



FLOATING GHOST SCIENCE EXPERIMENT

Name: _____ Date: _____

The secret behind these floating ghosts is static electricity. You've probably heard of electricity that you have in your home. That type of electricity is current electricity, which is caused by a steady flow of electrons. Your refrigerator, TV, gaming console, and other electronics need consistent, even electricity.

Static electricity is different than the electricity in your home because it is a stationary charge that occurs when electrical charges are unequal between 2 different objects. This static electricity, or uneven electrical charge, on the balloon is what causes the ghosts to float.

All objects are made of atoms. Atoms consist of protons, electrons, and neutrons. Protons have a positive charge, are located in the nucleus and typically do not leave the atom, or object. Neutrons are also in the nucleus, but they do not contain a charge, they are neutral. We can remember they have no charge because NEUTrons are NEUTral. Electrons have a negative charge, are on the outer layer of the atom, and can move from one object to another object. If there are 2 objects that are touching, electrons may move from one object to another, changing the charge of both of the objects.

Just like a magnet, like (or the same) charges repel each other while opposite charges attract. When you rub the balloon on your head, you are transferring electrons from your hair to the balloon. This causes an excess of negatively charged electrons on the surface of the balloon. Atoms like to be in balance, so when you bring the electron-heavy balloon near the positively-charged coffee filter, the ghosts rise to meet the balloon because they are attracted to the oppositely-charged object.



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1. How does static electricity make the ghosts float?

2. Would the ghosts be able to float if they were made from another material?



3. How is static electricity used in the real world?

4. Why are static shocks sometimes painful?





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1. How does static electricity make the ghosts float?

A: By rubbing the balloon on your head, you are transferring an excess of electrons to the balloon, which causes it to be more negatively charged. Because the ghost is positively charged and has a charge opposite to the balloon, the 2 items are attracted to each other.

2. Would the ghosts be able to float if they were made from another material?

A: Yes, if the material was still light and more importantly, contained a charge different from the balloon so that the ghost and balloon were attracted to each other.

3. How is static electricity used in the real world?

A: Static electricity often affects the earth and particularly electronics. A simple way is static cling, when you have clothes that seem to "stick" together. Because static electricity can negatively impact electronics, sometimes electronics need to be placed in anti-static bags. Lightning is a very large natural static discharge. Just a small static discharge can ignite flammable fuels – such as gas pumps and airplanes that are refueling. Even spacecrafts traveling through our solar system can accumulate static charges that can interfere with electrical instruments.


4. Why are static shocks sometimes painful?

A: Sometimes a large charge builds up and when it discharges very quickly, it can cause pain. An example of a static discharge that can cause a lot of pain, and even death, is lightning. This is why lightning damage can often be seen in trees or other objects that have been struck.

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