

CREATE YOUR OWN PARACHUTE



Swap game night with invention night and kick it off with this fun STEM activity for kids! You will be challenged to create your own parachute to help your toy animal safely land.

Physics is a component needed to view the mechanics behind parachutes. At Idaho National Laboratory, physicists focus on different areas such as reactor physics and particle transport modeling (i.e., how neutrons and gamma rays move inside a nuclear reactor), and how their interactions affect the reactor's physical parameters (e.g., reactor power).

GRADE LEVELS: K-8

VOCABULARY

Air resistance- *the force that air exerts on objects moving through it.*

Gravity- *the force that attracts a body toward the center of the earth, or toward any other physical body having mass.*

Physics- *the branch of science concerned with the nature and properties of matter and energy.*

MATERIALS

- Stuffed animal of your choice
- Tape
- Scissors
- Objects found around the house
- String
- Plastic bags

PROCEDURE

The challenge is to safely parachute a stuffed animal. With a parent's permission, scour the basement, recycle bin, junk drawer and garage for items you can use to construct your parachute. Old clothes and grocery bags are great items, but don't stop there. What items can you upcycle to build a parachute for a stuffed animal?

- 1. Cut out a large square from your material (something found around your house, old shirt, or a grocery bag).*
- 2. Trim the edges so it looks like an octagon (an eight-sided shape).*
- 3. Cut a small hole near the edge of each side.*
- 4. Attach 8 pieces of string of the same length to each of the holes.*
- 5. Tie the pieces of string to the stuffed animal you are using as a weight.*

When everyone has finished, have an adult safely stand on a high space (such as an outdoor stairwell, the top of the slide at the park or launch from a window) and gently toss your creations. Have your family count down from 10 as you launch the parachutes. Cheer when the stuffed animal lands slowly and safely. Make modifications and retest to improve the safety of the landing as many times as needed!

THE SCIENCE BEHIND IT

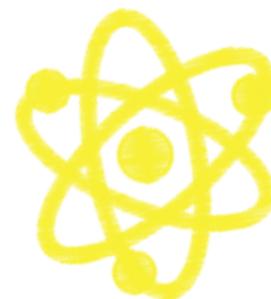
Why does the parachute work? When you toss the parachute up, if the canopy fills with air, the stuffed animal will slowly land on the ground. (At least slower than when not attached to a parachute!) Air resistance is pushing the parachute upward, and gravity is pulling the parachute downward. If the forces were equal in strength, the parachute would not move; it would be stuck in the air. But since gravity is stronger, the parachute is attracted downward and it floats down slowly, protecting the stuffed animal from impact.

EXTENSIONS

- Use different materials and see which parachute works the best.*
- Try different sizes and shapes of stuffed animals- do you see differences?*

RESOURCES

- <https://public.inl.gov/STEMHelpWanted/Brochure/index.aspx?page=18>*
- Invent.org/blog*



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