**Subject area/course**: Math/Algebra I or Algebra II

**Grade level/band**: 8th -10th

**Task source**: SCALE; author Theresa Morris

**Suspension Bridges**

**STUDENT INSTRUCTIONS**

1. **Task context**:

Part 1: Once called "the bridge that couldn't be built," today it is one the seven wonders of the modern world. The Golden Gate Bridge is perhaps San Francisco's most famous landmark, opened in 1937 after a four-year struggle against relentless winds, fog, rock and treacherous tides. Maintenance and repairs on the Golden Gate Bridge are incredibly dangerous. A group of ironworkers and painters battle wind, sea air and fog to repair corroding steel.  Jana noticed that the seventh vertical suspender rope from the left tower is showing signs of corrosion. She is making a plan to replace this rope.

Part 2: A state park has two sets of hiking trails. Accessing the second set of trails currently requires wading across a large creek. Park visitors who do not like hiking the trails with wet shoes and clothing have been submitting requests for a suspension bridge over the creek.

One motivated park visitor – probably an engineer – submitted a diagram of a possible suspension bridge. In her request, the visitor stated that the main cable creates a parabolic curve once the weight of the walkway is added.

1. **Final product**:

See Student Instructional Materials for details about the final product and the task.

**Additional Information**

1. **Knowledge and skills you will need to demonstrate on this task:**
* Students will reason abstractly to make informed decisions.
* Students will provide justifications using mathematics.
* Students will support mathematical arguments and justifications using appropriate sources and evidence.
1. **Materials needed:**
* Student Instructions/Instructional Materials
1. **Time requirements:**

This task is designed to take about two- four days. Your teacher will provide more details about the timing of each step in the task.

1. **Scoring:**

Your work will be scored using the Suspension Bridges - SCALE Math Performance Task rubric. You should make sure you are familiar with the language that describes the expectations for proficient performance.