**Egg Roll Project**

Planet Holloway Physics

**Objective**:

Design and build an egg roll container that will allow an egg to survive a roll down the amphitheater stairs. Secondly, calculate the maximum velocity and maximum acceleration from video analysis collected during the roll.

**Limitations**:

The project may be no larger than 24” x 24” x 24”.

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 must roll completely to the bottom.

**Data**:

Using a video record, video the roll with the camera fixed in a horizontal position.

Record the mass of your container.

**Calculations:**

Import video in Logger Pro software (<http://www.vernier.com/downloads/logger-pro-demo/>) and plot position vs. time.

Using software, graph velocity vs. time and acceleration vs. time. Determine maximum velocity and acceleration.

Your write up should include no less than three graphs. (x vs. t, v vs. t, a vs. t), but may contain more if that helps your discussion.

Discussion:

Label graphs with maximum velocity and acceleration (on every graph) indicating where they occur.

Maximum velocity: Using your graphs, explain what is happening to your container at this point in time and why velocity is a maximum here.

Maximum acceleration: Using your graphs, explain what is happening, especially relating to forces, at this point in time and why acceleration is a maximum here.

Finally, detail the performance of your container and note changes you could make to improve your container.