

Make and Test Parachutes

The force of air resistance, or drag, can be used to work against the force of gravity to slow things down.

Objective

Investigate ways to slow down an object being pulled by gravity and observe how changing a parachute's size can affect the force of air resistance.

Materials

- paper clips
- tissue paper
- tape
- a stopwatch
- an adult helper
- string
- scissors
- a step ladder
- a paper and pencil to take notes

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

1. Cut one piece of tissue paper into a small square. Cut another piece so it's about twice as big.
2. To make the parachutes, cut eight pieces of string, each about 20 cm. long.
3. Lay out both pieces of tissue paper, and tape the end of one piece of string to each corner.
4. Now tape the loose ends of the four strings together. These are your parachutes.
5. Next, clip a few paper clips together.
6. Use the stopwatch to time the fall of the paper clips from the ladder to the floor. (You can have your adult helper drop them from the ladder.) Record the time it takes for them to reach the floor in your data chart. Drop and time the paper clips again and record your data in the chart.
7. Now test the small parachute. Attach the same paper clips to the end of the strings of the small parachute and have your helper drop them from the same height while you use the stopwatch to find out how long it takes for them to reach the floor. Repeat and record your data.

8. Now test the large parachute. Take the same paper clips and attach them to the larger parachute. Have your helper drop it from the ladder at the same height as before and note the time it takes to fall to the floor. Repeat and record your data.

- Describe any differences in the time it took for the paper clips to reach the ground in each trial. What is a possible reason for the differences?

Data Chart:

Time It Takes Paper Clips to Reach the Ground

Paper Clips Alone	Small Parachute with Paper Clips	Large Parachute with Paper Clips

Conclusions

- How does the parachute slow the fall of the paper clips?

- How does the size of the parachute change the force of air resistance?
