Static Charges

Leading questions:

- Why do you sometimes feel a shock or spark when you touch something?
- Why does plastic wrap or wrapper sometimes stick to your fingers?

What to do:

1. You and a friend each rub fur or cloth over a balloon on a string.
   - Describe how the balloons behave.
   - What do you think causes the balloons to do this?
2. Rub the plastic top of the static box with a cloth, and then place some lightweight balls above or below the plastic.
   - What does rubbing the plastic sheet do?
   - Describe what happens when you try to touch them.
   - What do you think causes this behavior?

Summary:

Rubbing two things together can make them electrically charged. Charges can be either positive or negative. Charges that are the same repel each other and different charges attract. Charges can move through conductors (like metals). Charges build accumulate insulators (like plastic) to create static electricity (charges that stay in place).

You can also try this:

- Rub a cloth over a plastic pipe and bring it near a pop can.
- Charge a plastic plate and see its effect on a second one.

Static Charges
(Guide)

Leading questions:

- Why do you sometimes feel a shock or spark when you touch something?

  Ask: students to relate examples of where and what kinds of materials were involved.

  Ask: What do you think might cause this? Where could the spark come from?
- Why does plastic wrap or wrapper sometimes stick to your fingers?

  Ask: students to try to explain why this happens. Reasons can be discussed in summary.

What to do:

1. You and a friend each rub fur or cloth over a balloon on a string.
   - Describe how the balloons behave.

   Observe: the balloons will repel each other, but may be attracted to the student.
   - What do you think causes the balloons to do this?

   Explain: the friction, rubbing the balloon and cloth together, causes charged particles (electrons) to be transferred, making both balloons negatively charged. Charges that are alike repel each other.
2. Rub the plastic top of the static box with a cloth, and then place some lightweight balls above or below the plastic.
   - What does rubbing the plastic sheet do?

   Explain: rubbing the plastic sheet causes charged particles to transfer to the sheet.
   - Describe what happens when you try to touch them.

   Observe: the balls will respond to your finger because it changes the location of the charges on the plastic sheet.
   - What do you think causes this behavior?

   Explain: the balls will respond to your finger because it moves the charges the location of the charges on the plastic sheet.

Summary:

Rubbing two things together can make them electrically charged. Charges can be either positive or negative. Charges that are the same repel. Different charges attract. Charges can move through conductors (like metals), but accumulate in insulators (like plastic) to create static electricity, charges that stays in place. Rubbing the plastic in the static box, creates charges that can attract or repel the balls. When you touch the plastic near the balls you are removing the charge at that location, causing the balls to move to another spot.

Materials:

Cloth (wool, cotton, silk)
Rabbit fur
Plastic pipes
Aluminum pop cans
Static box
Styrofoam balls or pith balls
Balloons and string