

# Algebra 1B Unit 07: Quadratics Functions

Content Area: **Math**  
Course(s): **Algebra I B**  
Time Period: **Semester 2**  
Length: **7 cycles**  
Status: **Published**

## Unit Introduction

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## Standards

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MA.F-IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
MA.F-IF.C.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima.
MA.F-LE.A.1a	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
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.
MA.A-REI.B.4b	Solve quadratic equations by inspection (e.g., for $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers $a$ and $b$ .
MA.A-SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

## Essential Questions

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- How can you solve a quadratic function?
- How can you use quadratic functions to model real-world situations?
- What are the characteristics of a quadratic function?

## Content

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- Completing the Square
- Factoring to Solve Quadratic Equations
- Linear, Quadratic and Exponential Models
- Quadratic Functions
- Quadratic Graphs and their Properties
- Solving Quadratic Equations
- Systems of Linear and Quadratic Equations

- The Quadratic Formula

## **Skills**

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- Convert from Standard Form to Vertex Form
- Convert Vertex Form to Standard Form
- Find zeros of a quadratic function from a graph
- Graph a quadratic function in standard form
- Graph a quadratic function in vertex form
- Identify axis of symmetry
- Identify maximum and minimum
- Identify transformations on a quadratic function
- Identify vertex
- Solve quadratic equations by completing the square
- Solve Quadratic Equations using The Quadratic Formula
- Solve quadratic functions by factoring
- Use graphing calculators and technology where appropriate
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- Use relevant Vocabulary, notations, and symbols when appropriate