



Quadratic Quandary

► **Materials:**

- Equation cards
- Game board
- Pencil
- Paper

► **Directions:**

Students play in pairs or teams of three.

Each team needs one set of equation cards and a game board. After randomly drawing a card, the team must decide which method they are going to use to solve the quadratic equation. All team members then solve the equation, if possible. Students should round solutions to the nearest tenth, when appropriate. One member of the team checks the solution.

If the solution is correct, the team records the equation number and solutions(s) on the game board and randomly draw another card. If the solution is incorrect, the team continues to work until they get the correct solution.

Teams continue the process until their game board is complete. If a team selects an equation that is more efficiently solved by a method that was already used twice, the team may skip that equation and select another card.


► **Who Wins?**

The first team to completely fill their game board with all correct answers wins.


► **Discuss:**

Discuss the advantages and disadvantages of using different methods for solving quadratic equations. Why did some teams choose one method over another?


Equation cards for Quadratic Quandary




Equation 1
 $x^2 + 2x - 3 = 0$




Equation 2
 $-x^2 = 2x - 8$




Equation 3
 $x^2 + 5x + 4 = 0$




Equation 4
 $(x + 4)^2 = -36$




Equation 5
 $(x + 3)^2 = 1$




Equation 6
 $x^2 - 9x = -20$




Equation 7
 $x^2 - 6x = 55$




Equation 8
 $3x^2 - 7x - 4 = 0$




Equation 9
 $-x^2 + 8x + 5 = 0$




Equation 10
 $x^2 + 4x + 4 = 0$




Equation 11
 $x^2 - 3 = 2x$




Equation 12
 $2x^2 + 32 = 0$




Equation 13
 $(-2x - 10)^2 = 144$




Equation 14
 $3(x - 1)^2 = 27$




Equation 15
 $x^2 = -64$




Equation 16
 $x^2 + 2x = 24$




Equation 17
 $-6x^2 + 4x - 7 = 0$




Equation 18
 $x^2 - 4x - 6 = 0$




Equation 19
 $x^2 + 1 = 2x$




Equation 20
 $x^2 + 4 = 5x$




Equation 21
 $-3x^2 = -192$




Equation 22
 $x^2 + 5 = 14$




Equation 23
 $x^2 + 12x = -32$




Equation 24
 $x^2 + 6x = -5$



Equation 25
 $2x^2 - 8x - 9 = 0$

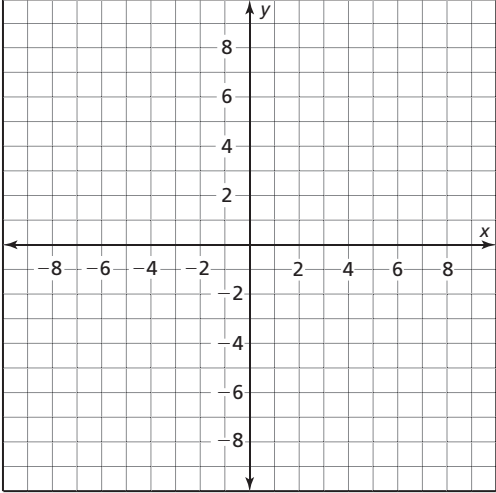
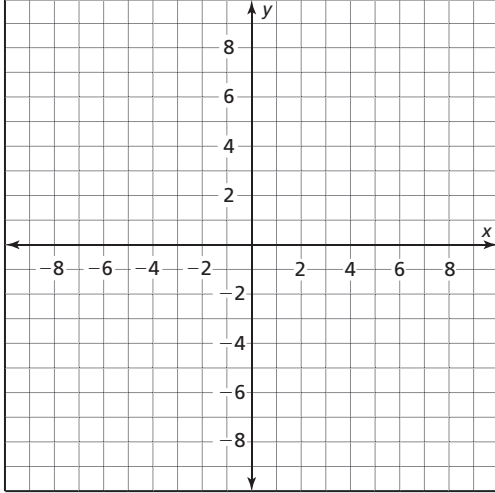


Equation 26
 $-2x^2 + 7x + 10 = 0$



Equation 27
 $x^2 + 8x - 5 = 0$

Game board for Quadratic Quandary

<p>Graphing:</p>	<p>Graphing:</p>
	
<p>Equation #: Solution:</p>	<p>Equation #: Solution:</p>
<p>Using Square Roots:</p>	<p>Using Square Roots:</p>
<p>Equation #: Solution:</p>	<p>Equation #: Solution:</p>
<p>Completing the Square:</p>	<p>Completing the Square:</p>
<p>Equation #: Solution:</p>	<p>Equation #: Solution:</p>
<p>Using the Quadratic Formula:</p>	<p>Using the Quadratic Formula:</p>
<p>Equation #: Solution:</p>	<p>Equation #: Solution:</p>

Answers for Quadratic Quandary

1. $x = -3, x = 1$

2. $x = -4, x = 2$

3. $x = -4, x = -1$

4. no real solutions

5. $x = -4, x = -2$

6. $x = 4, x = 5$

7. $x = -5, x = 11$

8. $x \approx -0.5, x \approx 2.8$

9. $x \approx -0.6, x \approx 8.6$

10. $x = -2$

11. $x = -1, x = 3$

12. no real solutions

13. $x = -11, x = 1$

14. $x = -2, x = 4$

15. no real solutions

16. $x = -6, x = 4$

17. no real solutions

18. $x \approx -1.2, x \approx 5.2$

19. $x = 1$

20. $x = 1, x = 4$

21. $x = -8, x = 8$

22. $x = -3, x = 3$

23. $x = -8, x = -4$

24. $x = -5, x = -1$

25. $x \approx -0.9, x \approx 4.9$

26. $x \approx -1.1, x \approx 4.6$

27. $x \approx -8.6, x \approx 0.6$