

## Build an intruder alarm

Spy tools – Inventing, designing and making

### Purpose

To improve knowledge of electronic circuits by constructing a simple 'intruder alarm'.

### Age range (years)



### Subjects

Science (esp. physics), Design & Technology



### Background

Sometimes spies must avoid detection and bypass alarm systems. Alternatively they may wish to safeguard their own secrets using similar systems.

This activity asks students to construct a simple circuit that mimics the operation of electronic pressure pads, which raise the alarm when triggered.

### Steps

#### You will need:

- Charged batteries
- Bulbs and bulb holders
- Electrical wire
- Simple switch assemblies

1. Ask students how they might construct an intruder alarm with the provided components.
2. Use the diagram on page two – explaining that depressing the switch will complete the circuit – lighting the bulb.
3. Ask for ideas for where the switch and bulb might be placed in a building to make the alarm most effective.

4. Ask students to build their own circuit, following the diagram.

### Discussion

- Can you think of a way of making a better circuit or one that would be easier to hide?
- Could other alarm signals be used instead of a light? (e.g. a buzzer, a radio.) What would be the advantages and disadvantages of other options?

### Extensions

- Are there other ways to complete the circuit instead of a switch? (e.g. placing a piece of card between two contacts that can be pulled free, perhaps when a door opens.)
- Explore how wiring several switches in a 'parallel circuit' could be used to construct an alarm system with the ability to detect intrusion at a variety of locations.
- Draw circuit diagrams for both serial and parallel alarm circuits using standard circuit diagram notation.

the science of...  
**SPYING**

**Build an intruder alarm – circuit diagram**

