

## *Invisible Forces Activity Bag*

### **Static Electricity: Student Activity Guide**

Have you ever touched a friend and accidentally shocked them? Have you even run a comb through your hair and noticed your hair stands out or is attracted to the comb? These are examples of static electricity. This activity will explore static electricity and how it produces motion.

#### **Materials From The Bag**

- Balloon
- Black Pepper Packet
- Styrofoam Cup
- Index Card
- Floating Paper Clip (paper clip & string)

#### **You Will Need**

- Science Notebook or Student Activity Sheet from the teacher.
- Tape
- Aluminum Can

#### **Part 1: Exploring Static Electricity**

1. Open up the pepper and place it on the Index Card.
2. Blow up the balloon and tie it.
3. Place the balloon next to the pepper. What do you notice?
4. Take the balloon and rub it on your clothes for 5-10 seconds. Now place the balloon next to the pepper without touching it. Describe what you notice. What force did you see?
5. Try and remove as much pepper from the balloon as you can.

#### *What's happening...*

The first time you placed the balloon next to the pepper was before you rubbed the balloon on your clothes. The pepper did not move. After you rubbed the balloon on your clothes, the

pepper was attracted to it. There was a pulling force between the pepper and the balloon. Rubbing the balloon with your clothes gave it a **static electric charge**. Static electric charges can push or pull even though you cannot see them.

## Part 2: The Dancing String

1. Use your string and paper clip from the floating paper clip activity. If you have not done this activity, tie the string to a paper clip.
2. Charge your balloon by rubbing it against your clothes for 5-10 seconds.
3. Place the balloon above the end of the string. **Do not touch the string**. What do you notice?
4. You will have two challenges. For both challenges, you may use different materials to charge your balloon.

Challenge 1: How far away can a charged balloon make the string move?

Challenge 2: Using only a charged balloon, make the string stand straight up.

### *What's happening...*

The charged balloon caused the string to move. Static electricity can produce two different charges. If materials have the **same** charge they will **repel** each other. If the materials have different charges they will attract each other. Do the charged balloon and the string have the same or different charges? How do you know?

## Part 3: Push The Cup

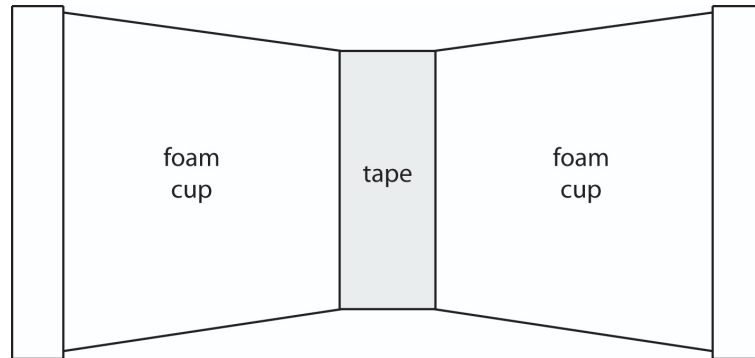
So far you have seen two examples of attraction between materials. In this challenge you will demonstrate an example of materials repelling each other.

1. For this challenge, you will need your balloon and a styrofoam cup.
2. Using only the balloon and a styrofoam cup, your challenge is to push the cup with the balloon without touching the cup.
3. You may not use wind or blow on the cup.
4. Do the charged balloon and the cup have the same or different charges? How do you know?

## Part 4: Push-A-War

You will need to work with a partner for this challenge. You will need an aluminum can for this activity.

1. Tape the bottom of your styrofoam cup to the bottom of your partner's styrofoam cup. It should look like this:



2. Place the foam cups in the middle of the table. Place the taped-together cups between you and your partner.
3. Your challenge is to move the foam cups to your partner's side of the table, using only a charged balloon. You do not want to allow the foam cups to come to your side.
4. Start the challenge with your partner and see who can get the foam cups to the other side the fastest.
5. What was difficult about this challenge?
6. Try this challenge again with an aluminum can.

**Save all materials for the other activities.**