

Algebra 1 · Solving Quadratic Equations · Quiz

Common Core A-REI.B.4a, A-REI.B.4b, A-APR.B.3, A-CED.A.1 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

Try these ten multiple-choice questions on quadratic equations: square roots, factoring, completing the square, the discriminant and a word problem. Each has one correct answer, and the explanation points out the usual slip.

Algebra 1 Common Core: A-REI.B.4a · A-REI.B.4b · A-APR.B.3 · A-CED.A.1

Questions

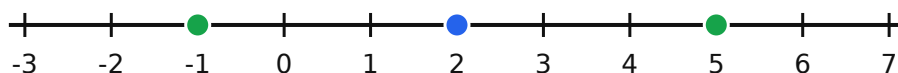
Question 1

Solve $x^2 = 64$.

- A. $x = 8$
- B. $x = 32$ or $x = -32$
- C. $x = 8$ or $x = -8$
- D. $x = 4$ or $x = -4$

Question 2

Solve $(x-2)^2 = 9$. The number line shows the center.



Number line for $(x-2)^2 = 9$.

- A. $x = 11$ or $x = -7$
- B. $x = 5$
- C. $x = -5$ or $x = 1$
- D. $x = 5$ or $x = -1$

Question 3

What are the solutions of $(x+3)(x-8) = 0$?

- A. $x = -3$ or $x = 8$
- B. $x = 3$ or $x = -8$
- C. $x = 3$ or $x = 8$

D. $x = -3$ or $x = -8$

Question 4

Solve $x^2 - x - 12 = 0$.

A. $x = -4$ or $x = 3$

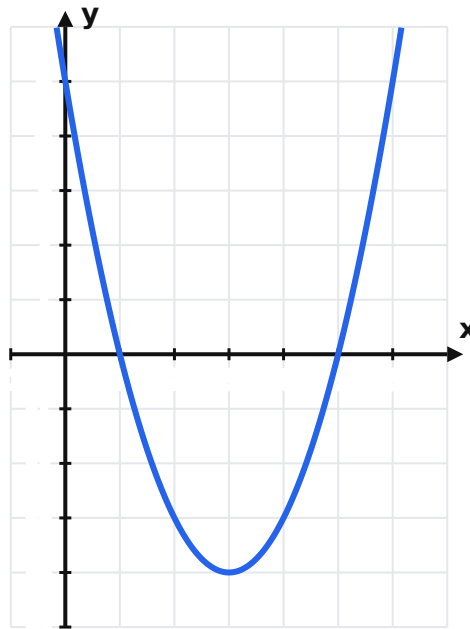
B. $x = 4$ or $x = -3$

C. $x = 4$ or $x = 3$

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

Question 5

The graph of $y = x^2 - 6x + 5$ is shown. What are the solutions of $x^2 - 6x + 5 = 0$?



Graph of $y = x^2 - 6x + 5$.

A. $x = 1$ or $x = 5$

B. $x = 3$

C. $x = 5$ or $x = -1$

D. $x = -1$ or $x = -5$

Question 6

What number completes the square in $x^2 + 14x$?

A. 14

B. 49

C. 7

D. 196

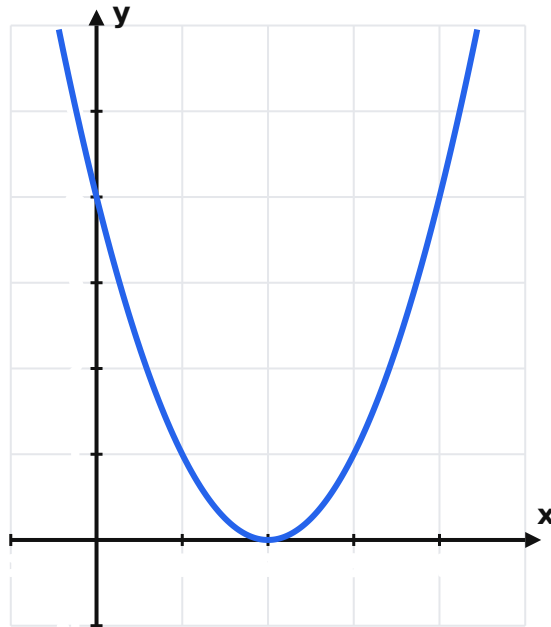
Question 7

What is the discriminant of $2x^2 - 3x + 5 = 0$?

- A. 31
- B. -31
- C. 49
- D. -11

Question 8

How many real solutions does $x^2 - 4x + 4 = 0$ have? The graph is shown.



Graph of $y = x^2 - 4x + 4$.

- A. Exactly two
- B. No real solutions
- C. Infinitely many
- D. Exactly one

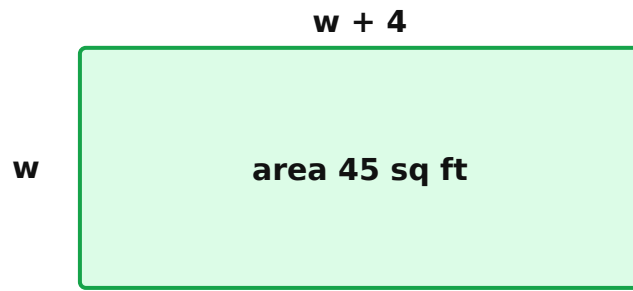
Question 9

Which are the solutions of $2x^2 + x - 3 = 0$?

- A. $x = -1$ or $x = \frac{3}{2}$
- B. $x = 1$ or $x = \frac{3}{2}$
- C. $x = 1$ or $x = -\frac{3}{2}$
- D. $x = -1$ or $x = -\frac{3}{2}$

Question 10

A rectangle is 4 feet longer than it is wide, and its area is 45 square feet. What is its width?



Rectangle model for the problem.

- A. 5 ft
- B. 9 ft
- C. -9 ft
- D. 11.25 ft

Answer key

1. **C** - Both 8 and -8 square to 64. Giving only 8 forgets the negative root, and halving 64 gives 32, which is not a square root.
2. **D** - Take square roots: $x-2=\pm 3$, so $x=5$ or $x=-1$. Squaring 3 instead of taking its root gives the error $x-2=\pm 9$.
3. **A** - Each factor equals 0 separately: $x+3=0$ gives -3 and $x-8=0$ gives 8. The signs in the factors are opposite to the solutions.
4. **B** - Factor $(x-4)(x+3)=0$, because $-4\cdot 3=-12$ and $-4+3=-1$. The pair 6 and -2 multiplies to -12 but adds to 4.
5. **A** - The solutions are the x-intercepts, 1 and 5. The value 3 is the axis of symmetry, not a solution.
6. **B** - Half of 14 is 7, and $7^2=49$. Using 7 forgets to square, and squaring 14 forgets to halve first.
7. **B** - $b^2-4ac=9-4(2)(5)=9-40=-31$. Using $+4ac$ gives 49, and dropping the 4 gives -11 .
8. **D** - The parabola touches the x-axis only at $x=2$. The discriminant is $16-16=0$, which means one solution.
9. **C** - $D=1+24=25$, so $x=\frac{-1\pm 5}{4}$, which is 1 or $-\frac{3}{2}$. Check $x=1$: $2+1-3=0$.
10. **A** - $w^2+4w-45=0$ factors as $(w+9)(w-5)=0$. A width cannot be negative, so $w=5$. Dividing 45 by 4 does not use the area equation.

Remember:

- Standards A-REI.B.4a, A-REI.B.4b, A-APR.B.3 and A-CED.A.1: solve quadratics, relate zeros to graphs, and model with equations.
- Zero-product property: if $mn=0$, then $m=0$ or $n=0$.
- Completing the square adds $\left(\frac{b}{2}\right)^2$ to both sides of $x^2+bx=k$.
- The quadratic formula is $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$.
- The discriminant b^2-4ac is positive, zero or negative for two, one or no real solutions.