Eggsactly One Piece

Activity Objectives

- To explore methods of landing delicate cargo when there is little or no atmosphere to slow the vehicle
- To determine impact speed and impact dispersion

Materials

- ✓ Raw eggs
- ✓ Various student-gathered materials

Background

Landing a space vehicle on the moon or any planet with a thin atmosphere (or no atmosphere) is a problem. Parachutes are ruled out because there is no atmosphere in which to deploy the parachute.

Instructions

Discuss with the students the importance of landing safely on a planet without an atmosphere. Explain they have a problem and they have X amount of time to solve this problem. They must prove their solution works.

1. They are to get a raw egg safely to the ground from a height of at least 30' (off the school roof, over a banister from the second floor, etc.) without parachutes and in some container smaller than a shoe box. Cracked or broken eggs will be considered evidence for further experimentation.

2. Give them a few days to design and construct their solution.

3. On the test day, have your students drop an egg in their landing device.

4. Retrieve each one and check the condition of the egg.

Have the students determine the following:

- The egg's impact speed.
- Compare the impact speed of the broken and unbroken eggs.
- Determine and compare the dispersion pressure exerted on each egg at impact.
- What designs best dispersed the impact pressure?

After the experiment, discuss what sort of devices, construction and materials seemed to work the best. Ask the students how they planned and tested their devices.

Extension

Have the students research how NASA and other aerospace agencies have worked out the problem of landing delicate cargo on other planets.