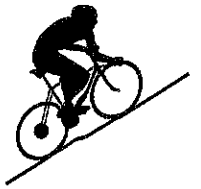


CREATING AN ELECTRICAL DISCHARGE

PHYSICAL SCIENCE
HARD LEVEL

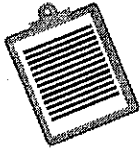
Introduction

Atoms are normally neutral. However, chemical reactions or collisions with electrons or atoms can produce *ions*, which carry a *charge*. Using this concept, you will create an object that discharges electrical shocks.











Time Needed

1 hour



What You Need

-  pliers
-  ball point pen (preferably a BIC™ pen)
-  thumbtack
-  foil pie pan
-  Styrofoam™ plate
-  wool cloth
-  glue gun
-  hot glue



Safety Precautions

Have an adult use the glue gun and hot glue. Please review and follow the safety guidelines at the beginning of this volume.

What You Do

1. Using the pliers, remove the ink cartridge from inside of the pen.
2. Turn the pie pan upside down on the table.
3. Push the thumbtack through the center of the pan (Figure 1).

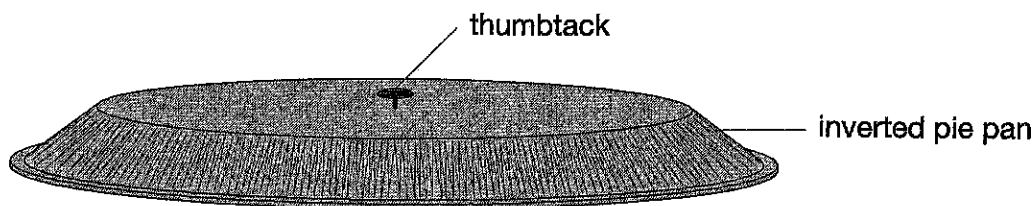


Figure 1

4. Turn the pan over so that you can see the thumbtack sticking up through the center.
5. Coat the point of the thumbtack with hot glue.
6. Push the empty pen down onto the hot glue, covering the thumbtack point (Figure 2).

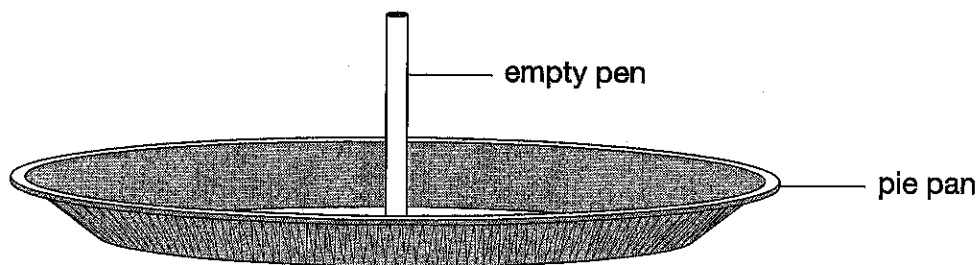


Figure 2

7. Allow the glue to dry.
8. Rub the Styrofoam™ plate with the wool cloth.

9. Turn the Styrofoam™ plate upside down on the table.
10. Holding it by the pen, place the pie pan on top of the upside down Styrofoam™ plate with the pen end sticking up (Figure 3).

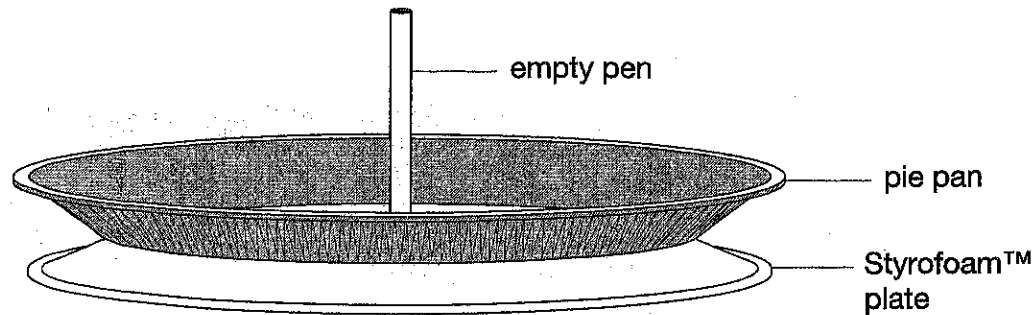


Figure 3

11. Touch the pie pan with your finger (you may feel an electric shock).
12. Lift the pie pan off of the Styrofoam™ plate using the pen.
13. Touch the pie pan with your finger.
14. You can recharge your pie pan by repeating steps 8 through 13.



Observations

1. What type of charge does the Styrofoam™ plate have after you rub it with the wool cloth?
2. How did the pie pan become charged?
3. What is the advantage of the pen “handle?”