

Big Lab

Pre-Activity Paper Helicopters

In the Big Lab you will experiment with roller coasters and the forces that act on them. Two forces you will investigate are gravity and drag. You have probably heard of gravity as the force that keeps us on the Earth. In this activity, you'll experiment with drag and see how changing the shape and mass of an object can change how much drag is created.

Materials (quantities for one pair)

For Helicopters

- Template of paper helicopters
- Paperclips
- Scissors
- Paper

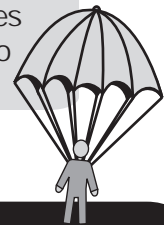
For Recording Data

- Pencils
- Stopwatch



Gravity and drag affect anything that is falling. Gravity is the force that pulls things to the ground. Imagine that you drop a piece of paper. Gravity causes the paper to fall. As the paper falls, it hits air molecules. These collisions create friction, or drag, and slow the paper down. Do you think drag is greater on a piece of paper balled up or lying flat? What falls slower?

Drag is one of the forces that help keep airplanes in the air. Gliders and parachutes use drag to help people stay in the air longer. During this activity, think of ways to create more drag and keep your paper helicopter in the air as long as possible!



Try This

1. Cut out the paper helicopter from the template.
2. Fold one blade towards you and one blade away from you. Put a paperclip on the bottom of the helicopter.
3. Hold the helicopter above your head and drop it. A partner should time how long it stays in the air. Record the time.
4. Change your helicopter to keep it in the air longer. Some examples of things to change may be adding paperclips, using different paper, curving or cutting the blades, or making a new helicopter with a different shape. You don't even need to use the template! Use your imagination, but remember scientists only make one change to an experiment at a time.
5. Drop the helicopter again and record the time.
6. Repeat Steps 4-5 as many times as you would like. Try to see who in your class can make the helicopter stay in the air the longest!

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Pre-Visit Activity
Paper Helicopters

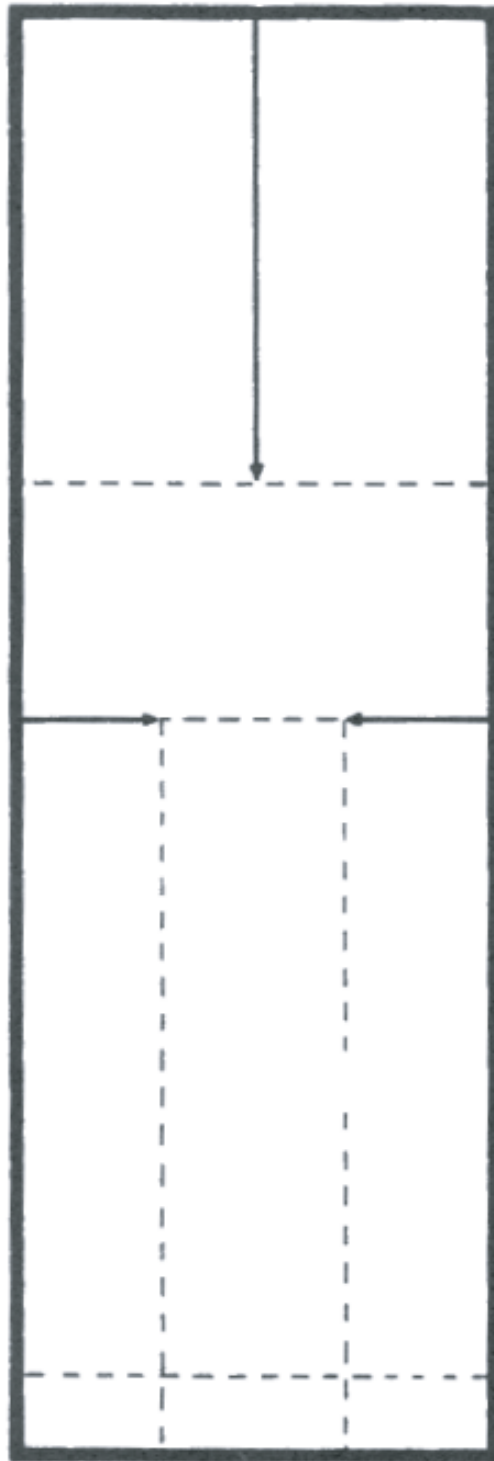
Helicopter Data Recording Sheet

Picture of my Helicopter	What I Changed	Time in Air

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Pre-Visit Activity
Paper Helicopters

Helicopter Data Recording Sheet



Cut along the solid lines
and fold on the dotted lines.