



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

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Project Title

How Strong Is Gravity Really?

Abstract

Objectives/Goals
 Can I build an apparatus to measure gravity? Which pendulum bob will provide the best results? Can I miniaturize my experiment to make it more portable?

Methods/Materials

- Have someone hold the bar in place.
- Make sure you, and the person holding the bar have gloves, and a welding mask.
- Weld the bar horizontal bar onto the vertical bar.
- Grind notches in the vertical board so that the string doesn't slide.
- Cut out square of wood to reference swings with.
- Calculate the middle of the board by dividing the total length by 2.
- Connect the string to the horizontal bar.
- Screw board to vertical bar.
- Put blue tape roughly every two inches for a reference point.
- Glue screw in corner for reference
- *Camera apparatus
- Connect bolt to camera
- Clamp bolt in vice.
- *To take measurements.
- Tie Pendulum bob to the end of the string.
- Press record on the camera.
- Pull the weight back to the screw.

Results

Average -range +range
 bike wrench 8.61 7.20 10.02
 deflated balloon 12.38 11.28 13.48
 half inflated balloon 9.62 8.56 10.67
 lead cross 8.43 5.92 10.94
 sharpie marker 12.86 11.32 14.41
 small pendulum 9.13 9.13 9.13 All values in m/S²

Conclusions/Discussion
 I found that I could create an apparatus that used a pendulum to measure gravity. The apparatus was made

Summary Statement
 Can I build a device that measures gravity, determine the best object for the pendulum bob, and get comparable results if its miniaturized.

Help Received
 Mr. Sewell, Ms Bertram, and Ryan Reeves