

# PhyzLabs: Charge It

two investigations of static electricity



## • Pre-Lab Questions •

**ANSWER THESE QUESTIONS BEFORE BEGINNING THE LABS. IT IS IMPORTANT THAT YOU ANSWER THEM WITH THE KNOWLEDGE YOU HAVE NOW, NOT WITH INFORMATION FROM A TEXTBOOK OR A LAB PARTNER.**

The "Charge It" PhyzLabs are designed to challenge and clarify your ideas about electricity. Electricity lies at the heart of most of the technology surrounding us, so it would be impossible to begin to understand the world around us without understanding electricity. You probably recall learning about electricity in elementary school and middle school; you're not entirely in the dark about electricity. Before you begin this lab, it is very important that you articulate your current understanding of electricity as best you can.

1. What's the difference between a charged object and a neutral object? (Do charged objects act differently from neutral ones? What makes a charged object charged? An answer like "They're charged" won't quite do.)

2. What kinds of charges attract and which ones repel?

3. Draw a rough sketch of the structure of an atom. What are the three kinds of subatomic particles, where are they in the structure, and what kind of charge—if any—do they have?

4. Which of the following are electrical conductors and which are insulators? Copper, steel, rubber, gold, plastic, styrofoam, aluminum, wood, glass. Make two lists: one of conductors and one of insulators. **Add at least two materials to each list.**

5. Charged, neutral, insulator, conductor: is there any connection between these descriptions? For example, can **both** conductors and insulators become charged? Are either conductors or insulators always charged? Or is there no connection between the terms?

6. Chandra Chargeson walked across a shag carpet in a Canadian hotel one sunny February day. She approached a wooden door with a set of brass push bars. Should she push the wood or brass part of the door to open it, or will it make no difference? Make your best guess and explain. (If you think one is better than the other, what will happen if she makes the wrong choice?)

