**Parachutes**

Supplies needed: plastic bags, string, glue, paper, different weights
Experiment Steps:

- Let the kids use the tools in front of them to make the most effective parachute to hold up their weighted object

What it teaches them: Air resistance

**Sources:**

https://youtu.be/O-KYLXp2MG4

*AIR RESISTANCE*

Air resistance is the frictional force air exerts against a moving object. As an object moves, air resistance slows it down. The faster the object's motion, the greater the air resistance exerted against it. Air resistance affects all moving objects, from airplanes, rockets, and trains to car, bicycles, and even living things.

An object's shape and surface area can increase or decrease the degree of air resistance it encounters. A feather will fall more...

-Britannica Kids

**Intro**

A. How many of you guys want to go skydiving?
    a. As much as I would love to make sky diving our activity for this week, I can't do that.
    b. However, we're going to do the next best thing: we're going to learn how parachutes work, make one ourselves, and take it home with us at the end of the day!

**Gravity**

A. Before we begin talking about how parachutes work, let's talk about why we need parachutes.
    a. **ASK:** What would happen if we didn't have them?
    b. **ASK:** What happens when we use a parachute?
B. Say I got up on this table, and jumped.
    a. **ASK:** What causes me to fall to the ground?
    b. This is called Gravity: gravity is a type of force that keeps everything in the world on the earth. If I jump in the air, gravity is what puts me back on the ground.
    c. Without gravity, I would just float up into the air.
        i. So, gravity is what parachutes fight against. When people jump out of airplanes, gravity pushes them towards the ground, and parachutes fight against it to keep us floating in the air.

But how exactly do parachutes work?

**Air Resistance**

A. Without parachutes, it'd be impossible to go skydiving! Well, maybe it'd be possible, but it'd be really really dangerous, right?
B. How do you guys think parachutes work?
    a. (listen to various responses)
    b. Parachutes work because of something called **air resistance,** which is something called a **friction force**
        i. Who can explain what friction is?
        ii. Friction is basically a force that is responsible for stopping or slowing the movement of a moving object.
            1. So, when I say that air resistance is a type of Friction force, what I'm saying is that **Air resistance** is responsible for the slowing down of an object.
                a. In this case, our object is people
    c. The way that I like to think of air resistance is the fabric of the parachute trying to catch as much air as possible. The bigger the parachute, the more air it's going to catch.
        i. **Paper demonstration:** I'm going to demonstrate that concept using two pieces of paper.
            1. One crumpled, one flat

2. **ASK:** which do you guys think will hit the ground first?
3. Ask for two volunteers
    a. Up at the front of the classroom, drop at the same time
4. **ASK:** why do you guys think the crumpled piece of paper fell faster than the flat one?
    a. Answer: the flat piece has such a big, flat surface, that when it falls it hits against the air beneath it
    b. The crumpled ball has very small surface beneath it when it falls. This causes it to not catch air instead falls faster

**BUILDING THEIR OWN PARACHUTES**

Now that we've learned about how parachutes work, you guys are going to experiment and see for yourselves what makes parachutes work the best!

d. Using supplies, make your own parachute
e. Remember everything we talked about, about what makes parachutes work
f. Once you've built your parachutes, we have weights here that will act as little people, so you can test out your design