

The Basketball Machine

Physics Engineering Project 1

I. Objective

Design and build a device that launches a ping-pong ball into a basket.

II. Project Specifications

- a. The device must launch a ping pong ball from a maximum height of 15 cm into a basket set at 45 cm high & 60 cm away within 5 trials.
- b. **No Incendiary Devices** (This includes fireworks, rocket engines, chemical combustibles, etc.)
- c. No mousetraps (they are too powerful and can hurt fingers and hands when trying to set).
- d. The launching device must fit within a volume of 15 cm long, 15 cm wide and 15 cm tall.
- e. The launching mechanism must have a trigger system that can be locked into a launching position.
- f. The basket will NOT have a backboard.
- g. The shape and design of the basket will be determined by Mr. Andrews.
- h. The ping pong ball will be of standard size and mass.

III. Presentation

- a. A short typed description of your project including:
 - 1) the simple machine(s) that are part of your device
 - 2) the materials you made the device out of
 - 3) how you created and put your device together.
- b. You will have 5 attempts at making the basket with the ping pong ball.

IV. Grading

- a. Devices that abide by the Project Specifications and
 - 1) launch the ping pong ball into the basket will receive an "A"
 - 2) launch the ping pong ball into the basket but the ball bounces out will receive an "A-"
 - 3) launch the ball and it comes reasonably close to landing in the basket will receive a "B"
 - 4) "fails miserably" will be graded on individual merit. (see Grading c.)
- b. A minimum grade of "B-" will be given to those students who make an honest effort to design a legal (see project specifications) and functioning device.
- c. Other categories that will be judged are your presentation, quality of work, creativity, accuracy, originality and design complexity & simplicity.
- d. The project will count as one 1st quarter test score.