



JUNIOR SEABEE

CE – CONSTRUCTION ELECTRICIAN



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Let's Light it Up!

Construction Electricians ensure that buildings the Seabees make will have lights and power and that places like streets, runways and parking lots have access to electricity to create safer environment for everyone. Their jobs are based on the idea of a simple electric circuit, which can be adapted and compounded to create power generators as large as 2,500 kW. To give some perspective, that's enough power to light up an entire neighborhood!

In our CE project, we're going to look at what makes up a simple circuit, how they are created and how they can be adapted. We'll also talk about different items in your home and whether or not they can be added to a circuit and complete the circuit. Throughout the Junior Seabee program we have tried to use items that can be purchased in local grocery, dollar stores, or big box stores, but for this program we have been unable to find the light bulbs or battery box holders locally, even at a battery and light store. You can find "5mm LED lightbulbs" and "AA switch battery pack" online.

For this project, we will need the following:

- 1 or 2 LED lightbulbs 5mm (2v)
- AA Switch Battery pack with 2 AA batteries (Battery Box holder)
- Conductive dough
 - Most purchase play dough will work as conductive dough
 - or
 - Mix the following ingredients thoroughly in a zippered plastic bag
 - 1 ½ C Flour
 - ¼ C Salt
 - 1 Tbsp Cream of Tartar
 - 1 C water
 - 2Tbsp Vegetable oil
 - Food coloring (optional)

JUNIOR SEABEES CAN DO TOO!



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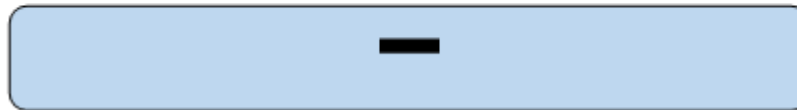
- Small items of different make-up (plastic, metal, glass, paper, etc.)

Simple Circuit

Let's talk about some of the basics of working with a circuit.

A circuit is a path, and electrons travel along the path to get back to a source of power. In order for a circuit to be complete, the path must be complete. If there is a break in the path, there will be a break in the circuit and the electrons will not complete their journey.

- 1) Insert two AA batteries into the Battery pack.
- 2) If you are creating your own dough, go ahead and mix that up. Using the zippered bag reduces the amount of food coloring that will get onto your hands.
- 3) Once it is mixed up or if you are using store bought dough, remove the dough and split the dough into at least 2 sections. You can make "worms/snakes" from the dough or flatten it out and make it into "tape." If you want, you can mark one with a + sign and the other with a – sign. This will be helpful later when you are adding your lightbulb and batteries.

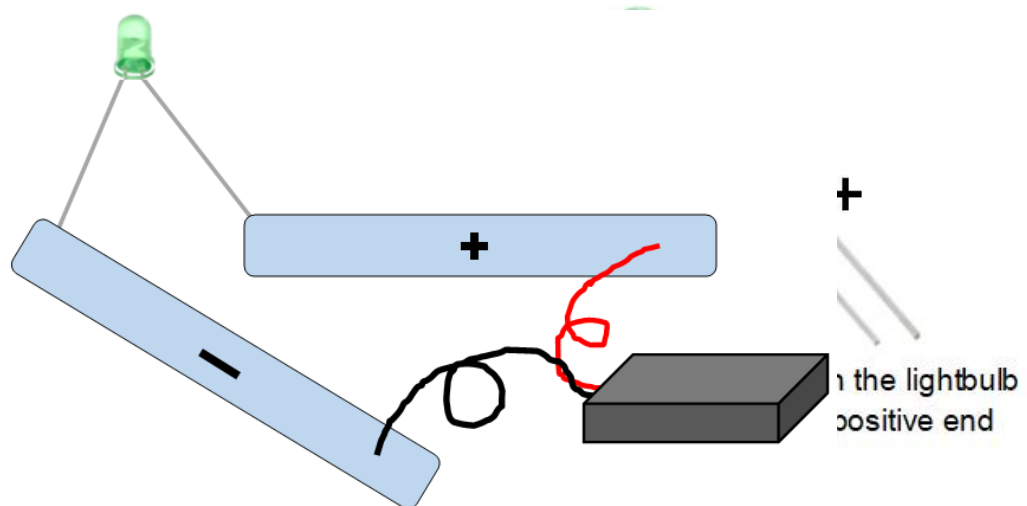




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4) Take a look at your light bulb. The longer post is generally the positive end. Take the light bulb and gently spread the two attached wires, putting one end into each piece of dough. Take a look at your battery pack. One wire should be red and one should be black. The red wire is positive and the black is negative. Try inserting the red wire in the side with the positive probe from the light bulb and the black wire into the negative.

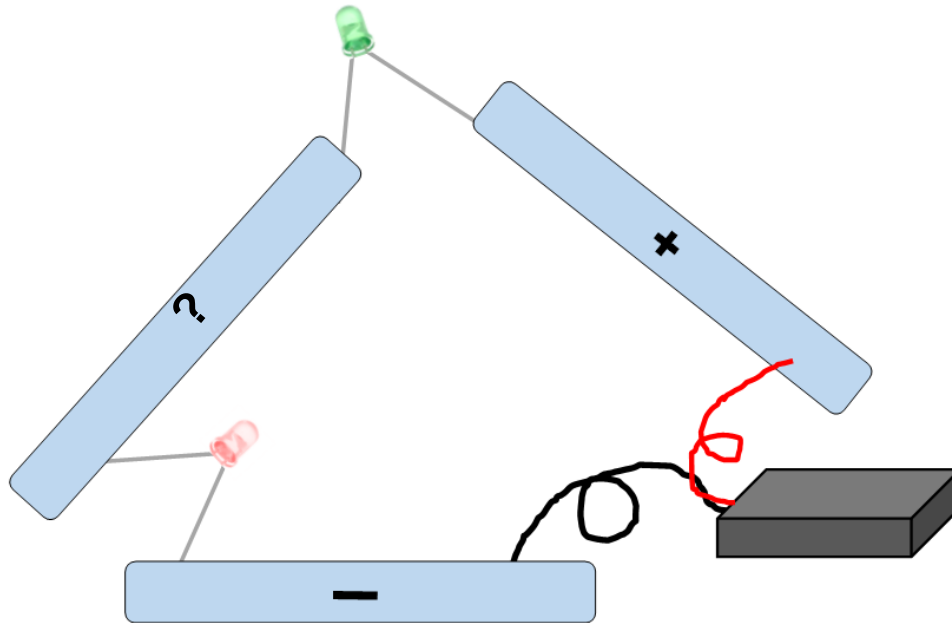
What happens? Does your lightbulb light up? If not, try switching the wires. Does that make your lightbulb light up?





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5) Let's see what else we can do to play with our circuit. What happens if we try to add another lightbulb and another piece of dough? Now you have a more complex circuit. Do both of your lightbulbs light up? Try switching the way that the new lightbulb faces.



6) Take a look at the items that you gathered to explore. Do you think that any of these items could take the place of the third piece of dough and still complete the circuit? Replace the third piece of dough with a blade of grass – do the lightbulbs light up? Try again with plastic, metal, glass, paper or any other items you can find.

7) Clean-up is always the last part of anything we do!

8) Please remember to post pictures on social media using #JuniorSeabee and #USNSeabeeMuseum so the world can see what you've learned. Share your creations on our Instagram or Facebook pages – tag us at **U.S. Navy Seabee Museum** and don't forget to follow us!