14 Topic: Parabola

Content Area: **Mathematics**
Course(s): **Algebra 2**
Time Period: **Semester 2**
Length: **2-3weeks**
Status: **Published**

Standards

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

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

How will the student identify the standard form of a vertical or horzontal 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 form given information?
How will the student convert the equation of a parabola into (h,k) form by completing the square?

Knowledge and Skills

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

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