

# M103 - Modeling with Quadratic Functions

## Badge Specific Essential Concepts

- ❖ Use Quadratic functions to model real world phenomena and/or objects
- ❖ Analyze quadratic functions in different forms to make predictions that are pertinent to a particular context
- ❖ Identify relationships between variables
- ❖ Determine the values of inputs/outputs and understand their significance relative to the context of the problem
- ❖ Understand connections between graphical and symbolic representations of quadratic functions

## Administration Notes

This Pre-Post Task is to be used as a tool for students to understand their learning. When administering this task, it is important to highlight a few things for students:

- Students will have the opportunity to complete the task at the beginning and the end of this badge. This is because we want students to be able to see how much they've learned and reflect on that learning in ways that matter to them.
- The work on the task will not be graded. The task is not a quiz or a test - it is designed to support students in understanding how much they have learned from the beginning of the badge to the end.
- Students can have access to any technology that they typically use during classroom instruction to complete this task.
- Students should work individually on the task.

Please share these things with students, reinforcing the idea that this task has been designed to support them in reflecting on the mathematics they have learned. In some tasks, students may create work in different places. It is helpful for them to have their own online folders to store their pre-post tasks as well as any supporting artifacts, such as screenshots from online tools that they use.

## Task Analysis

The purpose of the task analysis section is to report on student performance at the two time points -- how they performed on each question within the task before and after badge instruction. Complete a table for each student based on an analysis of their responses. You can create summary data for yourself if you choose to understand more globally how students are doing on the concepts measured by the task.

**PRE**

Were there any interesting or instructionally useful responses or insights from the student? Please record those here:

Question/Look For	Blank or similar	Emerging	Approaching	Meeting	Other Notes
(2) Student is able to plot the three points with scale & labels.					
(3) a. Student creates a quadratic equation that includes the three points.					
(3) b. Student explains how they came up with the equation.					
(3) c. Student graphs the curve represented by the equation.					
(4) a. Student determines the height of the arch 100 ft from the center and explains.					
(4) b. Student makes a connection between quadratics and architecture/engineering.					
(5) a. Student writes a new equation for the arch that situates the leftmost point at (0, 0).					
(5) b. Student makes a comparison to the original equation.					

## POST

Were there any interesting or instructionally useful responses or insights from the student? Please record those here:

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