

3-2-1 Blast Off!

Developed/Adapted By

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One sentence description of the assignment or activity

Students design, build, and test ping-pong ball launchers.

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

Scatterplots, lines of fit, descriptive statistics

Prerequisites

Linear equations in two variables, graphing points, basic statistics

Lesson Plan – Detailed Description

Students are divided into small groups and are given a list of supplies (determined by the teacher) that they may use in building the ping pong launcher for their group. The group must first draw a detailed blueprint for their chosen launcher design. Once the blueprint has been approved, each group must then construct their launcher according to their blueprint, using only the listed supplies.

After the ping pong ball launchers are built, each group then proceeds to test and calibrate their launcher to consistently launch the ping pong ball at each of the possible distances (i.e. 50 cm, 75 cm, 100 cm, 150 cm, 200 cm, and 250 cm). Their goal is to maximize their launcher accuracy at each distance. During this stage of the project, the students will create a scatterplot and equation for the line of fit for their test data.

Once the testing stage is completed, the teacher will randomly select one of the test distances, and then each group will be given 10 shots with their launcher attempting to reach that chosen distance each time. Descriptive statistics will then be computed in order to determine which group was able to shoot the most accurately.

Activity Grading/Assessment

The students grade will be computed based upon their participation and their completion of the assignment sheet.

Class Time Required

Designing and building 60-75 minutes, testing 30-40 minutes, class shoot-out and analysis 45 minutes

Out-of-Class Time Required

The teacher may choose to assign part or all of the design, building, and testing phases of the project to be completed outside of class as deemed appropriate.

Materials Required

Ping pong balls, golf tees, cardboard, pencils, paper cups, rubber bands, plastic spoons, tape, glue, etc.
Assignment sheet

Supplemental Web Resources

NA