

## **Egg Drop Project**

Planet Holloway Physics

(150 points)

### **Objective:**

Engineer and build an egg drop container that will allow an egg to survive a three story fall. Secondly, calculate the acceleration, height and final velocity of the egg during the fall from the recorded time of fall.

### **Limitations:** (30 points)

Students may only use the following materials:

30 straws

30 inches of thread

30 "Q-tips"

glue – connections only

30 rubber bands

The project may be no larger than 16" x 16" x 16".

The egg must be a raw chicken egg still in its original shell.

The egg must be placed in the project in the classroom immediately before the drop.

The egg must be able to be put into and taken out of the container within 10 seconds.

The container may not use any type of wing, airfoil, air break, or parachute.

### **Engineering:** (50 points)

Document and explain the science behind your design. What tests did you conduct on different parts and what modifications did you make. What was the inspiration for your container.

### **Data:**

Record the time of fall for your container.

Record the height of fall for your container.

### **Calculations:** (50 points)

Determine the average acceleration experienced by your container during the fall using the time you recorded and the recorded height of the fall.

Calculate the final velocity of your container just before it impacts the ground using the acceleration you found above and the time you recorded.

Calculate the height of the fall based on your container's time and the acceleration being 9.8 m/s/s.

### **Discussion:** (20 points)

Explain whether the acceleration you calculated for your container is too high, too low or correct. Justify.

Explain whether the final velocity you calculated for your container is too high, too low or correct. Justify.

Explain why the height you calculated for the building is different than the measured height.