

SUMMER INSTITUTE FOR ENGINEERING AND TECHNOLOGY EDUCATION

MECHANICAL ENGINEERING -- GRADES 5-8: MODULE 3

EGG DROP

OBJECTIVES

Students will apply the principles of Newton's second law (concepts of force and acceleration due to gravity, and collision) to **build a housing for an egg so that it will survive being dropped** from the maximum height possible.

POSSIBLE BUILDING MATERIALS

(Note: These Materials Cost "Money" So Don't Bust your budget!!!)

- 1) Eggs
- 2) Shoe Box or any other cardboard box
- 3) Filler materials like newspaper, sponges, marsh mellow, Styrofoam blocks, Styrofoam peanuts, rubber, popcorn, cotton, rags, plastic, balloons, etc.
- 4) Fastening materials like tape (duct, masking, scotch), paper clips, strings, rubber bands.
- 5) Tools like scissors, pliers, knives.

THE JOB

The job of a Mechanical Engineer does not end at the workshop or at the manufacturing plant. Once the parts are manufactured according to the specifications, proper care should be taken in packing the products for transportation. Poorly packed products lead to breakage, distortion, or improper functioning of the part. There is a strong need to pack these products properly to survive transportation, stacking etc.

Keeping these points in mind, **your Job is to design a housing for the egg.** The housing should be designed in such a way that the egg will survive being dropped from the maximum height possible. Build this housing by making use of the materials provided. You will be in teams of 3-4 to work on the experiment. When the designs are complete **each group's housing will be tested by dropping the housing along with the egg inside from increasing heights** until the egg breaks.

Hint: There are TWO things to consider when building your egg-protector...

- the speed of the entire package when it hits the ground
- how much *cushion* there is for the egg when it hits.

Example:

- The faster the package is moving when it hits the ground, the more cushion the egg needs.

- The slower the package is moving when it hits the ground, the less cushion the egg needs.

ASSESSMENT

After your egg package has been dropped and the egg broken, your team will decide how/why the package failed and design a *New and Improved* package. These will also be tested.

BIBLIOGRAPHY AND REFERENCES

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