

Algebra 1 - Solving Quadratic Equations - Test Answer Key

Common Core A-REI.B.4a, A-REI.B.4b, A-SSE.B.3a, A-CED.A.1 · maths-pdf.fr/en/

Use this key to grade the quadratic equations test. Each solution shows the full work, and the scoring note explains how the points are awarded. The test totals 20 points. Give partial credit for correct steps, even when the final answer is wrong.

Algebra 1 · Common Core State Standards: **A-REI.B.4a, A-REI.B.4b, A-SSE.B.3a, A-CED.A.1**

Question 1 - Square roots [2 pts]

a) $x^2 = 64$, so $x = \pm 8$.

b) $x^2 = 25$, so $x = \pm 5$.

$x = \pm 8$; $x = \pm 5$

Scoring: 1 point for each part (both solutions).

Question 2 - Factoring [2 pts]

$(x+6)(x-4) = 0$.

$x = -6$ **or** $x = 4$

Scoring: 1 point for the factors; 1 point for both solutions.

Question 3 - Factoring with a leading coefficient [2 pts]

$(3x-1)(x-3) = 0$.

$x = \frac{1}{3}$ or $x = 3$.

$x = \frac{1}{3}$ **or** $x = 3$

Scoring: 1 point for the factors; 1 point for both solutions.

Question 4 - Completing the square [2 pts]

Move the constant: $x^2 + 8x = -5$. Add 16: $(x+4)^2 = 11$.

$$x = -4 \pm \sqrt{11}$$

Scoring: 1 point for completing the square correctly; 1 point for the solutions.

Question 5 - Quadratic formula [2 pts]

$a = 3, b = -2, c = -4$. Discriminant: $4 + 48 = 52$, and $\sqrt{52} = 2\sqrt{13}$.

$$x = \frac{2 \pm 2\sqrt{13}}{6} = \frac{1 \pm \sqrt{13}}{3}$$

$$x = \frac{1 \pm \sqrt{13}}{3}$$

Scoring: 1 point for the discriminant; 1 point for the simplified solutions.

Question 6 - Discriminant [2 pts]

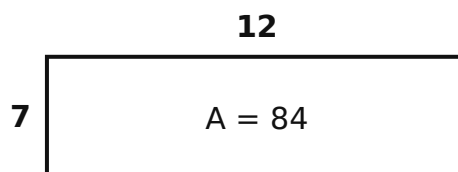
$x^2 + 4x + 7 = 0$: $16 - 28 = -12$, no real solutions.

$4x^2 - 12x + 9 = 0$: $144 - 144 = 0$, one real solution.

-12, none; 0, one

Scoring: 1 point for each equation.

Question 7 - Rectangle area [3 pts]



Width 7 m, length 12 m.

a) $w(w+5) = 84$, so $w^2 + 5w - 84 = 0$.

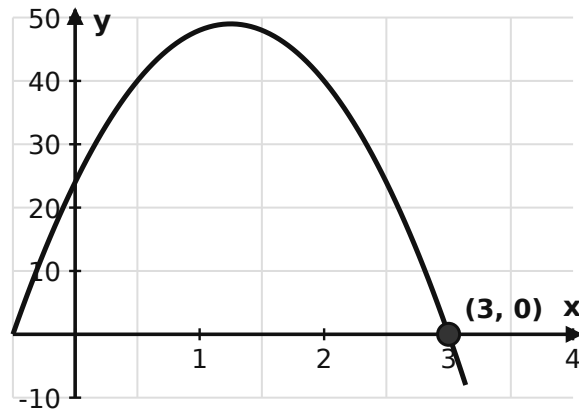
b) $(w+12)(w-7) = 0$, so $w = -12$ or $w = 7$.

c) A width cannot be negative: width 7 m, length 12 m.

Width 7 m, length 12 m

Scoring: 1 point per part.

Question 8 - Ball thrown from a platform [3 pts]



The ball lands at 3 seconds.

- a) $-16t^2 + 40t + 24 = 0$ divided by -8 gives $2t^2 - 5t - 3 = 0$.
- b) $(2t+1)(t-3) = 0$, so $t = -\frac{1}{2}$ or $t = 3$.
- c) Time cannot be negative, so the ball lands at 3 seconds.

3 seconds

Scoring: 1 point per part.

Question 9 - Find the error [2 pts]

The student forgot the negative square root.

$$x-2=\pm 5, \text{ so } x=7 \text{ or } x=-3.$$

$$x=7 \text{ or } x=-3$$

Scoring: 1 point for the explanation; 1 point for both solutions.

Total

20 points