

Name:

# Electricity & Magnetism

Date:

## How Can I Build An Electrical Device For A Purpose?



Discover: Build a Burglar Alarm

Question

How can I build a burglar alarm?

### Resources

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- Magnetic Kit Items: battery holder, lamp and lampholder, wires, alligator clips, buzzer, switch
- Other items: 2 AA batteries
- Optional: Additional master switch, pencil and paper, digital camera, or scanner
- Websites:  
PhET Simulation or Yenka Software

## Instructions

- 1 Design a burglar alarm. You can choose from several methods to build your design.

Method A: Build an alarm using Electricity Kit items (note the buzzer may sound like a clapper rather than a siren or beeper. It may need a tight connection for which you could use alligator clips.)

Method B: Draw a circuit diagram using paper and pencil

Method C: Simulate your alarm using PhET Simulator or Yenka software

If you choose Method A, you can use a digital camera.

If you choose Method B, you could use digital camera or scanner.

If you choose Method C, you can screensave your PhET circuit or save your Yenka file for sharing.

Your burglar alarm should have the following features:

- **It must have a switch for detecting the burglar.**  
In real life, this might a switch that is activated when a burglar opens a door.
- **It must have a buzzer.**  
In real life, this would be the alarm that goes off to scare the burglar away.
- **It must have a lamp.**  
In real life, the lamp would be the signal that goes off in the police station.
- **It must have a power source.**  
In real life, this is a source of electricity that provides energy for the alarm.
- **It must have a parallel circuit.**

- 2 Provide an explanation of how your burglar alarm works. This may be written or oral. A written portion may be submitted on this file. An oral may be submitted by leaving a voicemail on your teacher's phone, or by submitting a digital recording or video.

- 3 Review the Rubric below before handing in your assessment.

### Build a Burglar Alarm Rubric

	Excellent 5	Proficient 4	Satisfactory 3	Limited 2
Effective Design /5	• <i>Effective</i> design, uses multiple loads with a parallel circuit, and is <i>innovative</i> and <i>efficient</i> .	• <i>Functional</i> design, uses multiple loads with a parallel circuit, and is <i>practical</i> .	• <i>Basic</i> design, uses multiple loads and is <i>feasible</i> .	• <i>Impractical</i> design, lacks either multiple loads or a working circuit, and is <i>ineffective</i> .
Explanation /5	• <i>Detailed</i> explanation is <i>precise</i> and uses	• <i>Reasonable</i> explanation is <i>thoughtful</i> and uses <i>logical</i>	• <i>Basic</i> explanation is <i>simple</i> and uses <i>mostly</i>	• <i>Haphazard</i> explanation is <i>vague</i> and uses

	<i>accurate</i> circuit terminology.	circuit terminology.	<i>accurate</i> circuit terminology.	<i>inaccurate</i> circuit terminology.
<b>Presentation</b> <b>/5</b>	<ul style="list-style-type: none"> <li>Presentation or demonstration is exceptionally <i>well organized</i> and shows all parts <i>effectively</i> and <i>precisely</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Presentation or demonstration is <i>logically organized</i> and shows all parts <i>accurately</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Presentation or demonstration is <i>clearly organized</i> and shows most parts <i>generally</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Presentation or demonstration is <i>disorganized</i> and shows parts <i>imprecisely</i>.</li> </ul>

Written Explanation

Total: /15 marks



Save Your File

Save your Table to your Electricity Notebook folder. Name your file with your name (jsmith) in this format: (yournamehere)sc5-2-3-burglar alarm. Submit your completed assessment to the submission folder. Also include your photo, video, or diagram of your burglar alarm.