

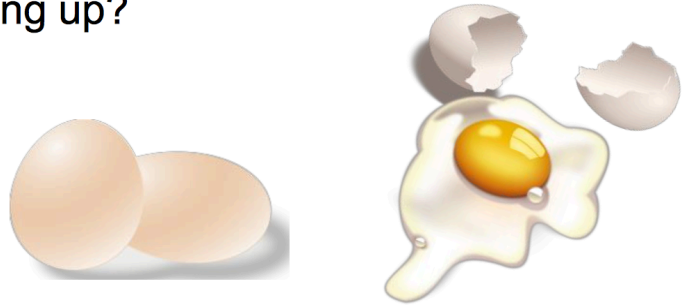
Egg-Cellent Landing - Single Egg Drop Challenge

Background:

An egg raised above the ground has potential energy due to the force of gravity. When dropped, the egg's potential energy is converted into the kinetic energy of motion. On landing, the egg must come to a stop without experiencing a stress (stress = force / unit of area) strong enough to break the shell. To minimize stress you must consider how to lower kinetic energy of

the falling egg (drag) and maximize absorbance of kinetic energy of the falling egg (shock absorbance). Remember the activities we have completed leading up to this point.

How do you prevent a dropped egg from cracking up?

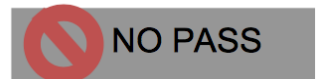
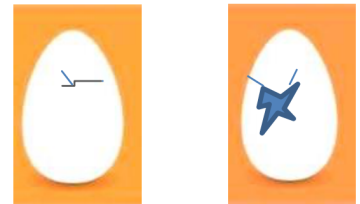


Application to the Real World:

Consider engineers who design things like bike helmets and Mars landers. What are other things that absorb impact (car bumpers, air bags, foam balls, football pads, etc.)?

Task:

Construct a carrier for a single raw egg that will allow you to drop it from the highest possible point without breaking the shell. Remember you are preparing for the big challenge of a 6-egg carrier!



Materials/Rules - you bring your own materials, just follow these rules:

- Large, fresh, raw, white, chicken eggs (bring 2-3 for testing)
- Only paper tape or masking tape (non-reinforced of any width) can be used
- The container with pass freely through a 13-cm diameter rigid, circular hoop when the hoop is turned at all angles, including diagonally. "Freely" is defined as no change to the circular shape of the hoop.

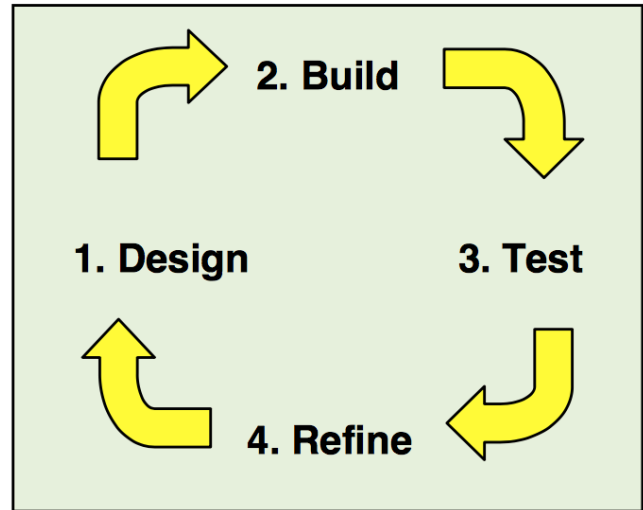
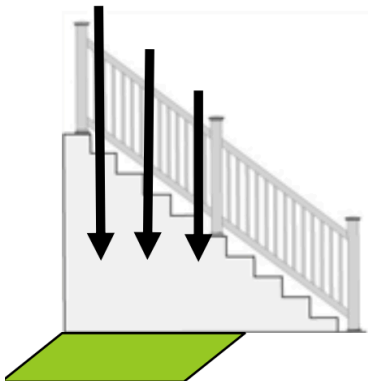
ILLEGAL:

- "Treated" or hard-boiled eggs; rotten eggs
- Small or medium eggs
- Duct tape, "Scotch-type" tape, electrical tape... (Including on the package and on the individual eggs)
- Staples
- Aerodynamic devices or parachutes

- The container may not contain any substance that will splatter including peanut butter, jell-o, liquids, fruits or vegetables (popcorn/marshmallows okay), powdered soap, flammable substances of any kind or glass.

Procedure:

1. Research
2. Design
3. Bring in your materials
4. Build, Test, and refine - when you are ready you can go out to the staircase and test. Record your results (height of drop, observations and redesign process)
5. Add photos to the [Single Egg Drop Photo Folder](#)



Design-Build-Test-Refine Cycle

BLOG POST:

1. Describe the challenge (1-2 sentences).
2. Describe real-world application of this challenge (what types of engineering challenges does this relate to?), 100+ words
3. Describe your design, test, refine cycle. This should be at least a paragraph (200+ words) with specifics including your data recorded and the changes in design you completed. Include Images!
4. What ideas are you forming for the 6-egg challenge? What design(s) are you considering?