



# Flying Tinsel

It's a bird... It's a plane... It's flying tinsel! Use the power of static electricity to make your tinsel dance.

## TEKS:

SCI 4.6 D: The student is expected to design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.

SCI 8.5 A: The student is expected to describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud.

## Materials:

- Latex balloon
- Multiple surfaces to test static electricity charge (your hair, a wool sweater, cotton, nylon, etc.)
- Tinsel

## How To:

1. Inflate the balloon and tie it off.
2. Charge the balloon with electrons by rubbing it on the surface of your choice, for example your hair.
3. Hold a piece of tinsel above the balloon, let go, and watch it fly!
4. If the tinsel falls to the ground, try rubbing the balloon on your surface for a longer amount of time.
5. Once you get the hang of it, experiment by using different types of surfaces to charge the balloon! Does your hair work better than cotton? Or do you think the wool sweater works the best?
6. Create different flying tinsel shapes by tying multiple tinsel strands together. Test the number of tinsel strands the balloon can hold before they fall to the ground!

## STEM Explanation:

Have you ever rubbed a balloon on your shirt and then put it up to your head to see your hair stick up? Well, the same concept happens with the flying tinsel. Your hair sticks up for the same reason that the balloon keeps the tinsel flying in the air: static electricity! Static electricity is the imbalance of positive and negative charges in an object. In the universe, everything that is matter (a solid, liquid, or gas) is made up of things called atoms. Your pet, a favorite toy, even YOU are made up of atoms! Atoms are very small. So tiny that you

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can't even see them with your eyes! And believe it or not, atoms are made up of even smaller things called particles. The three basic particles that make up an atom are called protons, neutrons, and electrons. Protons have a positive charge, neutrons have a neutral (neither positive nor negative) charge, and electrons have a negative charge.

Electrons are so tiny and move around so easily that they can sometimes jump from an atom on one object to an atom on a different object! When the balloon and your chosen surface are rubbed together, the protons in each object may begin to attract the electrons in the other object. You may have heard of the saying "opposites attract"; well, protons and electrons do just that! When you separate the balloon and your chosen surface, the balloon gains electrons from your surface and gets a negative charge. You may have noticed that when you put the tinsel above the balloon, it first attracts and then immediately repels the balloon. This is because the tinsel is initially positively charged, but when it gets closer to the balloon, the electrons from the balloon transfer to the tinsel, and the two repel each other.

### Career Connection:

*Chemists* study the properties of matter at the level of atoms and molecules. Their research includes understanding the structure and composition of many different chemicals and even creating new substances that help our lives!

### Resources:

<https://littlebinsforlittlehands.com/jumping-tinsel-christmas-static-electricity-science-experiment/>

<https://www.exploratorium.edu/snacks/flying-tinsel>

<https://www.stem.org.uk/elibrary/resource/32069>

<https://www.coolscience.org/cool-physics/electrostatic-levitation-flying-hoops-feathers-snowflakes>

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