# Circles, Arcs, Sectors & Radians Practice Questions

DO NOT USE A CALCULATOR ON ANY OF THE FOLLOWING QUESTIONS UNLESS INDICATED.

1. What is the area, in units squared, of a circle with radius of 11 units?

   (A) $\frac{11}{2}\pi$

   (B) $11\pi$

   (C) $22\pi$

   (D) $121\pi$

2. What is the circumference, in units, of a circle with radius of 20 units?

   (A) $10\pi$

   (B) $20\pi$

   (C) $40\pi$

   (D) $400\pi$

3. What is the radius, in inches, of a circle with circumference of $64\pi$ inches?

   (A) 8

   (B) 16

   (C) 32

   (D) 64

4. What is the radius, in centimeters, of a circle with area of $100\pi$ centimeters squared?

   (A) 10

   (B) 25

   (C) 50

   (D) 200

5. FREE RESPONSE: What is the measure, in degrees, of an angle with measure $\frac{2\pi}{3}$ radians?

6. FREE RESPONSE: What fraction of a circle is represented by an arc of $100°$?

7. What fraction of a circle is represented by an arc angle of $\frac{4\pi}{9}$ radians?

   (A) $\frac{1}{9}$

   (B) $\frac{2}{9}$

   (C) $\frac{4}{9}$

   (D) $\frac{8}{9}$

8. What is the sector area, in square units, of a sector representing $\frac{3}{5}$ of a circle with radius 10 units?

(A) $8\pi$

(B) $12\pi$

(C) $40\pi$

(D) $60\pi$

9. (CALCULATOR) Circle $C$ has a radius of 6 inches. What is the sector area, in square inches, of a sector of Circle $C$ with an arc angle of $200°$?

(A) $4\pi$

(B) $\frac{20}{3}\pi$

(C) $16\pi$

(D) $20\pi$

10. What is the arc length, in centimeters, of an arc with angle measure $\frac{3\pi}{4}$ radians in a circle of radius 10 centimeters?

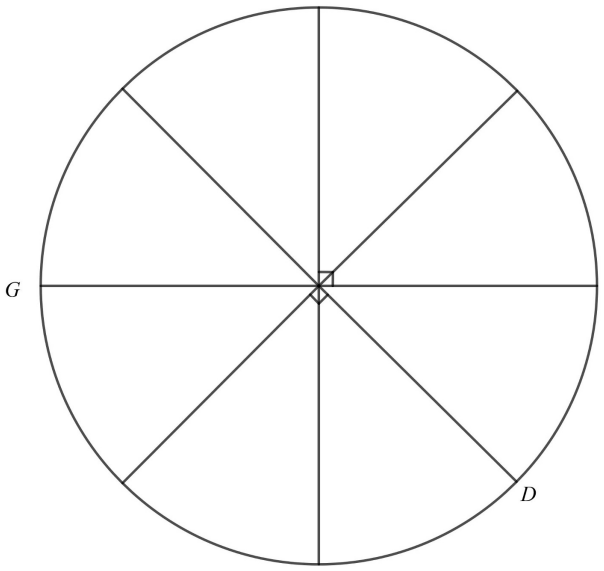
(A) $\frac{\pi}{4}$

(B) $\frac{15}{2}\pi$

(C) $15\pi$

(D) $75\pi$

11. (CALCULATOR) FREE RESPONSE: The number of radians in a 1080-degree angle can be written as $n\pi$, where $n$ is a constant. What is the value of $n$?



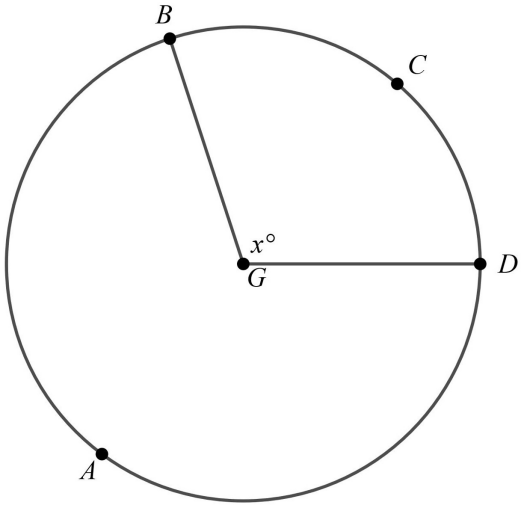

12. The circle above has a circumference of 48. What is the length of minor arc $DG$?

(A) 6

(B) 12

(C) 18

(D) 48



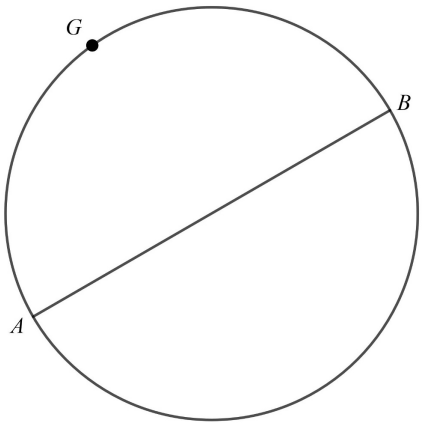

13. (CALCULATOR) The circle above has center $G$, the length of arc $BCD$ is $9\pi$ and $x = 108$. What is the length of major arc $BAD$?

(A) $18\pi$

(B) $21\pi$

(C) $27\pi$

(D) $30\pi$




14. In the circle above, segment $AB$ is a diameter. If the length of arc $AGB$ is $3\pi$, what is the length of the radius of the circle?

(A) 1.5

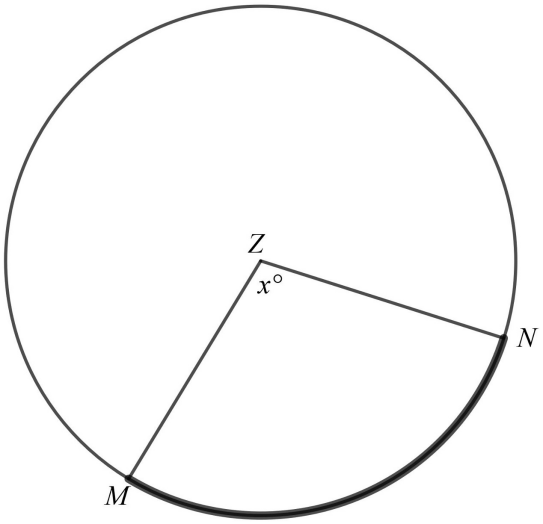
(B) $\sqrt{6}$

(C) 3

(D) 6

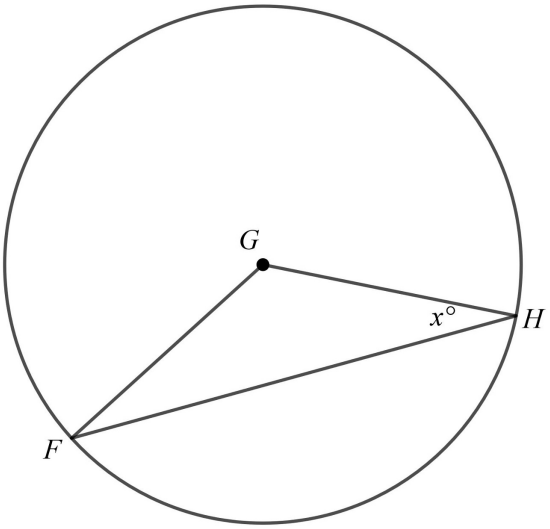
15. FREE RESPONSE: In a circle with center $P$, central angle $APB$ has a measure of $\frac{7}{4}\pi$ radians. The area of the sector formed by central angle $APB$ is what fraction of the area of the circle?

16. FREE RESPONSE: Points $X$ and $Y$ lie on a circle with radius $0.5$, and arc $XY$ has length $\frac{3\pi}{8}$. What fraction of the circumference of the circle is the length of arc $XY$?



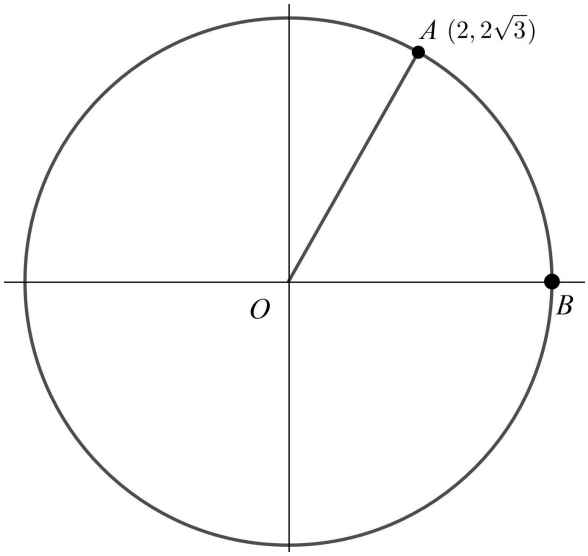

Note: Figure not drawn to scale.

17. (CALCULATOR): In the figure above, the circle has center $Z$ and radius 9. If the length of arc $MN$ (shown in bold) is between 2 and 3, what is one possible integer value of $x$?




Note: Figure not drawn to scale.

18. (CALCULATOR) FREE RESPONSE: In the circle above, point $G$ is the center and the length of minor arc $FH$ is $\frac{4}{9}$ of the circumference of the circle. What is the value of $x$?




19. FREE RESPONSE: In the $xy$-plane above, $O$ is the center of the circle and the measure of angle $\angle AOB$ is $\frac{\pi}{n}$ radians. What is the value of $n$?

20. (CALCULATOR) FREE RESPONSE: In Circle $A$ with centerpoint $K$, the length of minor arc $RS$ is $4\pi$ with an arc angle of $\frac{2\pi}{5}$ radians. If the area of major sector $RS$ is $n\pi$ square units, what is the value of $n$?

# Equation of a Circle, Completing the Square & Distance Formula Practice Questions

YOU MAY USE A CALCULATOR ON THE FOLLOWING QUESTIONS.

1. A circle in the *xy*-plane has center $(1,3)$ and radius $4$. Which of the following is an equation of the circle?

(A) $(x-1)^2+(y-3)^2=4$

(B) $(x+1)^2+(y+3)^2=4$

(C) $(x-1)^2+(y-3)^2=16$

(D) $(x+1)^2+(y+3)^2=16$

2. A circle in the *xy*-plane has center $(4,-6)$ and radius $3$. Which of the following is an equation of the circle?

(A) $(x+4)^2+(y-6)^2=3$

(B) $(x-4)^2+(y+6)^2=3$

(C) $(x-4)^2+(y+6)^2=9$

(D) $(x+4)^2+(y-6)^2=9$

$$(x-2)^2+(y+5)^2=25$$

3. In the *xy*-plane, the graph of the equation above is a circle. Point *G* is on the circle and has coordinates $(7,-5)$. If $\overline{FG}$ is a diameter of the circle, what are the coordinates of point *F*?

(A) $(-3,-5)$

(B) $(2,5)$

(C) $(5,0)$

(D) $(5,-10)$

4. A circle in the *xy*-plane has equation $(x-4)^2+(y+3)^2=36$. Which of the following points does NOT lie in the interior of the circle?

(A) $(-1,-5)$

(B) $(-2,0)$

(C) $(0,0)$

(D) $(8,-5)$

5. In the *xy*-plane, the graph of $x^2 + y^2 - 6x + 2y = -1$ is a circle. What is the radius of the circle?

(A) 1

(B) 3

(C) $2\sqrt{3}$

(D) 9

6. Which of the following is an equation of a circle in the *xy*-plane with center $(-2,3)$ and a radius with endpoint $(5,1)$?

(A) $(x+2)^2 + (y-3)^2 = 53$

(B) $(x-2)^2 + (y+3)^2 = 53$

(C) $(x-2)^2 + (y+3)^2 = \sqrt{53}$

(D) $(x+2)^2 + (y-3)^2 = \sqrt{53}$

7. In the *xy*-plane, the graph of $3x^2 + 18x + 3y^2 + 12y = 9$ is a circle. What is the centerpoint of the circle?

(A) $(3,2)$

(B) $(6,4)$

(C) $(-6,-4)$

(D) $(-3,-2)$

8. Which of the following is an equation of a circle in the *xy*-plane with center $(-5,6)$ and a radius with endpoint $(2,-7)$?

(A) $(x-5)^2 + (y+6)^2 = \sqrt{218}$

(B) $(x+5)^2 + (y-6)^2 = \sqrt{218}$

(C) $(x-5)^2 + (y+6)^2 = 218$

(D) $(x+5)^2 + (y-6)^2 = 218$

9. In the *xy*-plane, the graph of $2x^2 + 14x + 2y^2 - 8y = 17.5$ is a circle. What is the centerpoint of the circle?

(A) $(-7,-4)$

(B) $(-3.5,2)$

(C) $(3.5,-2)$

(D) $(5,5)$

10. In the *xy*-plane, the graph of $2x^2 + 6x + 2y^2 - 10y = 1$ is a circle. What is the radius of the circle?

(A) $\sqrt{3}$

(B) $3\sqrt{3}$

(C) 3

(D) 9