

You Can Do It!

Quick and Easy Project

Switch It On or Off?

Procedure

1. Build a parallel circuit that will light three bulbs dimly.
2. Add extra batteries to the circuit so that one bulb will glow more brightly than the other two. Add a switch you can use to turn off and on one of the dimly lighted bulbs.
3. Add a bell or buzzer in place of one of the bulbs. Add a switch that causes the bell to ring at the same time that it turns *off* a light.

Materials

- 3 batteries (size D) and battery holders
- 3 light bulbs and light bulb holders
- roll of insulated wire
- single-throw double-pole switch
- bell or buzzer



Draw Conclusions

How did you make one bulb glow more brightly? Where did you have to put the switch to control both the bell and the bulb at the same time? Why?

Design Your Own Investigation

The Travels of Electricity

You have learned about some of the ways electric current can be generated. However, getting the current from the generating plant to your TV set is a long process. Trace the path that the current travels from the time it is generated until it reaches your house. Diagram the process, and label the different stages the current goes through.

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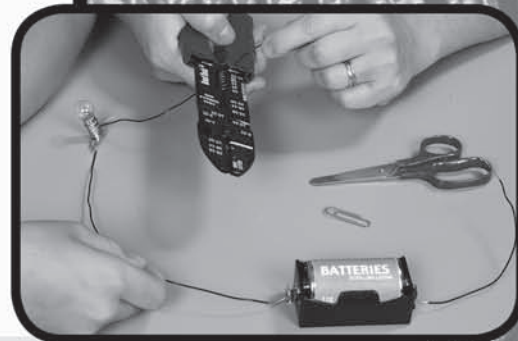
Build a Switch

Procedure

1. Assemble a simple circuit as you did for the Lesson 3 Investigate. But use just one bulb, and don't put the cells in the battery holder.
2. Cut one of the wires in half. Put the cells in the holder, and observe the bulb to see if it lights.
3. With your teacher's help, remove some of the insulation from the cut ends of the wire.
4. Straighten a paper clip. Remove the plastic covering from the ends of the paper clip.
5. Place the paper clip across the space between the cut ends of the wire so that the bare ends of the paper clip touch the bare ends of the wire. Observe what happens.

Materials

- battery and holder
- wires
- light bulb and holder
- scissors
- plastic-covered paper clip



Draw Conclusions

How does the paper clip act as a switch? Why did you have to remove some of the plastic covering from the paper clip before using it as a switch?

Design Your Own Investigation

Observe a Magnetic Field

When current passes through a wire, it produces a magnetic field around the wire. Use a compass and a simple circuit to study the magnetic field around a wire that is conducting current. Then turn the battery around in the holder. Does this have an effect on the magnetic field? Why do you think this happens?

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Quick and Easy Project

Insulators and Conductors

Procedure

1. Build a series circuit, but leave two wire ends open. Touch them together to make sure the circuit works.
2. Touch the ends to a test material to see if it will complete the circuit. Does the bulb light? Record your results.
3. Repeat Step 2 for each test material.

Materials

- three 30-cm pieces of wire, with insulation trimmed from the ends
- D-cell battery
- flashlight bulb
- test materials of your choice



Draw Conclusions

Which materials are conductors? Which are insulators? How do you know?

Design Your Own Investigation

Generate Electricity

Does moving a bar magnet inside a coil of wire generate an electric current? You can use a compass to find out. Use wire, a bar magnet, and a compass to build and test a simple generator. Record and explain your findings. How can you make sure that it's an electric current, and not the magnet, that's affecting your compass? How can you make your generator stronger? Test your ideas.

SCIENCE Projects

for Home or School

You Can Do It!

Quick and Easy Project

Make a Magnetic Fishing Game

Procedure

1. Make a “fishing pole” by tying string to one end of a ruler. Tie a magnet to the end of the string.
2. Cut fish shapes from paper. Tape steel paper clips to some.
3. Play the fishing game. Which fish can't you catch?

Materials

- paper
- string
- ruler
- magnet
- paper clips



Draw Conclusions

How can you make the fishing game work better? Predict ways to improve the design. Test your predictions.

Design Your Own Investigation

Static Electricity

Build up static electricity by rubbing a wool cloth over a hard rubber comb for a minute. Turn out the lights in the room. Touch the comb to a light bulb that hasn't been used in the last hour and that isn't plugged in. What happens? Repeat the procedure, touching the comb to different parts of the light bulb. Are your results different?