

# Static Balloons

For the following, be creative. However, your answers must show good scientific thought.

**For the following questions, you will need ONE INFLATED BALLOON.**

1. Try as many ways as you can think of to **put static charge onto a single balloon** (do this in conjunction with #2)
  - a. How can you tell if it has static charge on it?

Which ways work?

Which ways that you tried do not work?

2. Try as many ways as you can think of to **take static charge off a balloon.**
  - a. How can you tell if the charge is off the balloon?
  - b.

Which ways work?

Which ways that you tried do not work?

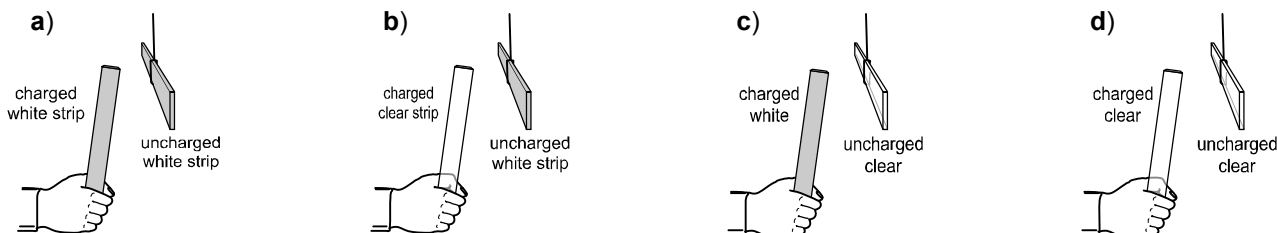
3. How does a charge balloon behave? How does it *affect* other objects? How is it *affected by* other objects? List as many observations as you can.
4. a) If you have an uncharged balloon, how can you get a static charge onto **only one spot on the balloon's surface**? Try it, and then explain your method.
  - b) If you have an uncharged balloon, how can you get a static charge onto **all sides of the balloon equally**? Try it, and then explain your method.
5. By observing the balloon's behavior, can you tell whether the balloon is charged **positive** or **negative**? Explain.
6. Can you ever get the balloon to create a **spark** of any size? How can you do it? How did you know there was a spark? Does the balloon lose its charge when a spark occurs?

# Magic Attraction

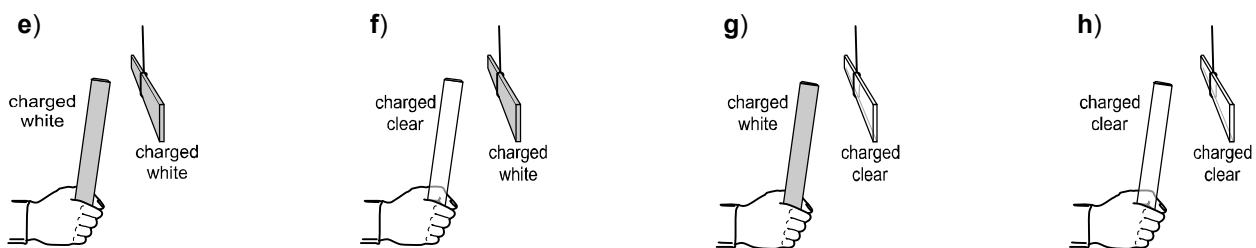
1. The 8 pictures below show some long plastic strips. Notice that some of the strips are white, and some of them are clear. The pictures state that some of the strips have been charged by rubbing on a cloth.

**Question:** In which pictures will the two strips **attract** each other? **repel** each other?

Charge up only the strip in your hand (make sure the hanging strip has zero charge):



Now charge up both strips — the strip in your hand and the hanging strip:



2. See again the eight pictures above. Some of the strips **attract** and some **repel**. Do you see a pattern? Describe the pattern. How can you predict whether any two strips will **attract** or **repel**?

3. In question 2 above, you described a pattern. The following questions ask you to explain the pattern...

- a) Suppose two different strips ignore each other because they are both uncharged. Then you rub both of them with cloth, and now they **repel** each other. Why did the rubbing make a difference? In what way did the rubbing *change* the strips that made them repel?
- b) Think about the **white strip** in the experiment at the top of this page (question 1). As best as you can tell, what happened to the atoms in the white strip when you rubbed it on the cloth? Be specific.
- c) Now think about the **clear strip** in the experiment. As best as you can tell, what happened to the atoms in the clear strip when you rubbed it on the cloth? Be specific.

4. The pictures at the right show six hanging ping-pong balls. Every ball is charged up.

What kind of charge must there be on ball **A**? ball **B**? all the other balls? Label each ball with its charge. (Is there only one possibility?)

