

## Mini-lite Penlight

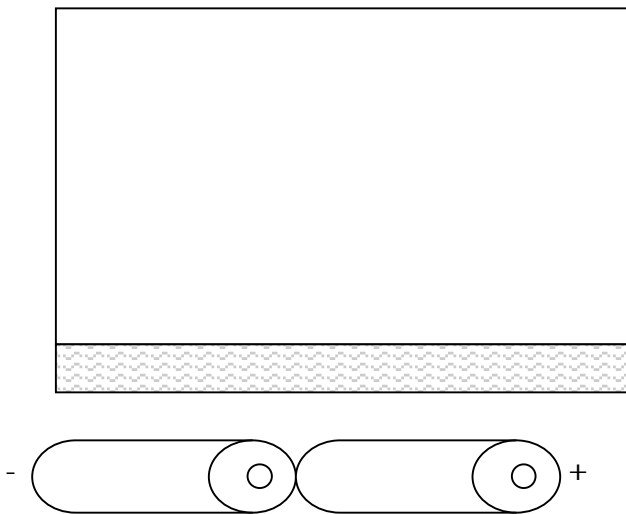
revised 12/07

*Supplies: 3X5 card, 2 AA batteries, 1 mini-lite with two leads(wires), 'Scotch' tape, 5cm square of aluminum foil, scissors, wire stripper (optional)*

**\* Safety note: cheaper batteries may not have good insulation, increasing the short circuit risk. Do not use batteries which have nicks or other damage to the outer plastic label! Duracell, Maxell, and Eveready are good brands.**

First, cut the 3X5 card to 3X4in. (7.5X 10.2cm).

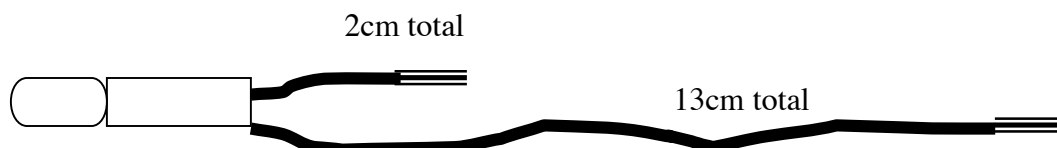
Attach transparent tape along the long edge of the card, leaving half the width hanging over...



Tape the batteries as shown to the edge of the card, leaving about 1cm (1/2 in) excess card on the bump end of the battery. The flat end of the battery should just stick out over the end of the card. Make sure the batteries are touching!

Next, roll the batteries up in the card (like a tube) and secure with transparent tape. You are now ready to prepare the light.

You will need a light with one lead which is at least 13cm long. The other can be 2cm in length. Trim the leads with scissors to the correct length. Strip about 1cm of insulation off each lead, exposing the copper strands. It is easiest to do this with strippers, but scoring with scissors and using the crotch of the scissors to pull off the insulation also works. **\*This is probably not a job for elementary students.\***



Assemble the light by putting the short lead into the hollow ('bump' end of the tube. Crumple a 5cm square of foil into a loose ball and wedge it into the hollow end with the Lead. Tape over with transparent tape. Tape the long lead down the side of the tube with tape. There should be about 1.0 cm left over. Use the stripped wire to complete the circuit and turn your light on! **\*If the student reports overheating, check to see if the plastic battery insulation is damaged. It is possible to have a short circuit if the bottom wire touches the outer metal case of the battery.**

A small piece of tape can cover the end of the battery when the light is not being used.

For the price of two batteries, students can make and be responsible for their own lights!

