



# Year 4 Design and Technology: Electrical Mechanisms

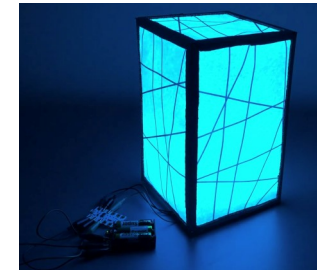
How do we make an electrical nightlight with a handmade switch?

## Prior Learning

- I have made a simple series electrical circuit in science, using bulbs, switches and buzzers.
- I have cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

## Sticky Knowledge

- I can investigate and analyse a range of existing battery-powered products.
- I can generate, develop, model and communicate realistic ideas through discussion and annotated sketches, cross-sectional and exploded diagrams, thinking about the **user**, **purpose** and **function** of my product.
- I can select from and use tools and equipment to cut, shape, join and finish with some accuracy, following steps needed for making.
- I understand and use electrical systems in my product, such as series circuits using switches, bulbs and buzzers.
- I can evaluate my ideas and product against my own design criteria and identify the strengths and areas for improvement in their work.



## Vocabulary

<b>User*</b>	The person or people who will use the product.
<b>Purpose*</b>	What the product will be used for.
<b>Function*</b>	What the product should be able to do to work properly.
<b>Design*</b>	A plan or idea of what the product will be like and how it will function.
<b>Circuit</b>	A path through which electricity passes
<b>Push-to-make switch</b>	A switch turned on by pressing it.
<b>Push-to-break switch</b>	A switch turned off by pressing it
<b>Insulator</b>	A material which does not easily allow electric current to pass through it.
<b>Conductor</b>	A material which allows an electric current to pass through it.
<b>Connection</b>	A direct wire path for current between two points in a circuit.
<b>Short Circuit</b>	A <b>short circuit</b> is a <b>fault</b> where electricity moves through a circuit in an unintended path, usually due to a connection forming where none was expected.



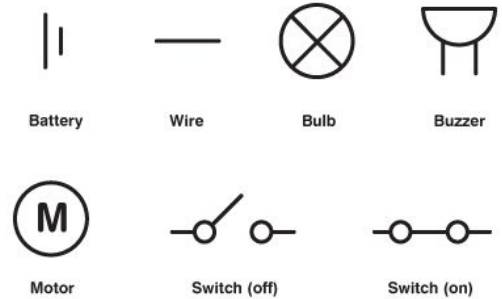
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How do we make an electrical nightlight with a handmade switch?

What electrical components will I need to create a working circuit?

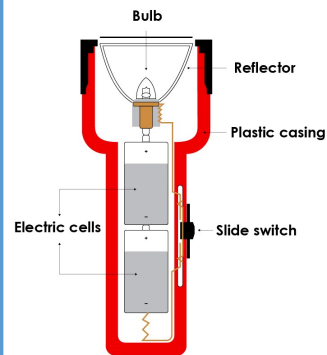


What scientific symbols do I use for these components?



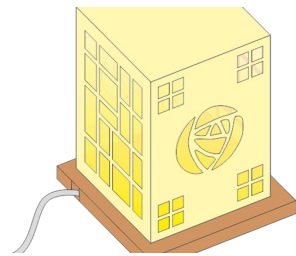
How can I show my ideas? How can I share my design?

Annotated Sketch



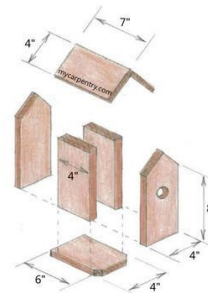
Shows your whole design idea.

Cross-sectional diagram



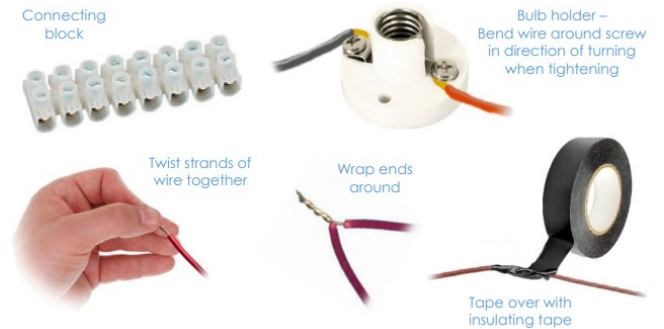
Focuses on one section of your design, in detail.

Exploded Diagram

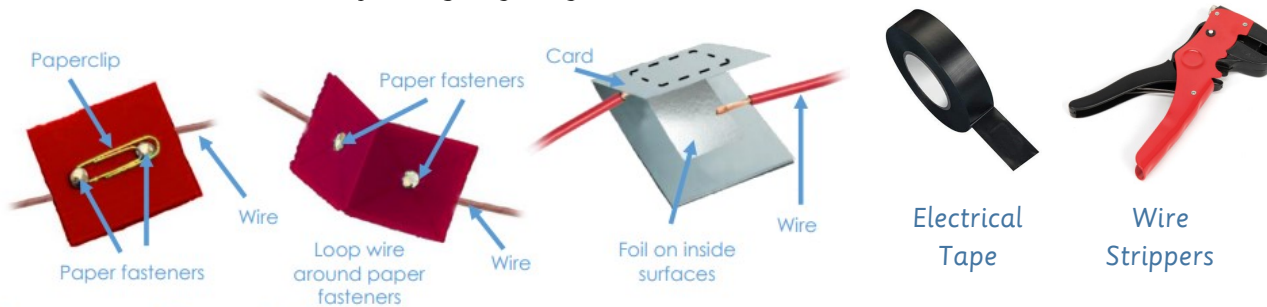


Shows how the different parts fit together.

How can I make secure connections?



How can I make a switch for my nightlight?



Series Circuit Diagrams

