

Algebra 1 - Graphing Quadratic Functions and Transformations - Quiz

Common Core F-IF.C.7a, F-IF.C.8a, F-BF.B.3, A-SSE.B.3b · maths-pdf.fr/en/

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

This quick quiz has 10 questions about graphing quadratic functions and transformations, matching Common Core F-IF.C.7a, F-IF.C.8a, F-BF.B.3, and A-SSE.B.3b. Choose the best answer, then use the explanation to learn from every miss. The wrong choices come from common mistakes, so read them with care before you decide.

Algebra 1 · Common Core State Standards: **F-IF.C.7a, F-IF.C.8a, F-BF.B.3, A-SSE.B.3b**

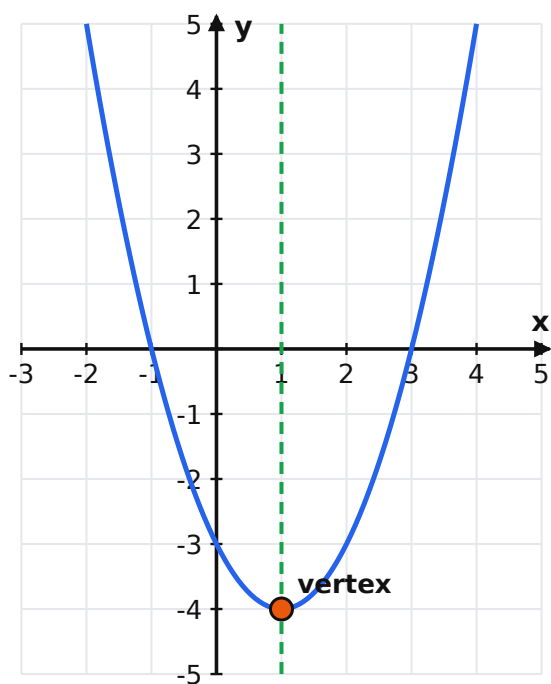
Questions

Question 1

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

- A. $(-5, 1)$
- B. $(5, 1)$
- C. $(5, -1)$
- D. $(1, 5)$

Question 2



What is the axis of symmetry of the parabola?

- A. $x = -4$
- B. $x = 1$
- C. $x = -1$
- D. $y = 1$

Question 3

A parabola crosses the x-axis at $x = 1$ and $x = 9$. What is its axis of symmetry?

- A. $x = 5$
- B. $x = 9$
- C. $x = 4$
- D. $x = 10$

Question 4

Which describes the graph of $y = -3x^2$ compared with $y = x^2$?

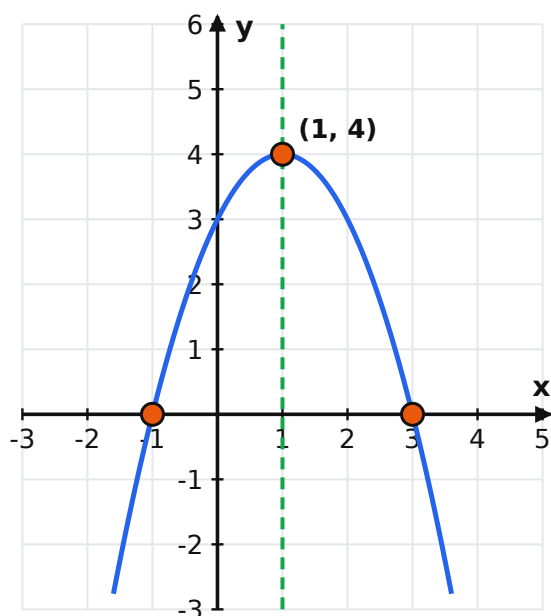
- A. Wider and opening down
- B. Narrower and opening up
- C. Narrower and opening down
- D. Shifted down 3 units

Question 5

The graph of $y = x^2$ is shifted 4 units left. What is the new equation?

- A. $y = (x+4)^2$
- B. $y = (x-4)^2$
- C. $y = x^2 + 4$
- D. $y = x^2 - 4$

Question 6



What is the maximum value of the function graphed?

- A. 1
- B. 3
- C. -1
- D. 4

Question 7

Which is the vertex form of $y = x^2 + 10x + 21$?

- A. $y = (x+5)^2 + 21$
- B. $y = (x+5)^2 - 4$
- C. $y = (x+10)^2 - 79$
- D. $y = (x-5)^2 - 4$

Question 8

A store's revenue is $R = -5p^2 + 100p$. Which price gives the maximum revenue?

- A. \$10
- B. \$20

C. \$500

D. \$5

Question 9

x	-1	0	1	2	3
f(x)	8	3	0	-1	0

The table shows a quadratic function. What is its vertex?

A. (1,0)

B. (0,3)

C. (-1,8)

D. (2,-1)

Question 10

What are the x-intercepts of $y = (x-2)(x+6)$?

A. $x = -2$ and $x = 6$

B. $x = 2$ and $x = 6$

C. $x = 2$ and $x = -6$

D. $x = -2$ and $x = -6$

Answers

1. **B** - In vertex form $a(x - h)^2 + k$, the vertex is (h, k) . The minus sign in $x - 5$ means $h = 5$.
2. **B** - The axis passes through the vertex $(1, -4)$, so it is the vertical line $x = 1$.
3. **A** - The axis is halfway between the x-intercepts: $(1 + 9)/2 = 5$.
4. **C** - The factor 3 stretches the graph vertically, and the negative sign flips it.
5. **A** - A left shift of 4 replaces x with $x + 4$.
6. **D** - The maximum is the y-coordinate of the vertex, which is 4. The x-coordinate 1 is where it occurs.
7. **B** - Add and subtract 25: $(x^2 + 10x + 25) - 25 + 21 = (x + 5)^2 - 4$.
8. **A** - $p = -b/(2a) = -100/(-10) = 10$. The maximum revenue itself is \$500.
9. **D** - The outputs at $x = 1$ and $x = 3$ are equal, so the axis is $x = 2$ and the vertex is $(2, -1)$.
10. **C** - Set each factor to 0: $x - 2 = 0$ and $x + 6 = 0$.

Remember

- Standard form $f(x) = ax^2 + bx + c$; vertex form $f(x) = a(x - h)^2 + k$.
- The axis of symmetry is $x = -b/(2a)$, and the vertex lies on it.
- If $a > 0$ the parabola opens up (minimum); if $a < 0$ it opens down (maximum).
- $f(x) + k$ shifts up/down; $f(x - h)$ shifts right/left; $a \cdot f(x)$ stretches or reflects.
- The vertex gives the maximum or minimum value in a model.