

# Ping Pong Timer

## Low Fidelity Prototyping Design Challenge

### Objective:

Design a device that causes a ping pong ball to take exactly 30 seconds to reach the ground from a height of less than 1 meter.

### Materials:

Given that this is a low fidelity prototyping design challenge, materials are fairly basic and straight forward. Only the materials below are permitted to be a part of your device. Any tools, such as scissors, protractors, metersticks etc. may be used to aid in construction, but may not be used in the device.

- |   |          |
|---|----------|
| - Standard printer paper (8.5" x 11") (Not Cardstock) | No Limit |
| - Masking tape (Standard width)                       | No Limit |
| - Twine/String  | 2 Meters |
| - Colored Paper Clips                                 | 12       |
| - Rubber Bands – Assorted                             | 12       |

### The Competition:

Team Size: 2 – 4 (Registered in advance)      Build time: 20 minutes - "From scratch to completion"

Starting from the raw materials provided in the room, each team has the designated build time to construct their device. At the end of time, everything must be complete with the only allowed "missing part" being the ping pong ball. The device must be able to fit within a "box" of 90 cm x 90 cm x 110 cm where 110 cm is the height. When time for testing, the ping pong ball will be placed in its "starting position" to be started using the eraser of a pencil. Once the device is started, no other interaction with the device may occur.

Photogates must be able to be positioned at the "start" and "stop" locations. The starting photogate may be hand held and then removed once the ping pong ball passes through.

### Scoring:

Two Photogates connected to LoggerPro will be positioned at the "start" and "stop" of the run. The time is from the initial blocking of each gate, not when the ball leaves. The output provided in LoggerPro will be the official time. The team with the lowest absolute error from 30 seconds wins:  $|t - 30| = \text{score}$ . In the case of a tie, the team with the lower starting height wins.

Starting height is defined as the surface of the table to the base of the ping pong ball.

Devices that do not reach the end will be scored as a DNF (Did Not Finish)

Devices with a build or rule violation will be scored as a DQ (Disqualification)

### Clarifications:

Any questions/clarifications about the rules must be asked in advance of the day of competition. All clarifications will be posted on the Design Competition Page.