

Burglar Alarm



Electricity All Around Us
Activity
Grade Level: 5-8

Main Objectives

This activity allows learners to combine the concepts of circuits and switches. Learner groups will make a burglar alarm, test it out, and list ideas for improving their alarm.

Learning Outcomes

By the end of this activity, learners will:

- Test a manufactured burglar alarm
- Choose appropriate materials to construct an alarm
- Apply knowledge about switch design to construct a burglar alarm

Length of Activity

2.5 hours

Materials List

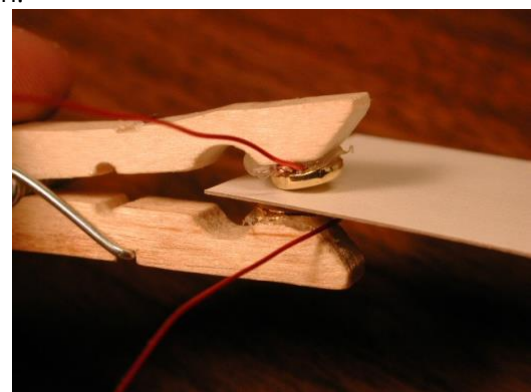
Burglar Alarm Learner Activity Instructions
Burglar Alarm Learner Worksheet

For each learner group:

- 4 Insulated copper wires
- Wire cutters
- 2 D 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.



Procedure

1. Print and distribute the worksheet. Have learners review the background information.
2. Discuss the purpose of an alarm. Ask learners why alarms are needed? Ask the learners to locate examples of alarms.
3. Explain to the learners that they will be making their own burglar alarm. Learners will have to use the materials and background information to design a burglar alarm.
4. In small groups, have the learners do the activity and record their observations on a worksheet.
5. Ask learners to use the materials given and test their burglar alarm. Then ask them to record their observations on their worksheet.
6. At the end of class ask learners to share their observations.

Comprehension

You may wish to test learners' comprehension of the basics of alarms using the following questions:

- Ask learners to identify the importance of alarms.
- Discuss the different designs of alarms.
- How would learners improve their alarm design?