



EGG DROP CHALLENGE

The egg drop design challenge will help you demonstrate the relationships that exist between science and technology, using science to solve a problem. Your team is expected to:

- (A) Identify a design problem and propose a solution (hypothesize);
- (B) Design and test a model to solve for a **final velocity, acceleration, vertical height** and **force**.
- (C) Evaluate the model and make recommendations for improving the model.

You will design and build a Falling Egg Apparatus (F.E.A) that will allow 2 uncooked, large grade A chicken eggs(provided by SFHS) to survive a drop from an unknown height with NO damage to the eggshell, using nothing but common drinking straws, or popsicle sticks. If the shell cracks... it's all over!

The Goal

The lightest (F.E.A.) allowing for one egg to drop from a predetermined unknown height, without cracking or breaking, and landing within the 5' target will win the competition; 5 pts on their 1-Demonsional Test.

Rules

1. Students must design and construct the project– NO PARENTS!
2. The apparatus shall be a self-contained, free falling device (no parachutes).
3. No dimension of the apparatus shall measure more than 46 cm
4. It must have an opening for insertion and removal of the eggs
 - a. I will supervise insertion of the eggs at the time of the competition
 - b. The apparatus builders will be allowed to secure the opening before the drop.
5. Two raw USDA Grade A or larger chicken eggs will occupy the apparatus during the entire flight.
6. Illegal: Sneaking hard-boiled or rotten eggs.
7. Only the use of common drinking straws, or popsicle sticks will be allowed to construct the apparatus.
Any other materials will automatically disqualify the group.
8. All entries will be weighed after the insertion of the egg.
9. No more than one entry per team is permitted.
10. All entries must be clearly and correctly labeled with entrants', and the launch directors' name.
11. The apparatus, with egg, will be released by only the launch director, so choose wisely.
12. To win the bonus points the egg must survive, intact (no cracks) and land closest to the target.

Responsibilities

You will choose no more than two others to plan with. You and your group members will:

- Brainstorm possible designs for an apparatus
- Decide on a final plan – complete planning worksheet
- Gather materials you might use
- Build the apparatus in class or at home
- Make pre-drop measurements and sketch
- Drop the apparatus on launch day
- Write post-drop Lab Report with a re-design plan



Grading Rubric

Documentation • Planning Worksheet	10 points Well planned and all written	15 points Briefly written	10 points Missing information
Size	20 points All sides met 46 cm requirements	10 points Some sides met requirements	0 points No side met requirements
Pre-Drop Measurements & Sketch	10 points Well documented and all written	7 points Briefly documented	5 points Missing information
Creativity/Design	10 points Well planned	7 points Not well planned	5 points Thrown together
Eggs Breakage	10 points Egg does not break	0 points Egg breaks	
Post-drop Calculations Lab Report & Redesign Idea	40 points Complete with all Lab report sections	20 points Missing sections, calculations or sketch	10 Points Minimal effort made

Team Name: _____

Apparatus Planning Worksheet

Team members:

- _____
- _____
- _____

Define the problem:

Gather information (brainstorm ideas):

Make hypothesis (if/then statement):

Describe your pre-construction design:

Sketch your apparatus. (label with all measurements)

Final sketch of apparatus with all measurements:

Team Name: _____

LAUNCH DAY SCORE SHEET

TEAM MEMBERS:

_____ - launch director

Pre-Drop Measurements

Size – Dimensions

Length _____ cm (Longest Side)

Width _____ cm

Height _____ cm

Mass _____ kg (After Egg Insertion)

Acceleration _____ m/s^2

Time in Air _____ s

Final Velocity _____ m/s

Force of (F.E.A.) _____ N

Drop Distance _____ m

Distance from Target Center: _____ m

Eggs Survive? 

(circle one) no



yes

0 pts

10 pts

Documentation

- Planning Worksheet
- Launch Day Worksheet

Size Requirements

Pre-drop Measurements & Sketch

Creativity/Design

Egg Breakage

Post Drop Report & Redesign Idea
