

What Causes Lightning?

Name: _____

Date: _____

Student worksheet

Word Bank

Attract

Conductor

Electric charge

Electric discharge

Electric field

Electron

Insulator

Negative charge

Positive charge

Repel

Static electricity

Triboelectric effect

Triboelectric series

1. Write down your observations

- a. What did you observe happen when you placed the latex balloon close to the electroscope spiral?

- b. Write your best scientific explanation for why that happened. Use some words from the word bank when writing your answer.

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2. Make predictions for each test material

- a. Predict how your test materials will behave in your electroscope testing. Check the YES box if you think the test material will become charged and move the aluminum pieces. Check the NO box if you think the test material will *not* get charged and thus not move the aluminum pieces.

Test material	Do you think the material will become charged and move the aluminum pieces of the electroscope?	
Latex balloon	☐ YES	☐ NO
Polyethylene cling wrap	☐ YES	☐ NO
Cardboard (paper)	☐ YES	☐ NO
Styrofoam® or polystyrene cup	☐ YES	☐ NO
Cotton round	☐ YES	☐ NO
	☐ YES	☐ NO
	☐ YES	☐ NO

3. Test your materials

Follow the instructions below to test all your materials.

- a. Before you start, make sure that the electroscope is neutral. The aluminum pieces should be touching each other. If the electroscope wire is charged (the aluminum pieces are not touching each other), touch the electroscope spiral with your hand to discharge it.
- b. Rub your test material back and forth several times against the wool.

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- c. Hold the part of the test material you rubbed close to the spiral on your electroscope. The material should be about half an inch (one and a half centimeters) away from the spiral. Be sure not to touch the spiral!
- d. Observe what happens. Do the aluminum pieces of the electroscope move apart or not?
- e. Move the test material away from the electroscope. If you accidentally touched the spiral with your test material, remove it from the spiral and briefly touch the spiral with your hand. Then rub the test material against the wool and bring it close to the spiral again.
- f. Record your results in the data table below.

4. Record your results

- a. For each test material, record the results of your electroscope testing in your data table below. Check the YES box if the test material moved the aluminum pieces. Check the NO box if the test material did not move the aluminum pieces.

Test material	Did the material move the aluminum pieces of the electroscope?	
Latex balloon	☐ YES	☐ NO
Polyethylene cling wrap	☐ YES	☐ NO
Cardboard (paper)	☐ YES	☐ NO
Styrofoam® or polystyrene cup	☐ YES	☐ NO
Cotton round	☐ YES	☐ NO
	☐ YES	☐ NO
	☐ YES	☐ NO