THE PRINCE'S FOUNDATION

SCIENCE, TECHNOLOGY, ENGINEERING AND MATHS

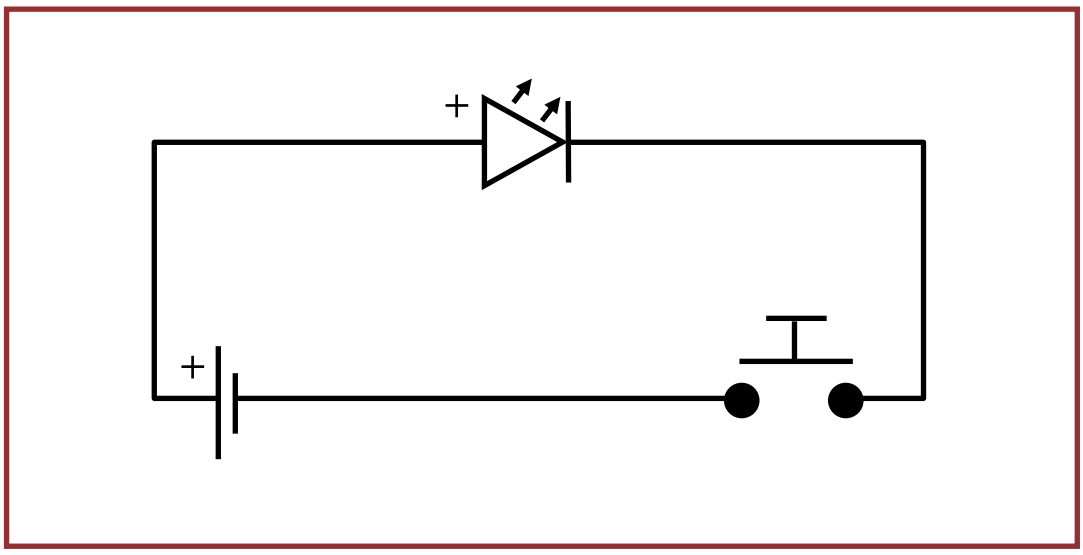
CREATIVE CIRCUITS

These Activities follow on from the Creative Circuits workshop that you have taken part in at Dumfries house STEM Centre. Using what you learned about Electricity at Dumfries House can you practice building circuits online?

Activity 1:

Build a basic circuit using Tinkercad

1. Set up an account on Tinkercad to use their free electronics simulator.
2. Follow the tutorials to learn how to use Tinkercad to build basic electric circuits. www.tinkercad.com/learn/circuits
3. Now can you create a simple circuit from scratch? go to www.tinkercad.com/dashboard
4. On the left of the screen click "circuits" and then select "create new circuit"
5. Can you create a circuit that matches the circuit diagram below?



On an LED the "anode" is the positive leg and the "cathode" is the negative leg. To get your LED to light up the positive side of the battery has to go to the positive side of the LED.

Activity 2:

Keep tinkering

1. Now that you can build a simple circuit on Tinkercad, try finding out what some of the other components do. You'll find some more circuit diagrams of the back of this sheet to try. Under the drop down menu on the right hand side you'll find some basic starter circuits that you can edit and build on.
2. See circuit diagrams over the page for some inspiration.

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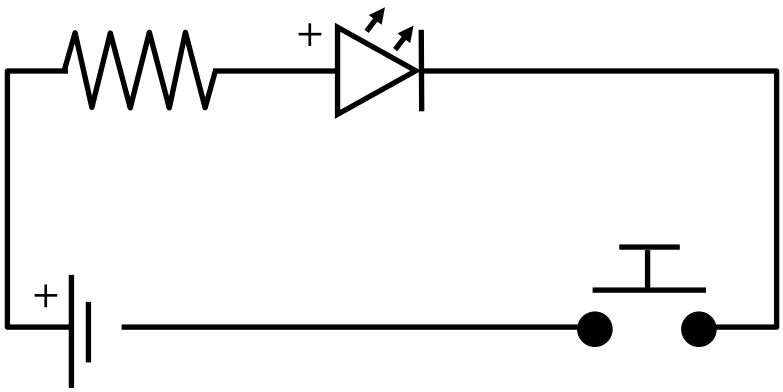
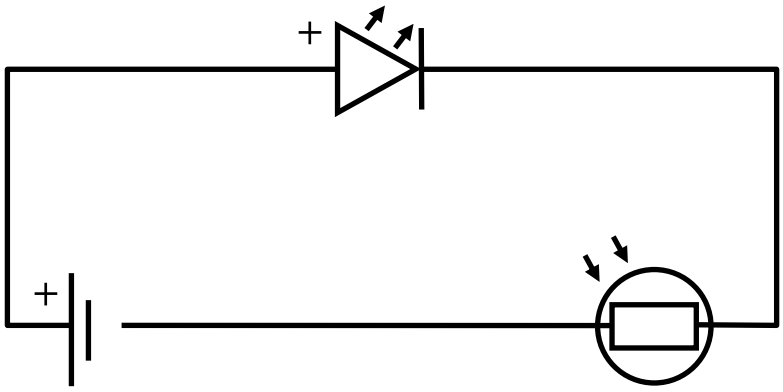
CIRCUIT DIAGRAMS

RESISTOR



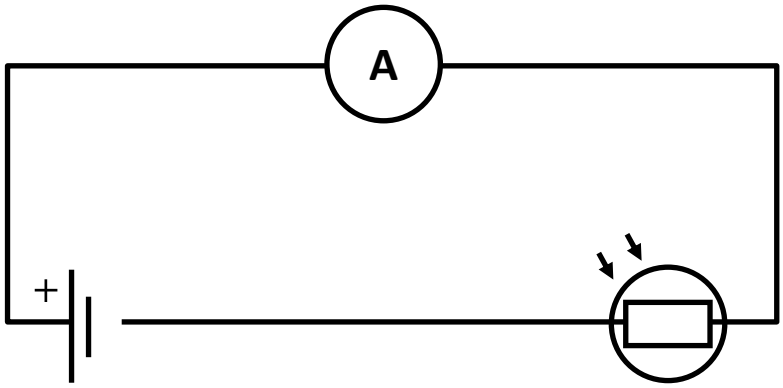
The new symbol is a RESISTOR. These limit the amount of current going through the LED so that it doesn't burn out too quickly. You can adjust the amount of resistance by clicking on it and changing the number. Start at "0" and work your way up to a suitable resistance.

PHOTORESISTOR



The new symbol is a PHOTORESISTOR. These limit the current to the LED depending on how much light hits them. Once you've built the circuit start the simulation and try adjusting the light by clicking on the photoresistor.

MULTIMETER



The new symbol is a MULTIMETER. In this case it is measuring Amps (the amount of energy). Once you have added your multimeter, you'll need to click on it and change it to "Amperage" mode. Try adjusting the photoresistor and see how it affects the amperage.