

Subject: Physics

Topic: How do different materials affect Air Resistance?

Sub – Topic: Air Resistance

Duration: 30 Mins

Class: 7

Aim:

- To examine the relationship between materials and air resistance.
- To discover what type of material will work best as a parachute.

Objective:

This project will examine the relationship between materials and air resistance.

Research Questions:

1. Do different types of materials affect air resistance differently?
2. Which types of materials have the greatest affect on air resistance?
3. Air resistance is a crucial factor when designing a parachute. Discover what type of material will work best as a parachute?

Materials Required:

- 3 small plastic bags or 12-inch pieces of plastic cut from a trash bag or grocery bag.
- Some string
- 3 small stones of different sizes.
- Masking tape

Procedure:

1. Make 3 small parachutes; each one weighted with a different size stone.
2. Cut 12 lengths of string, each 20-inches long.
3. Use a paper clip to punch four holes, equally spaced around the opening of each bag.
4. Tie a separate string into each small hole and let the strings dangle down below the bags.
5. Use a piece of masking tape to secure the string ends to a stone.
6. Do this with each bag. Test the parachutes!



7. Next, arrange the parachutes in order; small, medium and largest stone. Take them outside.
8. Loosely wrap the string and baggy around each stone.
9. Throw each parachute up into the air and observe the time it takes for each one to reach the ground.
10. Time several tries for each parachute if you wish to get an idea about which parachute falls to the ground fastest and slowest.

Conclusion:

Gravity pulls down equally on all the falling parachutes. But each one must push against the resisting force of air molecules in the atmosphere as it travels earthward. Depending upon its size, each of the stones has a different surface area and weight! Those stones with larger surface areas and lighter weights fall at a different rate than heavier stones with smaller surface areas. Stones of equal weight, yet different surface areas will fall to earth at different rates. Try doing the same experiment using both large and small plastic bags.