

# 14 Topic: Parabola

Content Area: **Mathematics**  
Course(s): **Algebra 2**  
Time Period: **Semester 2**  
Length: **2-3weeks**  
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.7b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
MA.F-IF.C.7c	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
MA.F-IF.C.7d	Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

## 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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- How will the student identify the standard form of a vertical or horizontal parabola?
- How will the student find the vertex, focus, axis of symmetry, directrix, and latus rectum of a parabola?
- How will the student find the x and y intercepts of a parabola?
- How will the student determine the direction of opening of a parabola?
- How will the student compare the width of a parabola to the standard graph?
- How will the student find the maximum and minimum values of parabola's?
- How will the student graph the parabola and its inverse?
- How will the student find the equation of a parabola in  $(h,k)$  form from given information?
- How will the student convert the equation of a parabola into  $(h,k)$  form by completing the square?

## Knowledge and Skills

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Identify the parts of a parabola: vertex, focus, axis of symmetry, directrix, latus rectum, direction of opening

Identify the width or narrowness of a parabola

Find maximum and minimum values of a parabola

Use completing the square to get a quadratic function into the standard form of a parabola

Find x and y intercepts of a parabola

Find the equation of a parabola from given information

Graph a quadratic equation

Transform a parabola to (h,k) form

Find the Axis of Symmetry of a parabola

## **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](#)

