

Name _____

The Incredible Egg Drop

Launch Date: Wednesday, May 10th

Task: Construct a capsule to protect an egg being dropped from a 3rd floor window (approximately 9 meters). An egg will be provided the day of the egg drop. You may NOT use any peanut butter in your capsule OR messy food/substances. Ask if you are unsure. You must be present for testing. This will not be made up, give your capsule to a friend if you know you will be absent. You are required to test your capsule at home.

Parameters:

- Must fit in a milk crate
- Must weigh at least 600 grams/0.6 kg (1.3 pounds)
- No parachute

**Violation of any parameters will result in a 5 point deduction*

PLANNING:

Sketch potential designs in the space below and brainstorm ideas. Pick the best and build it! *(2 points)*

List Materials: *(1 point)*

DIAGRAM: Draw a picture of your final design below and label each part. Use arrows and labels to show how **gravity, air resistance and inertia** will affect the capsule. *(9 points)*

CALCULATIONS: Using the equations below, calculate the force your capsule hits the ground with AND the potential energy of your capsule. **(4 points)**

Mass of capsule = _____

Height = 9 meters

Acceleration = 9.8 m/s^2

Plug those measurements into the formula below to calculate the force with which the capsule will hit the ground. Write your answer in the box provided.

Force = Mass x Acceleration

PE = Mass x Gravity x Height

Force =

PE =

RESULTS: What happened to the capsule after the drop? Were you successful? **(2 pts.)**

Did your egg break?

SCORING GUIDE

Planning ____ / 2

- Sketch possible designs

Materials List _____ /1

Diagram ____ /9

- List materials used in construction (NO PEANUT BUTTER!) (1 pt.)
- Gravity, air resistance, inertia labeled correctly (6 pts.)
- Neat, detailed drawing of capsule (3 pts.)

Testing ____ / 6

- Data Table Complete
- Observations explained
- Modifications listed

Explanation ____ / 10

- Description of how gravity, air resistance and inertia affect capsule
- Description of how Newton's Laws influenced design (at least two of three)

Calculations/Results ____ / 6

- Accurate calculation of force
- Accurate calculation of potential energy
- Results

+ 5 points if egg is unbroken

-5 points if parameters not met

Total _____ / 34 Points