Aerospace: Safe Recovery

Learn how to safely recover objects after flight.

Time

45 minutes total

Activity 1 Materials

- Eggs- one per person or team- (Can substitute for other object if you want activity to be less messy)
- Scotch tape
- String
- Tissue paper
- Wax paper
- Single hole punch
- Ladder (or area 10 feet or more off the ground where parachutes can be dropped from)

Space Required

Room with table space for each youth. Outside area where parachutes attached to eggs can be dropped.

Before the Meeting

Designate area for members to drop their egg parachutes from so everyone is dropping from the same point. Set out all equipment needed. Decide if you want members to work individually or in teams.

Background

Parachutes are designed to slow an object moving through the air by creating more drag. They work either by being deployed after an object is dropped or when the operator of the object deploys them. Once deployed, they open up and creating a dome that air flows into creating drag.

The earliest record of parachutes being used is from the renaissance era in 1470. Previous to space craft designed more like airplanes, they relied on parachutes for safe landing. Today parachutes are commonly used by daredevils who enjoy sky diving and other adventurous activities and also by military personnel. Some airplanes and spacecraft use parachutes to aid in braking and to help them slow down once they hit the runways.

Activity Instructions

Tell members how to make a parachute, but don't give them dimensions. Let them decide what size parachute is needed in order to keep the egg from cracking.

How to make a parachute:

1. Cut out a square
2. Fold in half and then in half again so that your square is quartered.
3. Cut off or round one of the corners with all loose sides to form a circle or a hexagon.
4. Unfold and if you are happy with the shape punch 6 holes in your parachute. Tape over holes and punch through the tape to reinforce the holes so that they don't rip when the parachute is thrown.
5. Cut 3 pieces of string long enough to ensure that you can attach your egg
6. Tie ends of string into adjacent holes that you punched.

Instruct members that they can add padding to the outside of their egg with the tissue paper and make the parachute as big as they think that they need or attach multiple parachutes to their egg. Give them 20-25 minutes to make their parachute and add padding to their egg.

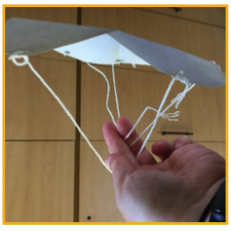
When they are finished take them out and have each group or individual throw or drop their egg parachute from the location that you designated.

After everyone has launched their egg, unwrap them and see whose egg survived the drop without cracking. Discuss reflect and apply questions.









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Reflect and Apply Questions

1. Whose egg cracked? Why did it crack? What could you have done differently?
2. Whose egg didn't crack? What do you think prevented it from cracking?
3. What worked better small or large parachutes?
4. Why do you think surface area of a parachute affects the speed an object falls at?
5. Was it helpful to add parachutes?
6. Did the padding help protect your egg? How does that apply to airplanes and spaceships?

Other Related Resources:

Wyoming 4-H Team Rocket Launch

References

Adapted from: Wyoming 4-H Team Rocket Launch, University of Wyoming Extension.
https://en.wikipedia.org/wiki/Parachute

LESSON 5

Aerospace: Safe Recovery

Learn how to safely recover objects after flight.

REFLECT AND APPLY ANSWER SHEET

Activiy 1 Reflect and Apply Questions

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2. Whose egg didn't crack? What do you think prevented it from cracking?
3. What worked better small or large parachutes?
4. Why do you think surface area of a parachute affects the speed an object falls at?
5. Was it helpful to add parachutes?
6. Did the padding help protect your egg? How does that apply to airplanes and spaceships?

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