. I, II and III

FINISHED?

Check your answers online

aryalanupme.github.io/sat-circles.html

Do not stop at “wrong.” Identify why it was wrong: concept, algebra, arithmetic, interpretation, calculator choice, or timing.

I do not correct the answer first. I correct the reason.

Independent SAT-style practice. Not affiliated with or endorsed by College Board.