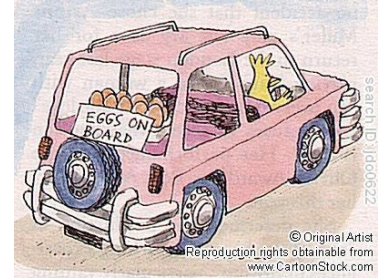


Car Smack!

The objective is to build a car that will protect a driver (raw egg) in a head-on collision. The car must also be able to roll easily across a level floor.



Parameters:

- The cars must be made from scratch using any materials other than those from model car kits or remote control cars. Wheels and axles taken from models are acceptable.
- The car must have at least three wheels on which it sits.
- The entire car must fit within a volume of 12 cm X 20 cm X 30 cm (a typical shoebox).
- The car's mass, without driver, must be between 20 and 500 grams.
- The egg must be able to be inserted *easily* before testing and removed easily after testing- like a driver easily getting in and out of a car. You may NOT tape the egg in any way but you are encouraged to use "seatbelts".
- At least 50% of the egg must be visible. It cannot, for example be buried in cotton balls.
- The eggs used during testing will be Grade A Large, supplied by the judge.
- The car will be powered only by gravity, dropping down a ramp that is approximately 1.0 m high.

Testing:

- The first test of the car will be for distance. The car (without the egg) will be released from the top of the ramp and allowed to roll down the ramp and across a level floor. The distance it travels will be measured by a line drawn perpendicular to the bottom edge of the ramp, straight out from the ramp's centerline. If the car curves, that is lost distance.
- The second test is a crash test. The car will again be released from the top of the ramp carrying the egg but this time, it will run into a wall at the bottom of the ramp. The egg will then be removed to check for damages.
- The car may not be altered in any way between the first and second tests.

Scoring is on a 75 point scale.

- **Materials and Planning.....possible 10 pts.**
 - ♣ All materials and a written plan on time = 10 pts.
 - ♣ Some materials brought in = 5 pts.
 - ♣ No plan, no materials = 0 pts.
- **Parameters.....possible 10 pts.**
 - ♣ Parameters are met = 10 pts
 - ♣ Parameters partially met = 5 pts.
 - ♣ Parameters are not met = 0 pts.
 - Car will still compete.
- **Distance.....possible 20 pts.**
 - ♣ 1 point for every foot it travels (up to 20 feet)
- **Crash test..... possible 15 pts**
 - ♣ Egg OK = 15 pt.
 - ♣ Egg cracked = 10 pt.
 - ♣ Yolk/white showing or leaking = 5 pt.
 - ♣ Egg ejected from seat (whether or not it is intact) = 5 pts.
 - ♣ Egg ejected from car (whether or not it is intact) = 0 pts.
- **Write up.....possible 20 pts.**
 - ♣ Follow up questions will be assigned and due after the testing.
 - ♣ ***If your egg gets ejected, you need to do a detailed explanation of why!***
- **Creative Engineering, use of materials.** The teacher can award up to 10 bonus points at his discretion

Timeline:

_____ Day 1. In-class construction of vehicles. Bring materials/plans!

_____ Day 2. In-class construction of vehicles.

_____ Day 3. First half: finish/tweak vehicles. Second half: TEST. Review questions will be due next class meeting.