

## Levitating Ghosts & Bats

### OBJECTIVES

**Super Six Connection:** At Headfirst, campers learn how they can apply their grit, determination, and optimism towards a goal to make the world a better place. Self-efficacy, or the belief in yourself to create change, means you think, 'hey, I can do this!' when facing a tricky challenge; you know that you have the power of hard work and perseverance.

**Development and Learning:** This project is a prime example of static electricity, the build-up of an electrical charge on the surface of an object. Static electricity occurs when the charges stay in one place for some time and don't flow or move to a different area.

### MATERIALS

1. Black Tissue Paper
2. White Tissue Paper
3. Four 12" Balloons
4. Assorted Markers
5. Scissors
6. Tape

### VIDEOS

- [TED-ED - The Science of Static Electricity:](https://www.youtube.com/watch?v=yc2-363MIQs)  
<https://www.youtube.com/watch?v=yc2-363MIQs>
- [Bill Nye the Science Guy Static Electricity \(0:00-4:47\):](https://www.youtube.com/watch?v=PYXLtfwZFIs)  
<https://www.youtube.com/watch?v=PYXLtfwZFIs>



## SET UP & PREP

- Blow up the balloons at the start of this exploration.
- Cut the tissue paper into quarters.
- Cue the videos by playing through commercials and maximizing screen prior to campers arriving.

## INTRODUCTION

- Introduce your camper to this project by showing them the TED-Ed video, 'The Science of Static Electricity.'
- Today we're going to learn all about an important STEM concept know as STATIC ELECTRICITY! As you heard in the video, ATOMS are the basic building blocks of all matter, or the STUFF that makes up our world! ATOMS are made up of PROTONS, particles with a positive charge, ELECTRONS, particles with a negative charge, and NEUTRONS, particles with no electric charge. STATIC ELECTRICITY is the buildup of an electrical charge on the surface of an object. If you've ever worn fuzzy socks across a carpet and then touched something metal, like a door knob, you've likely felt a small shock. That is STATIC ELECTRICITY in action! Whoa! Today we're going to use STATIC ELECTRICITY to LEVITATE ghosts and bats! We will make our ghosts and bats appear to be floating on their own, and it's all thanks to science!

## INSTRUCTIONS

1. Cut ghost shapes out of the white tissue paper with your camper.
2. Draw faces on the ghosts and design them in any way you please.
3. On the black tissue paper, cut out bat shapes. Again, the design is up you! If you want to make creatures other than bats and ghosts, you can do that too!
4. Recycle the tissue paper scraps.
5. Rub the balloon vigorously on your hair for at least 10 seconds.
6. Now it's time for your ghosts and bats to LEVITATE!
7. Slowly bring the balloon near the cutouts and the cutouts should begin to rise toward the balloon. If the balloon is charged enough, the ghost will rise and float right up to the balloon, even when it is several inches away! You can even try to make the ghost 'dance' in the air!
8. OPTIONAL: You can add a small piece of tape to the bottom of the ghost or bat and move the top with the balloon, so it will look like its standing straight up. Otherwise, many of the cutouts might attach right to the balloon!

## DEBRIEF

- Today we got to see some ghoulish friends demonstrate STATIC ELECTRICITY! Were the ghosts and bats really able to fly? Why or why not?
  - When we rubbed the balloons on our heads, invisible ELECTRONS with a negative charge build up on the surface of the balloon. The electrons have the power to pull very light objects with a positive charge towards them, in this case, or tissue paper bats and ghosts!