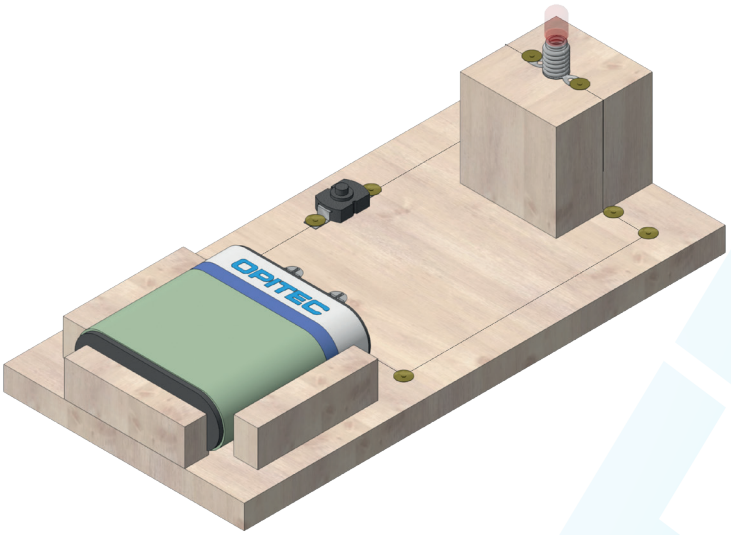
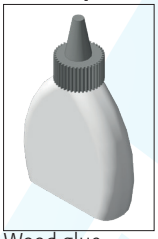
103.199

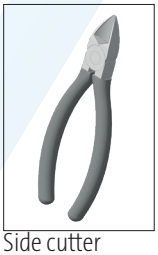
Basic Electric Circuit

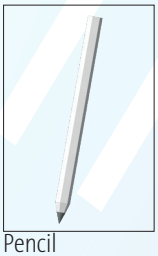


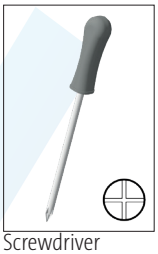
Tools Required:


Wood glue


Pricker


Side cutter


Pencil


Screwdriver

Battery Disposal Warning:

As the end user, you are legally obliged to return used batteries. After use, you can return batteries free of charge to the designated collection points (e.g. municipal collection centres or retailers).

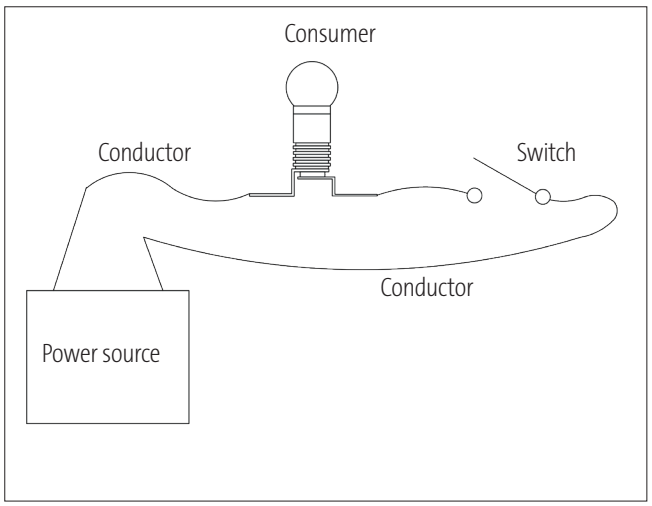
Garbage bin with cross:
Batteries should not be discarded as unsorted household waste.
Pb:
Battery contains more than 0.004 % by weight of lead
Cd:
Battery contains more than 0.002 % by weight of cadmium
Hg:
Battery contains more than 0.0005 % by weight of mercury

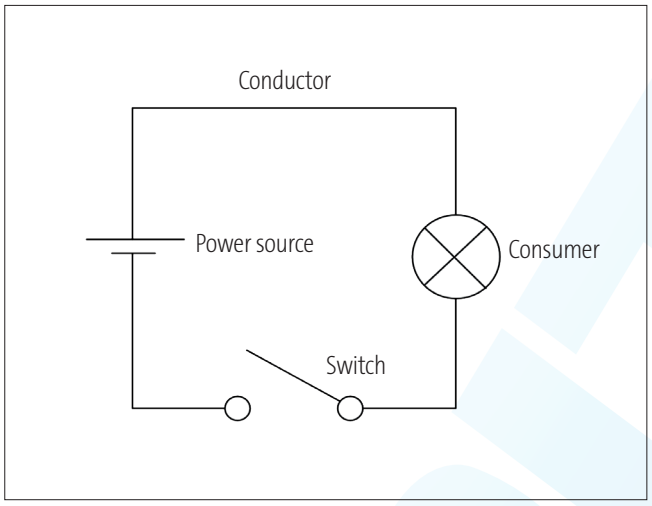
NOTE:

The OPITEC range of projects is not intended as play toys for young children.They are teaching aids for young people learning the skills of Craft, Design and Technology.These projects should only be undertaken and tested with the guidance of a fully qualified adult. The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Danger of suffocation! Not suitable for children under 36 months. Choking hazard!

Part List	Quantity	Dimensions (mm)	Description	Part no.
Plywood	1	200x100x10	Base plate	1
Wooden strip	3	50x15x10	Battery holder	2
Wooden cube	1	40x40x40	Support light bulb	3
Flat battery 4.5 V	1		Battery	4
Chipboard screws	2	3x20	Contact	5
Thumbtacks	12		Thumbtack	6
Pressure switch	1	29	Switch	7
Flashing LED E10	1		Lighting	8
Socket E10	1		Socket	9
Wire annealed	2		Wiring	10

OPITEC





Components of a simple electrical circuit

The very word "circuit" indicates that it must be a circle, something closed. The current can only flow in a closed circuit.

What components are needed to build a functioning circuit?

- a power source (battery)
- a light bulb (consumer)
- a connecting wire (cable)
- a switch for turning on and off

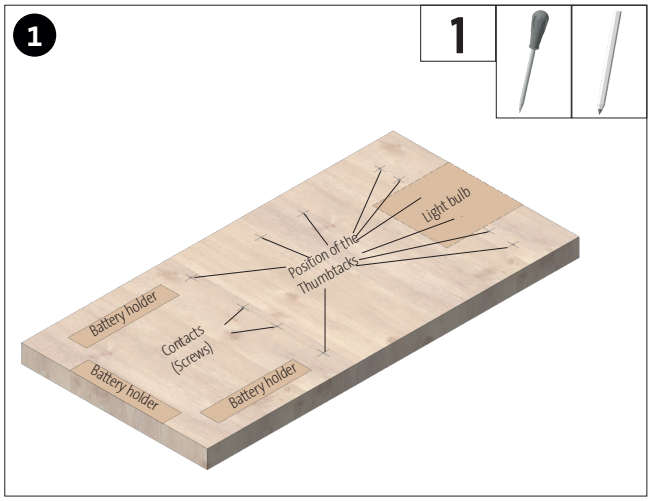
Illustration of a simple circuit with a switch.

The current must flow from the battery via a conductor, switch to the lamp (the consumer). And from there back to the battery.

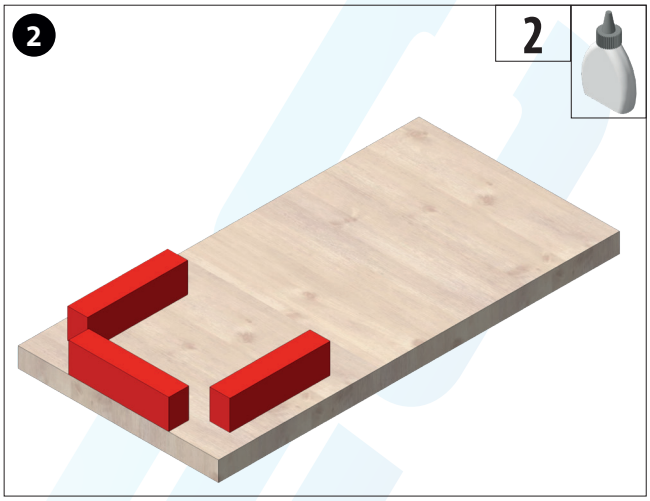
It is therefore necesary to create a circuit (closed electric circuit). The lamp (load) can therefore only burn if the current flows from one pole of the battery via the conductor (wire) to the switch and to the lamp (load) and from there (second pole of the lamp) back to the battery via a conductor. When the lamp is on, the circuit is closed.

NOTE:
Power source
Battery, power supply units, dynamo, socket (Attention 220V Danger to life!)
- good ladder:
Copper wire, aluminium wire, stranded copper wire
- Consumers:
Light bulb, motor, buzzer, magnet etc.
- there are plug-in connections (banana plugs and bushings), Screw connections (luster terminal), pinch connections (flat receptacle)
and soldered connections (wires are permanently soldered on).

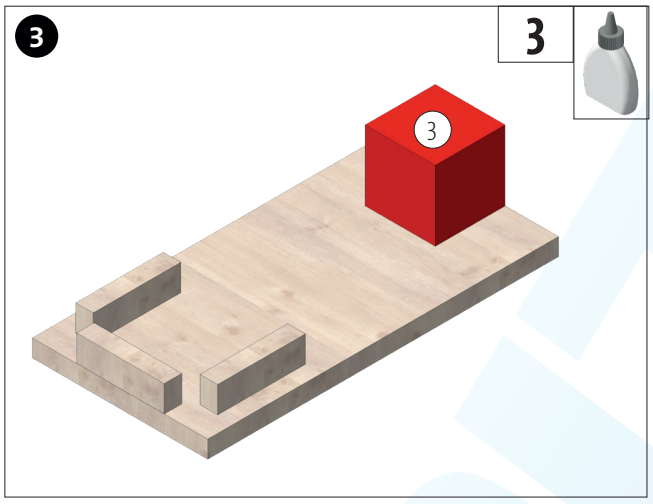
Caution:
Electrical voltages above 42 volts are life-threatening! Therefore, never carry out electrical experiments with voltage directly from the socket!



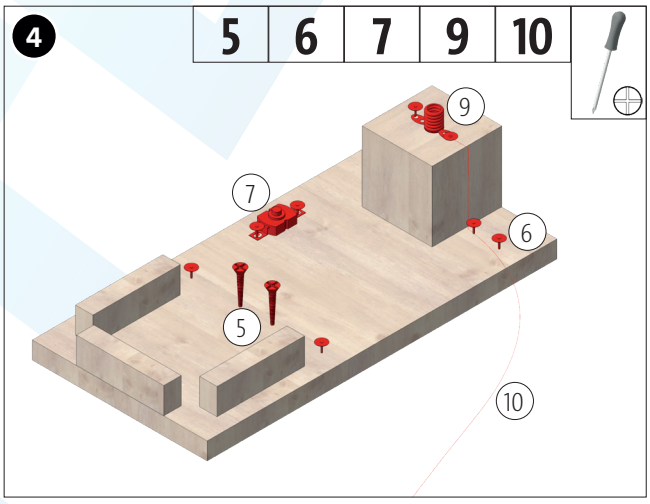
Transfer the template for the arrangement of the individual parts to the base plate (1). Mark the holes for the contacts and for the tacks with the centre punch.



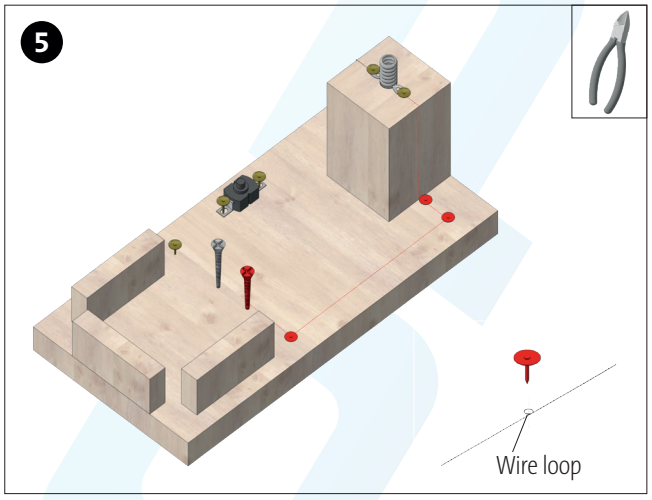
Glue on the wooden strips (2), as shown.



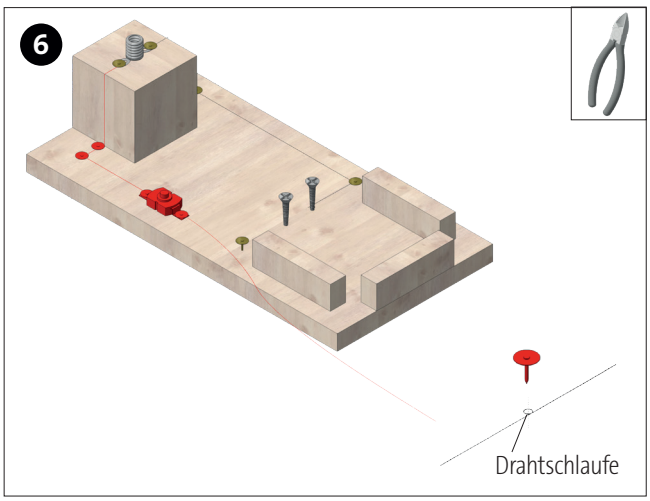
Glue the support for the light bulb (3) onto the base plate (1).



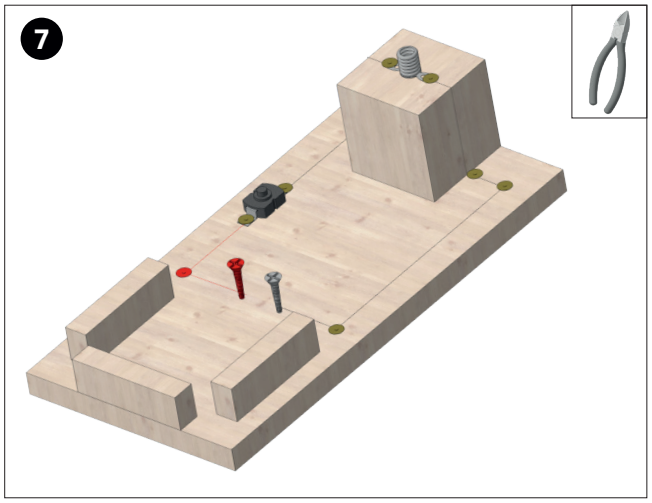
Attach the socket (9) and wrap the end of the wire (10) around a drawing pin (6) to fix the socket (9) to the wooden cube (3). Position the switch (7) and insert all drawing pins (6) halfway. Screw in the two screws (5) at the intended position.



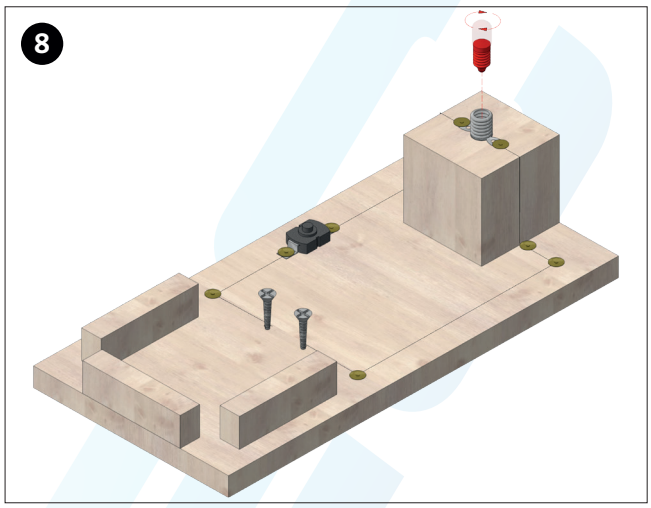
Wrap the wire (10) around the tacks and, at the end, wrap it around the screw (5) several times as shown and pinch it off. Press in the tacks to secure.



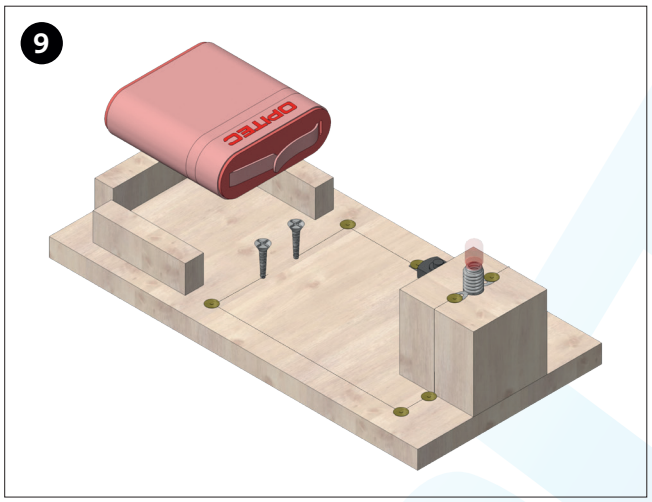
Wrap the wire (10) on the other side around the drawing pin (6) on the socket (9) and press tight. Fix the wire with drawing pins (6) and connect with the switch pull pin. Attach the end of the wire to the free switch pull pin and press it tight



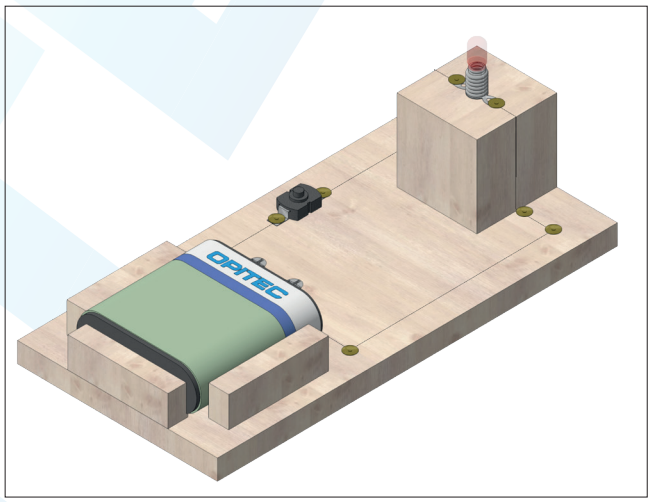
Connect the wire to the following drawing pin (6) and wrap it around the second screw (5). Cut off excess wire.



Screw the flashing lamp bulb (8) into the socket.



Insert the battery into the battery compartment and ensure that the contacts touch the two screws. Press the switch to switch on the light.



Done!

Template Arrangement Single Parts
SCALE 1:1