

Eggcellent Eggceleration

The 2014 PHS Egg Drop

It ain't the fall that hurts; it's the landing!

Eggs are very fragile and break easily... especially when dropped 10 meters onto a concrete parking lot! Your challenge is to design and produce an Egg Drop Capsule that will allow an unadulterated, raw egg to survive the impact 100% intact (ie: no cracking, no splatting!)

The Rules:

- ✓ Regulation raw eggs only: large size, no thick-shelled eggs allowed. Eggs will be provided on Drop Day if you did not already put an egg into your capsule.
- ✓ Your egg capsule must not exceed a total volume of 20,000 cm³
- ✓ No single dimension can exceed 50 cm (except parachutes)
- ✓ It must have a mass of less than 1 kg (think 1 liter of soda) without the egg.
- ✓ It cannot contain anything toxic or dangerous
- ✓ It cannot create excessive mess (no goo, no stains, no blowing bits of litter)
- ✓ You may use your own raw egg so that you can encapsulate it before the competition, but you must give me your egg right after your drop so that I can crack it and make sure it is unadulterated.
- ✓ Your Egg capsule must be at school ready to be tested on Drop Day- NO EXCEPTIONS!!

What you will turn in:

1. To-scale sketch (use metric units!) of your capsule, label important features and materials. **Due the class before the drop.**
2. Write a brief design paragraph (word processed, 1.5 spacing) that points out the features of your egg capsule and how and why you think it will work based on the principles that we have been discussing in class (Chapters 1-3). You must discuss the physics (mass, velocity, forces, force diagrams, terminal velocity, momentum and impulse, PE and KE) behind your design in order to get any credit! **Due the class before the drop.**
3. Build your egg drop capsule. It must **be at school on the day of the competition**, ready to weigh in and then drop.
4. Parent Feedback Form: completed form must **be at school on the day of the competition**.
5. Post-Drop write-up (word processed, 1.5 spacing)- write a brief paragraph that describes your drop experience. Be critical of your design regardless of whether or not your egg survived. How could your design be improved (simpler, smaller, lighter, less expensive)? **Due the class after the drop.**
6. Eggcellent Problems and Graph. **Due the class after the drop.**

Prizes will be awarded for:

- ✓ Grand Champion- Best design that works
- ✓ Best design that didn't work
- ✓ Coolest looking (whether it works or not!)
- ✓ Smallest design (least volume) that works
- ✓ Lightest design that works
- ✓ Most improbable design that works (looks sketchy but does the trick)

Good Luck!!!!!!!!!!!!!!!!!!!!!!