



Electric Play Dough Project 2: Rig Your Creations With Lots of Lights!

https://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p074/electricity-electronics/squishy-circuits-project-2 (http://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p074/electricity-electronics/squishy-circuits-project-2)

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Experimental Procedure

1. Optional: if you are making your own homemade conductive and insulating in addition to using the dough in the kit, follow the instructions on [Electric Play Dough Recipes](http://www.sciencebuddies.org/science-fair-projects/references/squishy-circuits-recipes) (<http://www.sciencebuddies.org/science-fair-projects/references/squishy-circuits-recipes>).
2. Insert the four AA batteries into the battery pack that came with your kit.
3. First, do an experiment to see how many LEDs you can connect in series.
 - a. Start by connecting one LED to the battery pack using Play-Doh. Remember from Project 1 in our series that you should use insulating modeling clay between the conductive Play-Doh pieces to prevent short circuits between the LED leads.
 - b. Now, add a second LED in series, like in [Figure 5](#) ([#figure5](#)) from the Introduction. Do the LEDs get dimmer?
 - c. Add a third LED in series. Do they get even dimmer?
 - d. Continue this process until the LEDs do not visibly light up at all.
4. Now, do an experiment to see how many LEDs you can connect in parallel.
 - a. Start by connecting one LED to the battery pack using Play-Doh. Remember from Project 1 that you should use modeling clay between the Play-Doh pieces to prevent short circuits between the LED leads.
 - b. Now, add a second LED in parallel, like in [Figure 6](#) ([#figure6](#)) from the Introduction. Do the LEDs get dimmer?
 - c. Add a third LED in parallel. Do they get dimmer?
 - d. Continue to add LEDs in parallel. Do they eventually get dimmer? Can you make them brighter by keeping them very close together?
5. Now, plan out the shape that you want to make (drawing it first is a good idea) and how you want to add lights. Remember that if you want to use a lot of LEDs, you will need to connect them *in parallel*, and that the actual shape of the Play-Doh does not matter, as long as each LED has its own "loop" formed with the battery. You might need to use modeling clay in some places to prevent a short circuit. [Figure 8](#) shows an example design.
6. Build your shape and start adding lights! Remember from Project 1 that LEDs only work in one direction (the longer lead should be connected to the positive side of the battery pack, with the red wire), so if one does not light up, try flipping it around. If your circuit is not lighting up at all, make sure you remembered to turn your battery pack on, and that you do not have a short circuit somewhere. If you are still having trouble, you can refer to our [FAQ](http://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p074/electricity-electronics/squishy-circuits-project-2#help) (http://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p074/electricity-electronics/squishy-circuits-project-2#help) [section](#).



Figure 8. An example design with four LEDs in parallel. The wings of the butterfly are made from conductive Play-Doh and the body in the middle (yellow) is made from insulating modeling clay.

Frequently Asked Questions (FAQ)

FAQ for this Project Idea available online at https://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p074/electricity-electronics/squishy-circuits-project-2#help (http://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p074/electricity-electronics/squishy-circuits-project-2#help).