

Building Bridges

Developed/Adapted By

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One sentence description of the assignment or activity

Students work with small groups to design, build, and test the structural integrity of a bridge.

Course for which this is used

- PreAlgebra (Math 0950)
- Beginning Algebra (Math 0990)
- Intermediate Algebra (Math 1010)
- College Algebra (Math 1050)

Key topics taught in this activity

Structural design, research, applied mathematics

Prerequisites

A basic understanding of the characteristics of basic geometric shapes and parabolas

Lesson Plan – Detailed Description

In small groups, students begin by conducting research on various bridge designs, assessing the strengths and weaknesses of each. Based on this research, the students will decide on a bridge design to use for the project. The students will present their design choice, justification, geometric characteristics, and information sources used to choose their bridge.

After the research and design phase is completed, each group will begin construction of their bridges within the material and size constraints specified by the teacher. Groups may be required to construct their bridges outside of class.

Once the bridges have been constructed according to specifications, each group's bridge will be load tested until it collapses. The group with the strongest and lightest bridge will be declared the winners of the group competition.

Activity Grading/Assessment

Students will be assessed based on the participation with the group during the research, building, and testing phases of the project and based upon their responses to project analysis and evaluation questions included at the end of the assignment document.

Class Time Required

Bridge design introduction (30-40 minutes), load testing (45-60 minutes)

Out-of-Class Time Required

Research (1-2 hours), building (5-10 hours)

Materials Required

Craft sticks or balsa wood, string, wood glue, tape

Supplemental Web Resources

<http://bridgecontest.usma.edu/index.htm>

<http://pghbridges.com/basics.htm>

