

Sticky Situation

Students will observe that even though tape is designed to stick to objects, it may attract or repel certain items due to its static charge.



Grade Level

- 4th - 8th

Science Focus

- static electricity
- positive charges
- negative charges

Time Required

- 15 minutes

Supplies

This is a whole group activity, but there are enough rolls of Scotch tape to distribute one dispenser to ten areas or groups in the classroom.

Per Class

10 Scotch tape dispensers

Per Student

2 pieces of tape approximately 6 inches long

Doing the Activity

- Ask students what they already know about static electricity. Discuss their ideas and then tell them that you will be giving them a tool to learn more about static electricity.
- Distribute the tape dispensers and have each student pull off one piece of tape, approximately 6 inches long, and carefully hang it from a fingertip.
- Ask them if they think the tape is charged from pulling it off the roll. (It is.) How could they show that the tape is charged. (Have them bring the strip near another of their fingers or their other hand.) What do they observe? (The tape is attracted and moves toward the finger or hand so it is definitely charged.)
- Have students take their piece of tape and press it on to the table or desk with a small piece hanging off the edge.
- Instruct them to pull off another 6 inch piece of tape and press it on the table near the other piece of tape, making sure to leave a small piece hanging off the end.
- Then have them hold an end of tape in each hand and pull both pieces off the table. Since younger students may struggle more with dexterity, we gave directions for the tape to be pulled from the table. Depending upon your students, you may want them just to pull both pieces from the roll of tape and hang them from the edge of the desk or table for further use.

When you pull the tape off the roll, it will be charged.

- Bring the two strips of tape toward each other. What do they observe happening? (The strips repel and move away from each other.)
- Challenge your class to take these two pieces of tape with a like charge and make them charge oppositely so they attract each other. Have them share what techniques they tried. (The goal is to put the two pieces together in close contact, so that one piece of tape takes more of its share of electrons and leaves the other piece of tape positively charged. Students can hold the two pieces in the air and press the sticky side of one piece to the smooth side of the other and then pull them apart. Dangle them on fingertips as before and bring them together. They should attract each other. Another technique is to press one piece down on the desk or table and put the second piece on top of it and rub it down to make close contact. Then, pull the strips up together, touch them to eliminate charge, and then pull them apart and test.)

Active Questioning, Explanation, and Discussion

1. Why did the first piece of tape move toward your fingers and hand? (The tape became charged when it was pulled off the roll. One side of the tape took more than its share of electrons when it was pulled away, making the tape negatively charged. Your finger or hand was electrically neutral, but the negatively charged electrons in your hand moved away from the surface of your skin because they were pushed away, or repelled, by the negatively charged tape. This left your hand with more positive charges at the surface. Since unlike charges attract, the negatively charged tape was attracted to the positive surface of your hand and moved towards it.)
2. Why did the two pieces of tape that were pressed down on the surface of the desk or table move away from each other? (Since both strips were pulled away from the table in the same way, they have like charges and like charges repel each other.)
3. Can you think of other things you've experienced where things attracted or repelled each other? (Open-ended. Rubbing a balloon on your hair and sticking it to a wall, combing your hair, etc.)