

Geometry - Equations of Circles and Parabolas - Quiz

Common Core G-GPE.A.1, G-GPE.A.2 · maths-pdf.fr/en/

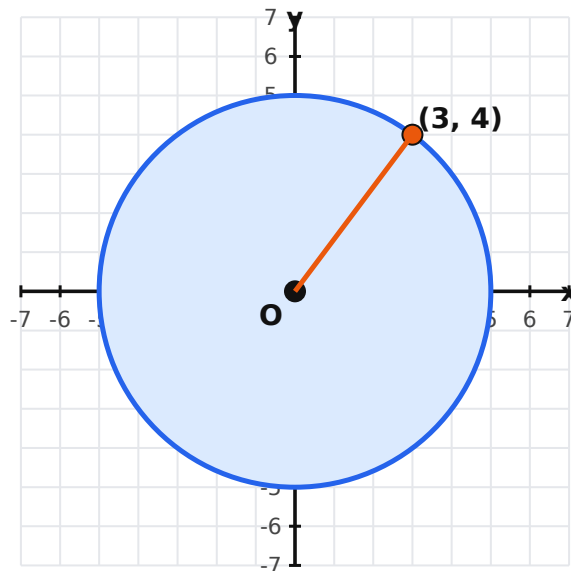
Name: _____ Class: _____ Date: ____/____/____

Test your understanding of equations of circles with this 10-question multiple-choice quiz. Each question has one correct answer, and the explanation after it names the typical mistake behind the wrong choices. Take it after the lesson or before the test.

Geometry · Common Core State Standards: **G-GPE.A.1, G-GPE.A.2**

Questions

Question 1



Origin-centered circle of radius 5 with the point (3, 4) on it.

Which equation gives the circle with center at the origin passing through (3, 4)?

- A. $x^2 + y^2 = 5$
- B. $x^2 + y^2 = 25$
- C. $x^2 + y^2 = 7$
- D. $x + y = 25$

Question 2

What is the center of the circle $(x - 6)^2 + (y + 1)^2 = 9$?

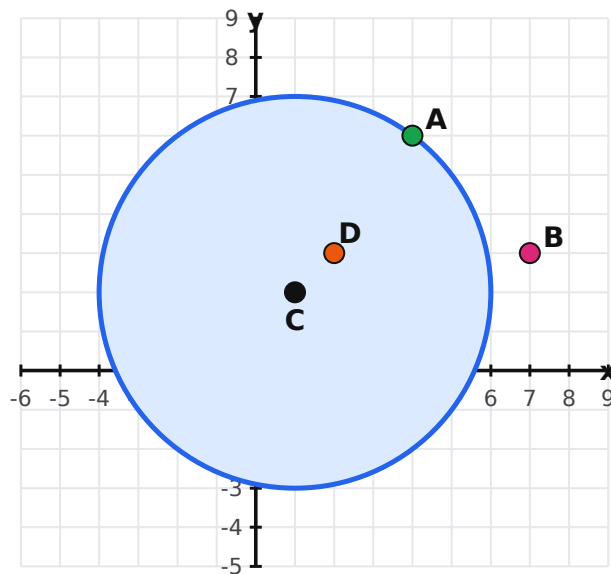
- A. $(-6, 1)$
- B. $(6, 1)$
- C. $(-6, -1)$
- D. $(6, -1)$

Question 3

What is the radius of the circle $(x + 1)^2 + (y - 5)^2 = 121$?

- A. 121
- B. 60.5
- C. 22
- D. 11

Question 4



Point A lies on the circle, B lies outside and D lies inside.

The circle has center $(1, 2)$ and radius 5. Is the point $(7, 3)$ inside, on or outside?

- A. Inside
- B. Outside
- C. On the circle
- D. Cannot be determined

Question 5

Complete the square: $x^2 + y^2 - 4x + 6y - 3 = 0$ gives center

- A. (2, -3)
- B. (-2, 3)
- C. (4, -6)
- D. (2, 3)

Question 6

A circle has endpoints of a diameter at (0, 0) and (6, 8). What is the radius?

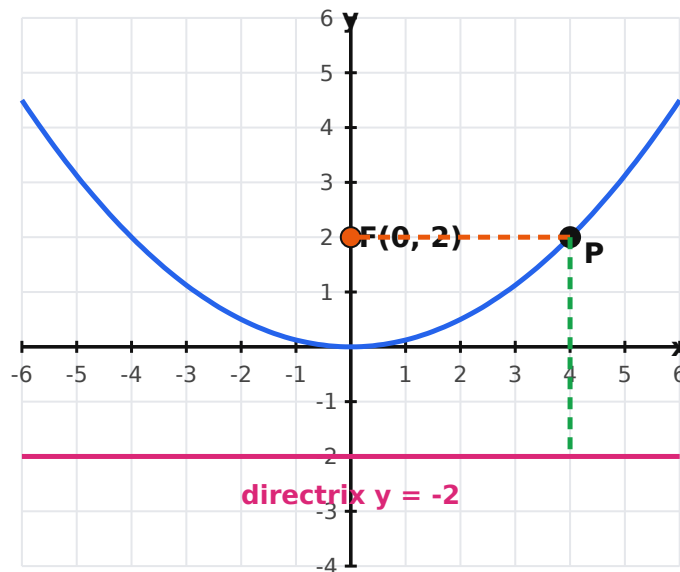
- A. 10
- B. 5
- C. 7
- D. 14

Question 7

What is the set of points equally far from a focus and a directrix?

- A. A parabola
- B. A circle
- C. An ellipse only
- D. A line

Question 8



Each point of the curve is the same distance from F and from the line $y = -2$.

The parabola has focus (0, 2) and directrix $y = -2$. What is its equation?

- A. $x^2 = 8y$
- B. $x^2 = 4y$
- C. $y^2 = 8x$
- D. $x^2 = 2y$

Question 9

A parabola has equation $x^2 = 20y$. What is the focus?

- A. (0, 20)
- B. (0, 10)
- C. (0, 5)
- D. (5, 0)

Question 10

The line $y = x$ meets the circle $x^2 + y^2 = 8$ at

- A. (4, 4) and (-4, -4)
- B. (2, 2) only
- C. (2, 2) and (-2, -2)
- D. (8, 8) and (0, 0)

Answers

1. **B** - $r^2 = 3^2 + 4^2 = 25$. The equation uses r squared, not r .
2. **D** - Read the signs opposite to the equation: $x - 6$ gives 6, $y + 1$ gives -1.
3. **D** - r squared is 121, so $r = 11$. The value 121 is r squared.
4. **B** - $(7 - 1)^2 + (3 - 2)^2 = 37$, which is greater than 25.
5. **A** - Group and complete: $(x - 2)^2 + (y + 3)^2 = 16$. The center is (2, -3).
6. **B** - The diameter is 10 (a 6-8-10 triangle), so the radius is 5.
7. **A** - That is the definition of a parabola.
8. **A** - With $p = 2$, $x^2 = 4py = 8y$.
9. **C** - $4p = 20$ so $p = 5$, and the focus is (0, 5).
10. **C** - $2x^2 = 8$ gives $x = 2$ or -2 , and $y = x$.

Remember

- Circle: $(x - h)^2 + (y - k)^2 = r^2$, center (h, k), radius r .
- Read the center with opposite signs from the equation.
- Inside, on, or outside: compare $(x - h)^2 + (y - k)^2$ with r^2 .
- Complete the square to convert $x^2 + y^2 + Dx + Ey + F = 0$.
- Parabola with focus (0, p) and directrix $y = -p$: $x^2 = 4py$.