

FLOATING GHOSTS

Use static electricity to make paper ghosts move and groove

What you'll need:

- Single tissue sheet (substitute: a sheet of tissue paper or a sheet of single-ply paper towel)
- Scissors
- Marker
- Balloon (any size and shape will work)
- The hair on your head (substitute: wool or microfiber cloth/towel)
- Optional: Balloon pump, tape, and different types of paper for experimenting

Activity setup:

1. If you have a 2-ply or 3-ply tissue sheet, peel it until you have single-ply tissue sheets.
2. Draw the outline of several ghosts, each with eyes and a mouth on the tissue sheet. Each ghost should be approximately 4 cm (1.5 inches) by 4 cm (1.5 inches). Be creative and give each ghost a different pose and facial expression.
3. Cut out the ghost outlines and lay them flat and close together on a table.
4. Inflate the balloon and tie it so that the air does not escape.
5. Rub the balloon on your hair quickly back and forth for 10 seconds to build up a static charge. Note: you can rub the balloon with a wool cloth if you do not want to use your hair.
6. Hold the balloon high above the ghosts and slowly move the balloon towards them.
7. When the balloon is close enough, the ghosts will suddenly float up towards it like magic.



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Make your ghosts dance *(optional)*

Want to make your ghosts dance? Tape the tip of the ghosts' tails to the top of the surface. Then, charge the balloon and bring it close to the ghosts. Upon approach, the ghosts will stand up. Put on some music and move the balloon to see your ghosts groove to the beat!

How does it work?

This magical effect occurs due to static electricity. When you rub the balloon on your head, the electrons (negatively charged subatomic particles) build up on the surface of the balloon. When you bring the negatively charged balloon surface close to the ghosts, the protons (positively charged subatomic particles) in the ghosts are attracted to it. Since the ghosts are light, the attraction is strong enough to overcome the force of gravity, making the ghosts float up to the balloon.

Explore more

- How many ghosts can you get to stick on the balloon? Did one ghost stay on longer than the others? How long did the floating ghosts stay on the balloon?
- If you rub the balloon for longer, do the ghosts stay afloat longer?
- Try 2-ply, 3-ply or other types of paper to make ghosts. Do they float? Which paper works best?
- Which paper gives you the most control over the ghosts' movements?

Did you know?

The iconic Van de Graaff electrostatic generator at the Ontario Science Centre uses the same static electricity principle to make your hair stand up. While standing on an insulator, the generator steals your electrons, leaving you and your hair positively charged. Since like charges repel each other, your strands of hair will repel from your head and each other making your hair stand up.

