ASSET

TEACHER PAGE

Lesson: Effects of Parameter Changes

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New Arizona Math Strand 4 Geometry and Measurement Gr. 9-12
Articulated 4MH3-01 Graph a quadratic equation with lead coefficient equal to one.

Learning Objectives: The student will able to:
•explain parabola as a mathematical statement
•explain the changes in a parabola determined by (a) in the formula.
•explain and determine the graph based on the formula
•explain and determine the formula from the graph

Overview and content:
Students will be given examples of parabolas and a method for determining the look of a graph describing a parabola. The student will have an opportunity to use and manipulate the quadratic formula in determining a graph. The values of the formula will also be determined after reading a graph. This lesson was an Algebra lesson when first developed (from the former standards). It then carried the standard identifier of 3MP3-PO1. Please notice its placement now in the Geometry Strand for High School 4MH2-01.

Engaging Students:
Video tape the path of a ball being thrown. Use slow motion on a video player that is running the tape and plot the path of the ball on a whiteboard or piece of paper mounted on the wall. Ask students to identify the path, plot it on graph paper and calculate its path mathematically.

Follow Up or Extensions:
The vocabulary of SAY WHAT? contains vertex, quadratic function, maximum minimum, and parabola. In SO WHAT! are more examples (photos) of real parabolas. DIG DEEPER asks if it is possible to toss a ball so it doesn't make a parabola? In TALK ABOUT IT! students are asked to use the information from this lesson in Arizona sports—yes, a web site.

Assessment:
The fun starts with matching quadratic formula to the graphs that they would create in the TRY section. In SHOW students have to determine the correct values for the formula from correctly reading a graph.