Egg Parachute

Your mission—if you choose to accept it—is to construct a parachute that will deliver an egg safely to the ground when dropped. No fancy materials allowed! You can only use familiar household items like plastic bags and string. Do you think you have what it takes to construct this gravity-defying wonder? Be careful: a sloppy parachute will result in a yolky mess!

Problem:

Can a parachute made out of plastic bags and string save an egg from a two-story fall?

Materials:

- Plastic heavy-duty trash bag
- Plastic sandwich bags
- String
- Scissors
- Hole punch
- Eggs

Procedure:

1. Cut a square from the garbage bag that is 20 inches on each side.
2. Use a hole punch to punch one hole in each corner of the piece of plastic garbage bag.
3. Cut four pieces of 20-inch long string.
4. Thread a piece of string through each hole in the bag and secure by tying the string firmly on each corner.
5. Place one egg into the plastic sandwich bag, twist the top of the bag and tie closed with the loose ends of strings. This will also attach the parachute to the bag holding the egg.
6. Repeat the experiment with different sizes of bags and strings (the length of the strings should match the size of one side of the square).
7. Think about what you know about wind resistance. Which size bag do you think will allow the egg to drift to the ground slowly? Make a note about you think will happen. This is called the hypothesis.
8. Take the egg parachute to the second floor of your house and have a parent help you drop it from the window
9. How fast did the egg fall with each size of parachute? When did the egg break and when didn't it? Write your observations in a notebook. Does the experiment prove your hypothesis or not?

Results:

The largest parachute falls the slowest and should cause the least amount of damage to the egg.

Why?

When you drop the egg, the strings that are attached to the sandwich bag pull down and this open the bag to full size, which creates a large surface area and more wind resistance. More wind resistance slows down the descent of the egg.

You can explain the results of this experiment with the concept of resistance. Wind resistance, also called drag, is simply a force that acts on a solid object. Car designers often factor in wind resistance when designing a car to help it have greater fuel efficiency and accelerate to high speeds more easily. In this experiment, your goal was to create more wind resistance to slow the speed of the object. The largest parachute created more resistance and slowed the descent of the egg the most.

The experiment shows that the size of the parachute makes a difference in the speed of descent, but what if you tried different materials for the parachute? Repeat the experiment with a parachute made from construction paper, plastic grocery bags or other items you have around your house. Do you think the results will vary? Come up with a new hypothesis each time you try new materials and see if your guesses are correct. You'll learn so much about wind resistance that even Humpty Dumpty may thank you.