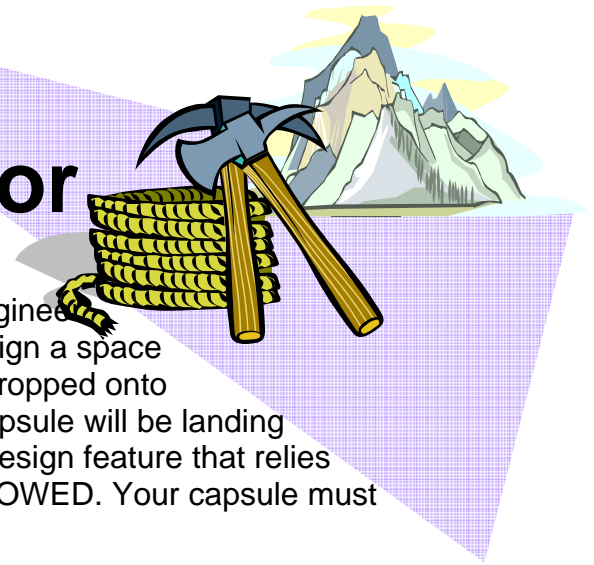


Eggcelerator



You have just been hired by an aerospace firm as an engineer at a yearly salary of \$45,000/year. Your first job is to design a space capsule that can insure the survival of a raw egg when dropped onto concrete from a height of 3 m. Since the actual space capsule will be landing on a planet with no atmosphere, a parachute or similar design feature that relies on the presence of air to slow the rate of fall is NOT ALLOWED. Your capsule must meet the following specifications:

1. Only wood or wood by-products can be used in the fabrication.
2. The capsule must be designed with a door for loading the egg.
3. It must fit into an R-Kive box (file box) with the lid closed.
4. It must have a mass of less than 1 kg (2.2 lbs).

ANALYSIS:

1. What variables influenced the rate of fall of each eggcelerator?
2. In the capsule where the astronauts “died,” what was the specific reason? How would you specifically redesign that capsule to prevent loss of life?
3. Which do you think is more important, padding for the astronaut or a slow rate of descent? Why?
4. Of the eggcelerators launched, which do you think was the best? Why?
5. Suppose we re-do this activity but do the drop from 300 m. How would you design an eggcelerator to insure the safe landing of the astronaut?