

# 09 Topic: Methods for Solving Quadratic Equations

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Content Area: **Mathematics**  
Course(s): **Algebra 2**  
Time Period: **Semester 1**  
Length: **2 weeks**  
Status: **Published**

### Standards

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MA.F-IF.C.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima.
MA.F-IF.C.8a	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
MA.F-LE.A.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
MA.A-REI.B.4	Solve quadratic equations in one variable.
MA.A-REI.B.4a	Use the method of completing the square to transform any quadratic equation in $x$ into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.

### Enduring Understandings

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1. Mathematics is a language consisting of symbols and rules.
2. The same mathematical ideas can be represented concretely or symbolically.
3. There can be different strategies to solve a problem, but some are more effective and efficient than others.

### Essential Questions

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1. Which operations and equivalences will simplify and help me solve the problem?
2. How is thinking algebraically different from thinking arithmetically?
3. How does explaining my process help me to understand a problem's solution better?
4. What is meant by equality?

## Knowledge and Skills

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- Define the standard form of a quadratic equation
- Review factoring to solve quadratic equations
- Use Square root method to solve quadratic equations
- Use Quadratic formula method to solve quadratic equations
- Completing the square method to solve quadratic equations
- Solve Application problems
- Find and use the Discriminant of a quadratic equation
- Use Sum and Product of solutions

## Transfer Goals

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Using mathematical reasoning and strategic thinking can allow for practical solutions of many problems.

Often unique vocabulary and implementation methods are needed to solve problems.

## Resources

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1. McDougal/Littell - Algebra & Trigonometry Structure & Method Book 2
2. Aufmann/Barker/Lockwood - Intermediate Algebra with Applications Sixth Edition
3. Houghton/Mifflin/Harcourt - On Core Mathematics Algebra 2
4. Holt - Algebra 2 with Trigonometry
5. Larson/Boswell - Big Ideas Math: Algebra 2 Texas Edition
6. [Khan Academy](#)
7. [PurpleMath](#)
8. [KutaSoftware](#)

9. [CK-12](#)
10. [Quizlet](#)
11. [Albert I/O](#)
12. [Desmos](#)
13. [Problem Attic](#)