

# Egg Drop Project 2010

## Who will build the lightest transport and still survive?

### Objective:

NASA is looking to design a space vessel that will transport a human to Mars and safely land on its surface. The cost of using the actual building materials is too great so your design team has been hired to build a model transport vessel with building materials that have similar properties as the actual materials. A large egg will be used to simulate the human. Your goal is to design a vessel that will keep the egg from cracking when dropped from the balcony in the gym.

### Vessel Building Materials

- 1 gallon plastic milk jug
- 1 raw Grade A large egg
- 6 sheets of paper
- 1 foot of duct tape

### Rules

- The vessel must be made only with the materials provided and land on the force plate.
- You may cut holes in the milk jug, but the main structure must remain intact.
- Your team will be allowed 2 eggs for testing.
- The egg cannot have anything physically attached to it.
- I must watch you place the egg in the vessel and remove it after the drop for inspection.
- Find the mass of your vessel before dropping and measure the height of the drop.
- Use the labquest with the force plate to measure the force of impact and then impulse.

### Scoring (50 points for drop)

- A – Egg survives the fall from the balcony intact 1st try
- B+/A- – Egg survives the fall from the balcony intact 2nd try
- B – Egg survives the fall from the ceiling intact
- C – Egg survives the fall from the desk intact

### Daily Journal and Project Report (23 points)

Create a webpage linked on your website that includes your daily journal and discusses the success/failure of your drops in a newspaper article format. Include what worked in your design and what didn't? Would you make any changes in your design if you had to do this again? Make sure to be CREATIVE! Also include the following data for the engineers. Use the Conservation of Energy, Work-Kinetic Energy and Impulse-Momentum theorems to help you calculate the values. On a separate sheet explain and show how you arrived at your answers. Please include the screen shot of the graph of Force vs Time with the impulse calculated.

	Mass	Height	PEg	Vi	Fnet	Impulse	pi – mom.
Balcony							

### Timeline

- Jan 12<sup>th</sup> – Project introduction, group choices (2-3) and begin testing. 1<sup>st</sup> Journal entry due
- Jan 13<sup>th</sup> – Design and testing, 2<sup>nd</sup> journal entry due
- Jan 14<sup>th</sup> – Drop day, 3<sup>rd</sup> journal entry due
- Jan 18<sup>th</sup> – Web page project report due