The No-Touch Test

Investigate how objects can affect one another without touching.

3.3 "Conduct investigations to determine cause and effect relationships between objects not in contact with one another, including magnetic and electrostatic forces."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline what was changed in each test, and circle what moved or stayed still to help you link causes to effects.

What Made It Move?

1. Maya set a steel washer on a smooth desk. She held a magnet near it but did not touch it. The washer slid toward the magnet. She tried the same test with a plastic button. The button stayed still. Maya thought the magnet pulled the steel washer from a short distance away.

2. Next, Leo rubbed a plastic comb with a dry wool cloth. He held the comb close to tiny bits of tissue. The bits lifted toward the comb before they touched it. Leo tried again without rubbing the comb first. At the same distance, the bits did not lift. Rubbing gave the comb an electric charge that could pull the light bits through the air.

3. Maya wanted to find out if distance changed the magnet's pull. She placed the same steel washer in the same spot each time. First, she held the magnet one centimeter away. The washer moved. Then she held it four centimeters away. The washer stayed still. She changed only the distance, so she could link the different results to the distance between the objects.

2 ANSWER WITH EVIDENCE

Use the passage

1. What happened when Maya held the magnet near the steel washer? How do you know they did not need to touch?

2. Why did the tissue bits lift in Leo's first test but not his second test?

3. In Maya's distance test, what did she change? What did she keep the same?

4. What did the washer do at each distance? What does this show about the magnet's pull in Maya's test?

3 YOUR TURN

Your own words

Plan a no-touch test with a plastic ruler and tiny paper squares. In three or four sentences, say what you will change, what you will keep the same, what you will look for, and what the result could show about cause and effect.

The No-Touch Test

PART 1 · READ AND MARK

Underline what was changed in each test, and circle what moved or stayed still to help you link causes to effects. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What happened when Maya held the magnet near the steel washer? How do you know they did not need to touch?	**The washer slid toward the magnet even though Maya did not let the magnet touch it.**
2	Why did the tissue bits lift in Leo's first test but not his second test?	**Leo rubbed the comb before the first test, giving it an electric charge that pulled the tissue bits. He did not rub it before the second test.**
3	In Maya's distance test, what did she change? What did she keep the same?	**She changed the distance between the magnet and washer. She used the same washer in the same spot.**
4	What did the washer do at each distance? What does this show about the magnet's pull in Maya's test?	**The washer moved when the magnet was one centimeter away but stayed still at four centimeters. The magnet pulled the washer when it was closer.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I will hold a plastic ruler near tiny paper squares without touching them. First I will try the ruler before rubbing it, then I will rub it with a dry cloth and try again at the same distance. I will use the same squares and watch whether they move toward the ruler. If they move only after I rub it, the rubbing caused a charge that pulled them.

For the open task, accept a test that changes whether the ruler is rubbed, keeps the distance and paper the same, and checks for movement without contact. A student may describe a possible result rather than claim the test has already been done.