

# Burglar Alarm



**Electricity All Around Us**  
**Learner Activity Instructions**  
**Grade Level: 5-8**

## What you will learn:

This activity will combine the concepts of circuits and switches. Make a burglar alarm that makes a buzz! You will be given the materials and procedures to design a burglar alarm. You and your group will make the alarm and then test it out. You will also have to list ideas for improving your burglar alarm!

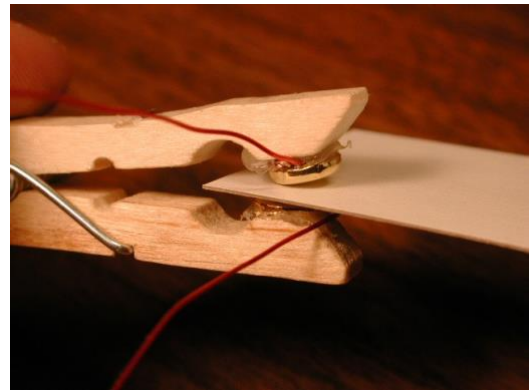
## What you will need:

Burglar Alarm Learner Worksheet  
4 Insulated copper wires  
Wire cutters  
2D batteries  
2 Battery holders  
2 Metal paper fasteners  
1 Clothespin  
1 Small piece of cardboard  
Tape  
1 Buzzer  
Boxes (optional)

## Background

A burglar alarm consists of some very basic principles such as a power source, wires and an output such as a light or buzzer. A burglar alarm is usually made of a complete circuit. When a window or door is opened when an alarm is on, then the circuit is changed from an open circuit to a closed circuit allowing the alarm to operate. A clothespin switch can also be used to make a closed circuit to simulate a burglar alarm. It is made using a clothespin with metal contact points on the end. A piece of cardboard is placed between the two contact points to keep the switch open. As soon

as the cardboard is pulled out the switch closes the circuit and turns the device on. This makes it an ideal switch for a burglar alarm. The switch will need to be reset manually when the paper is pulled out. The illustration provides an example of the clothespin switch.



## How to do it

1. Twist the metal clasps (pointed ends) from two paper fasteners until they detach from the round top.
2. Use glue to fasten the round tops from the paper fasteners to the inside of the closed ends of the clothespin. If you are using insulated copper wire with stripped ends, take two pieces of the insulated copper wire and glue one end of each of the wires to one of the round tops. Ensure the round tops touch when the clothespin is closed.
3. Place the battery in the battery holder.
4. If using alligator clips, use two pieces of copper wire and attach one end of each of the wires to the two-round tops.

5. Using one of the wires attached to a round top, attach the other end of the insulated copper wire to the buzzer.
6. Using the other wire attached to a round top, attach the other end to the battery holder.
7. Using the third insulated copper wire, attach it to the buzzer and the battery holder.
8. Cut a piece of boxboard 5 cm in width and 5 cm in length.
9. Tape a piece of string to one side of the boxboard strip.
10. Open the clothespin and place the boxboard strip in between the two contact points. Close the clothespin with the boxboard pinched between the two contact points.
11. Take turns removing the boxboard.
12. Once you have built your burglar alarm, try some different methods for testing it (e.g. on the classroom door, a lunch box, window, a drawer etc.)
13. Record information and observations on your worksheet.