This is a step-by-step guide to making your own Electronic Greeting card. The equipment you should have at your station: Bare Paint Pen, Card Template, Scissors / Craft Knife Wire snippers, Needle-nose Pliers, Glue Stick, Cutting Mat (if using knife), Ruler

We hope you enjoy this creative task, learn some new technological skills and apply them to your life in useful ways. Enjoy!

MAKING YOUR ELECTRONIC GREETING CARD

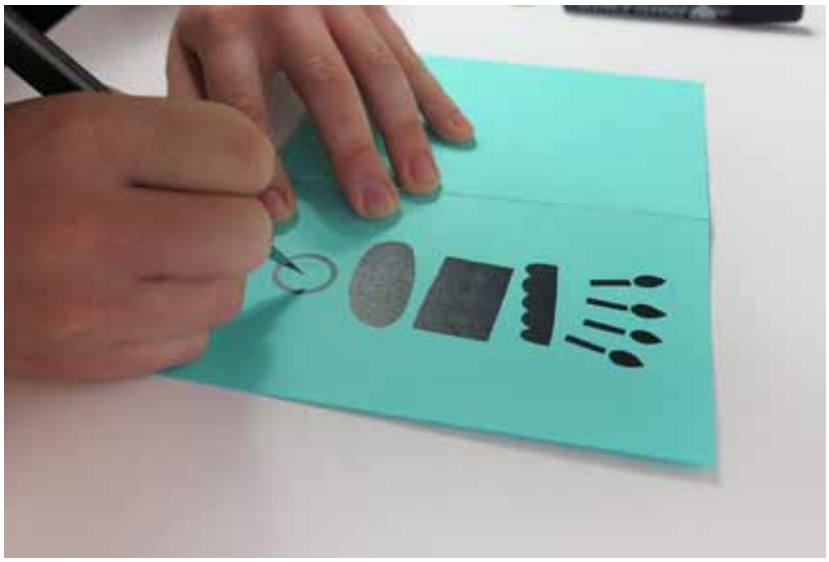
Parts:
1) 1x Bare Pen
2) 3x Card Templates
3) 3x Red Flashing LEDs (light-emitting diodes)
4) 1 x Rainbow LED
5) 3 x 3V Coin Cell Batteries

Additional Equipment:
6) Glue
7) Scissors
8) Paintbrush
9) Cutting Knife
10) Pliers
11) Wire cutters

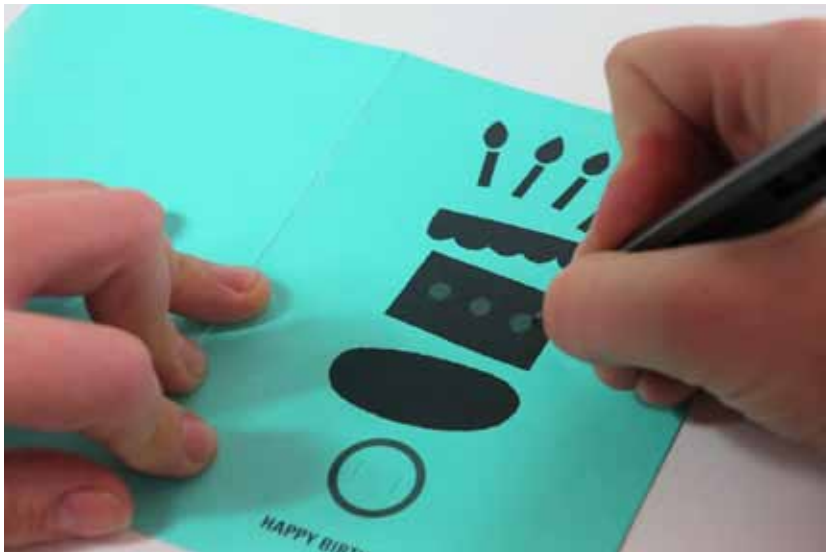
1. Make your card body

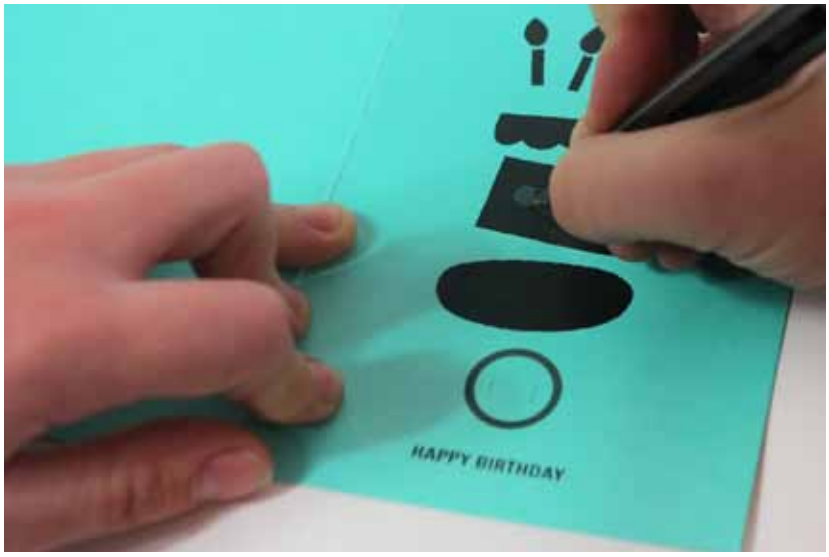
1.0 Find your card template or download a new one.
If downloaded please print your template onto coloured piece A4 paper.
1.1 Open up the card and on the inside cover you will see the circuit drawn out for you. Take note of the symbols what they stand for and also which way round the components go (+ and -)

1.2 You now need to make cuts for each of the components to slot into too. For this you will need a craft knife (Children gets adults to help at this stage). Firstly make slits either side of the battery spot.



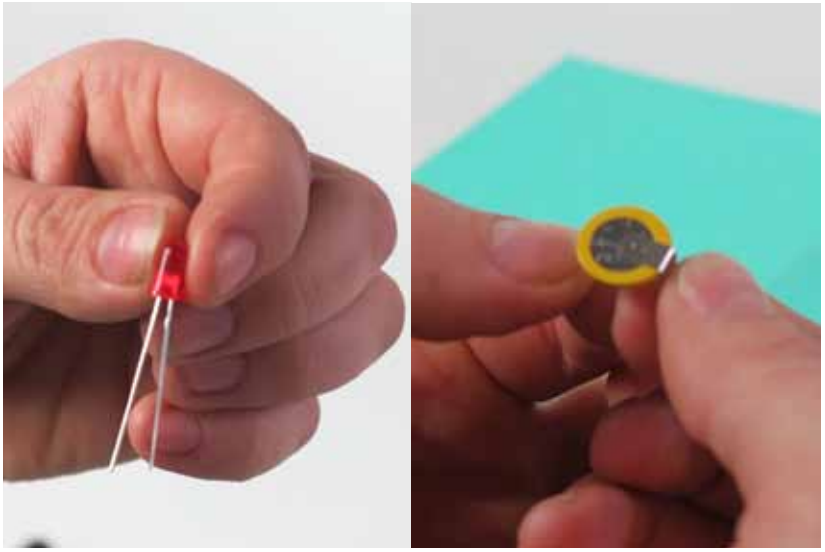
1.3 Then repeat for all the LEDs. Make sure you check the diagram to see which way round they go,and make a slit either side of the circle.



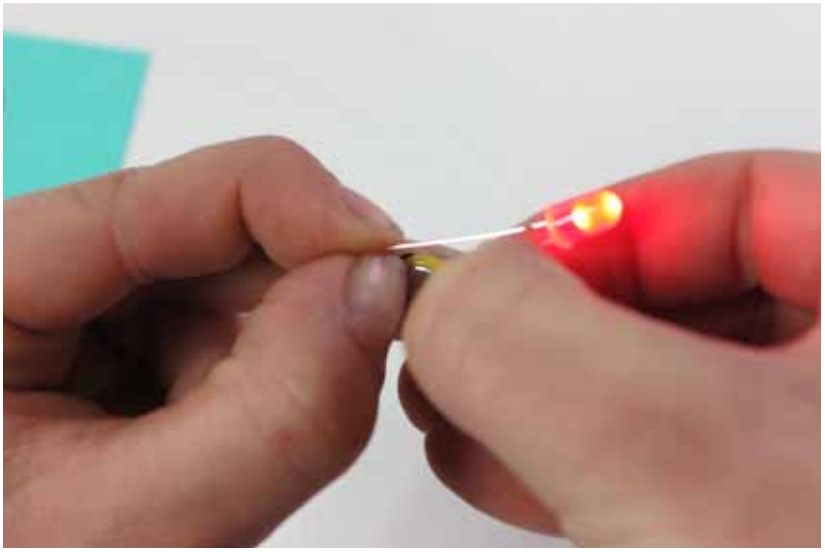


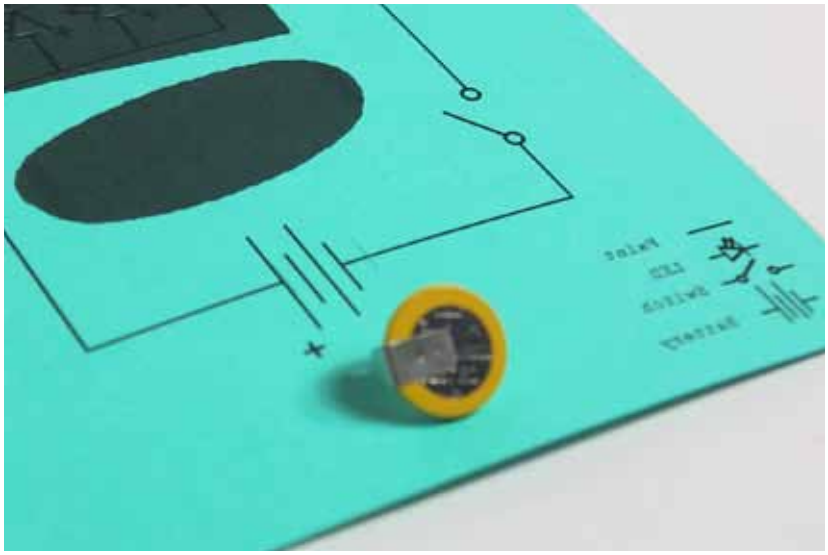
2. Components

2.0 Now its time to put your components in place. Open up your card and have a look at the circuit key - notice the little symbols with the plus and minus signs - these show you where your components go. Batteries and LEDs are polarised which means you have to put them into your circuit the right way round for electricity to flow. This diagram is going to help you do that. The only thing you have to remember is that the long leg of the LED is positive and the leg that comes from the top of the battery is the positive leg.



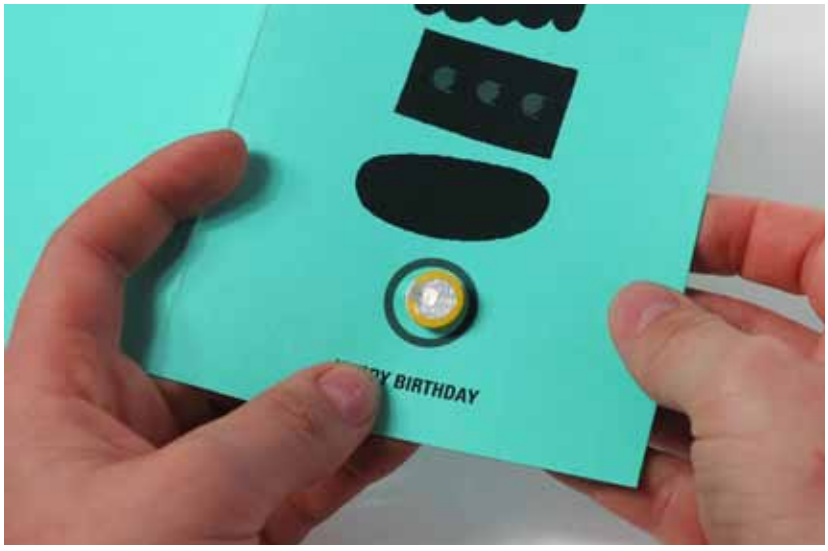
2.1 Its always a good idea to check your components before you paint them into the circuit. So put positive leg of the LED to the positive leg of the battery and the same with the negative legs and your LED will light up. If it doesn't double check you have everything the right way round.





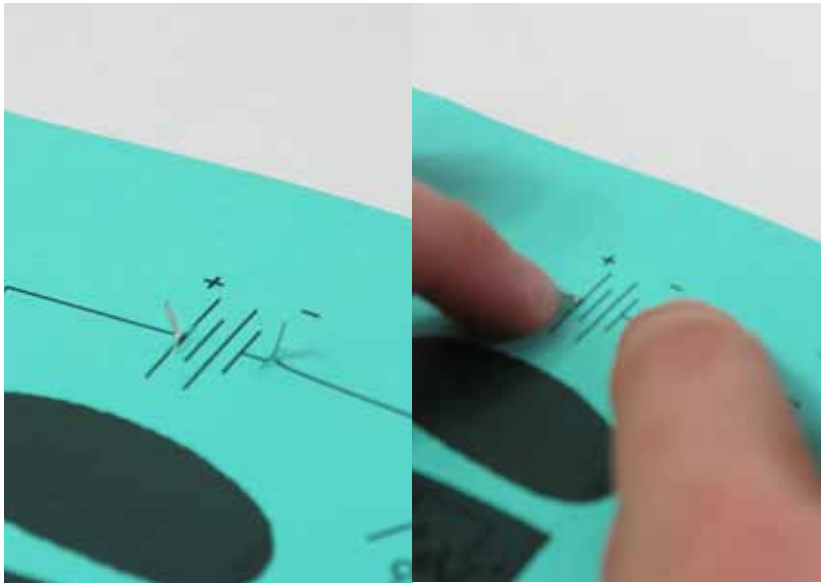
2.2 Line up the battery with the diagram to make sure you have it the right way round.

note: remember that when you place the battery in from the front it is the reserve so you will need to rotate the battery 180 degrees.

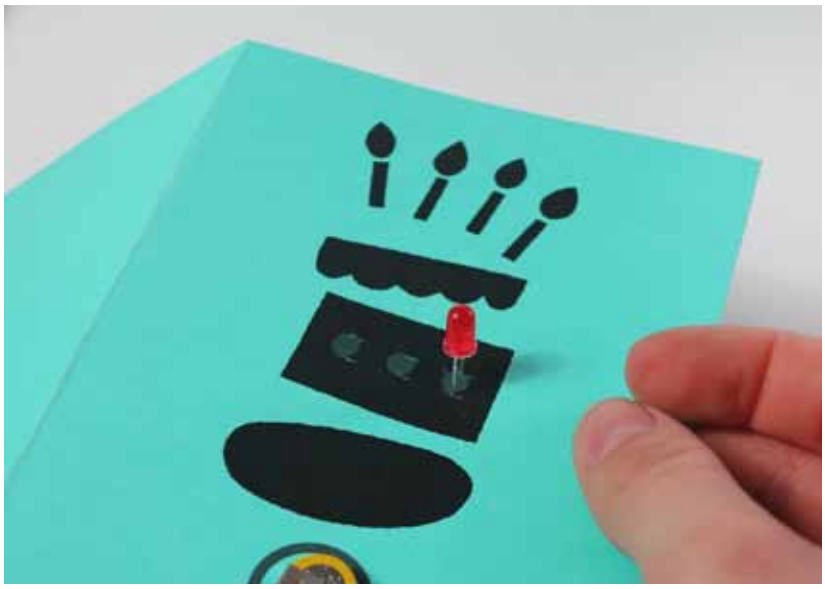


2.3 Then place the legs through the front of the battery using the slots you made earlier.

2.4 Next turn the card over and push the legs down flat against the card surface to hold it in place.

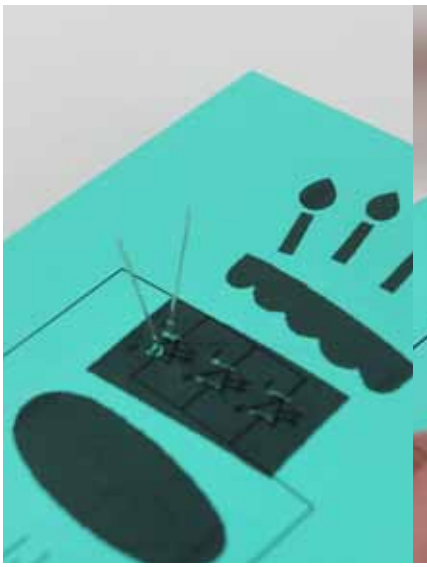


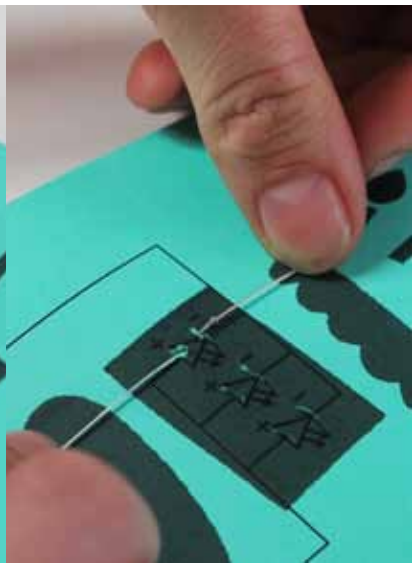
2.4 Now repeat with the first LED, again checking that you have it the correct way round.



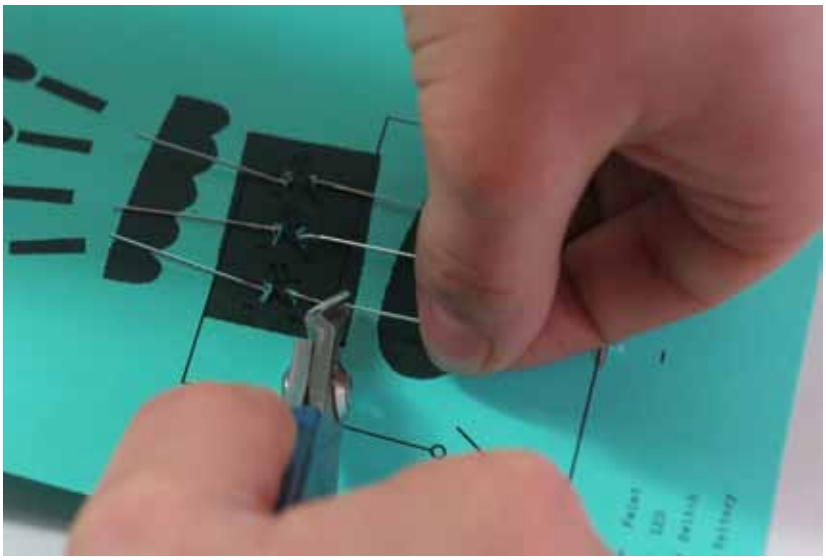
note: If you are worried about getting the components the wrong way round one tip is to mark the positive leg with a permanent marker so you can identity it once its through the card.

2.5 Repeat as you did for the battery splaying the legs out against the card to hold in place and repeat until all 3 LEDs are in place.

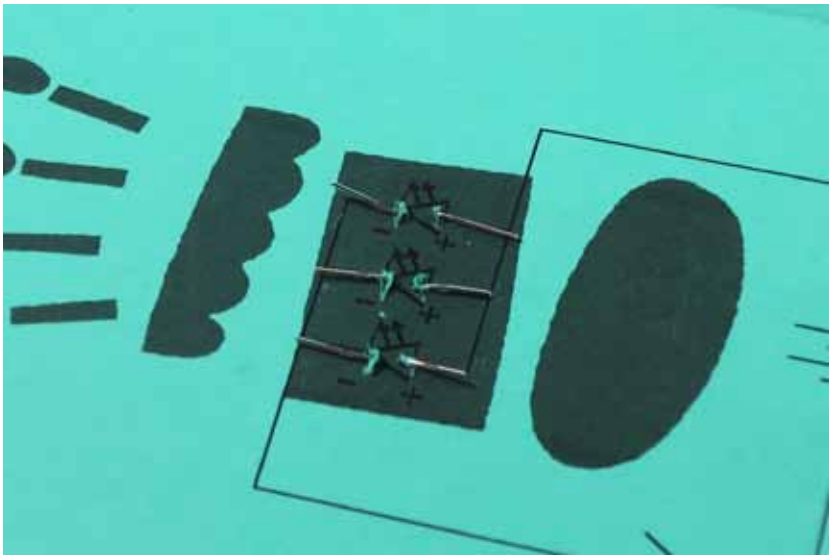




2.6 Now get your side cutters and carefully trim the legs. Please make sure you hold onto the end of the legs when doing this so they don't fly off and hit someone.



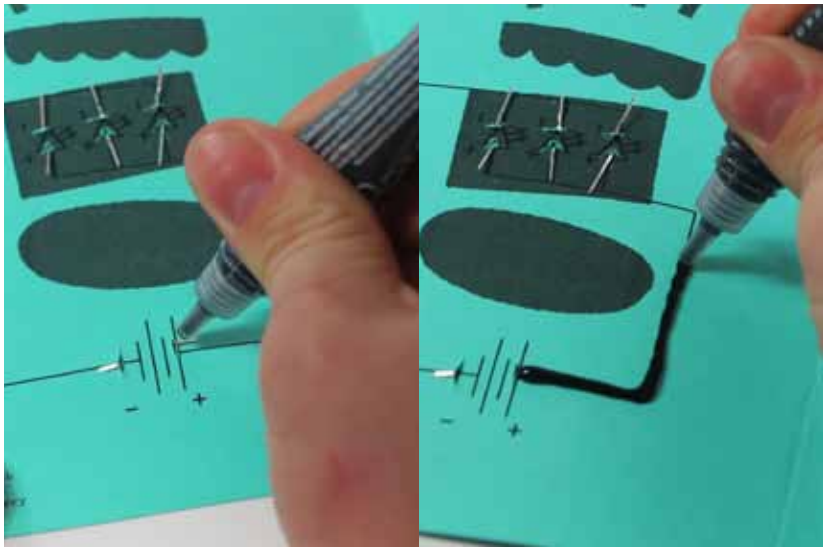
2.7 Repeat for all of the LED legs until you have them nicely lined up with the circuit diagram.

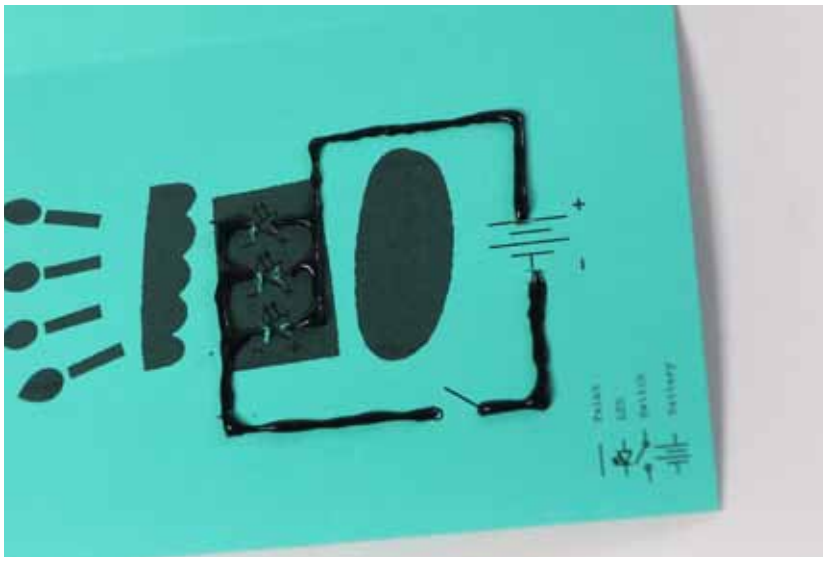


3. Paint your circuit!

3.0 Get your bare paint pen and carefully follow the lines of the circuit until all of the lines and all of the components are covered.

Make sure you are careful to keep the gaps clear of paint in between the components so they don't short circuit. Also take note of the switch and keep a gap there. Otherwise your card will be constantly on.

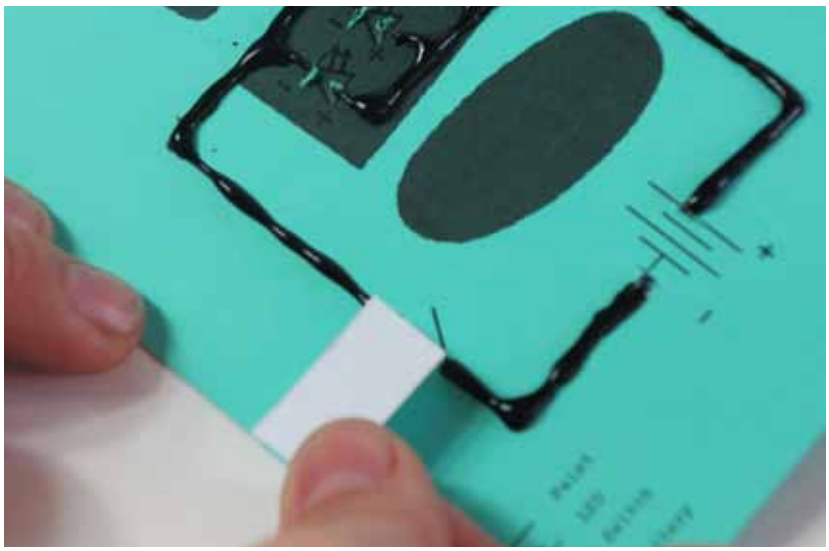




4. Make a Toggle Switch

4.0 Switches are useful if you don't want your card to be on all the time (and especially if you want to post it to someone). This switch is just a simple flap of paper, painted with Bare Paint to bridge a gap in the circuit.

Find that bit of extra card and using a craft knife or scissors cut a small piece off. Check it is the right size as it needs to completely cover the gap.

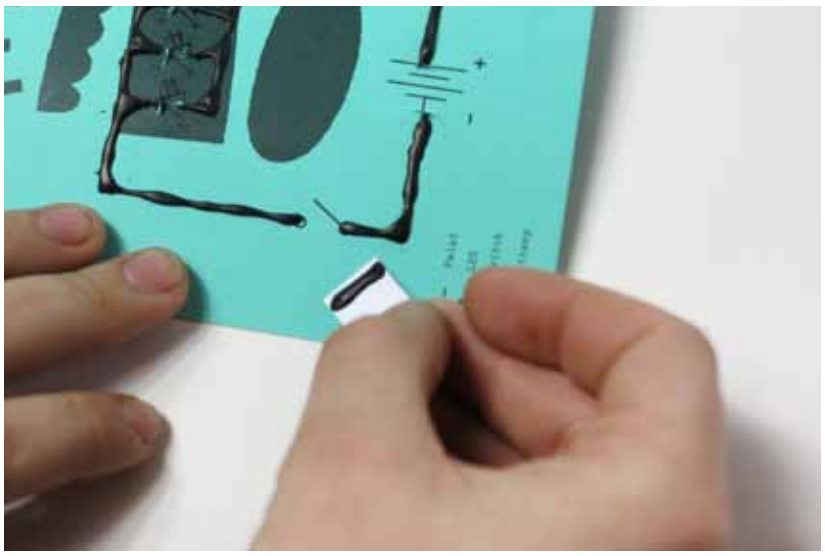


4.1 Next we're going to paint it with a patch of Bare Paint so that when it closes, it makes a bridge across the gap and turns the circuit on!

4.2 Now leave the switch and the circuit to dry. If you a warm place leave there to speed up the process.

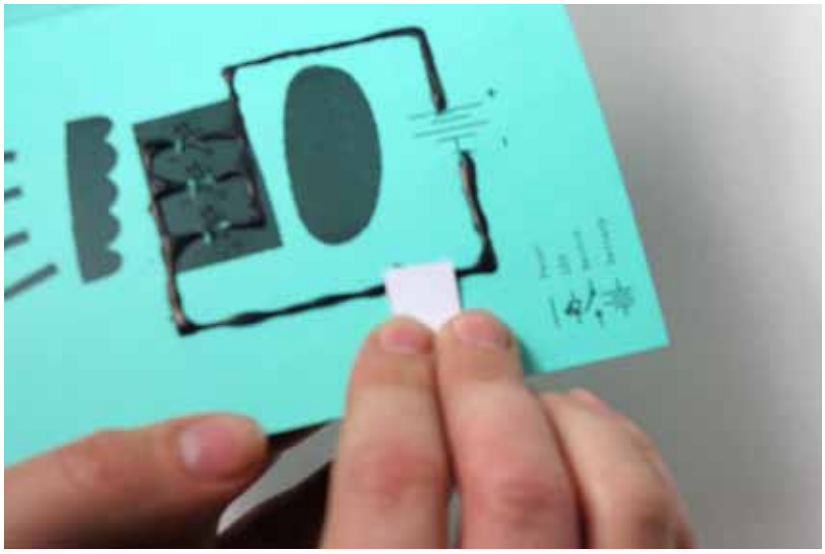
5. Time to turn it on

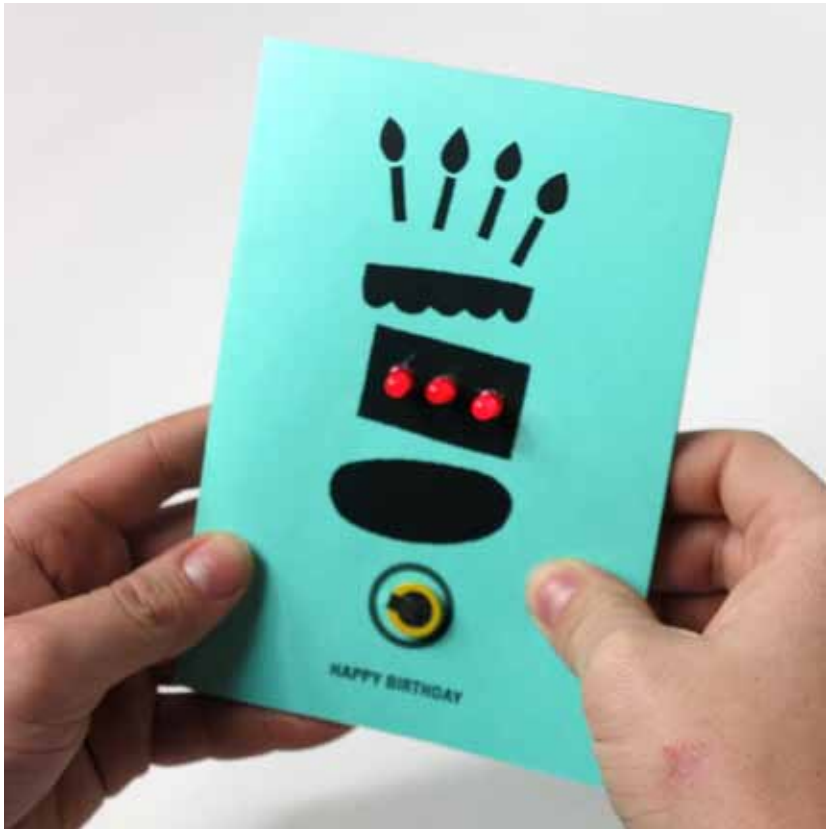
5.0 Check that both the circuit and the switch are now dry - test by touching the paint.



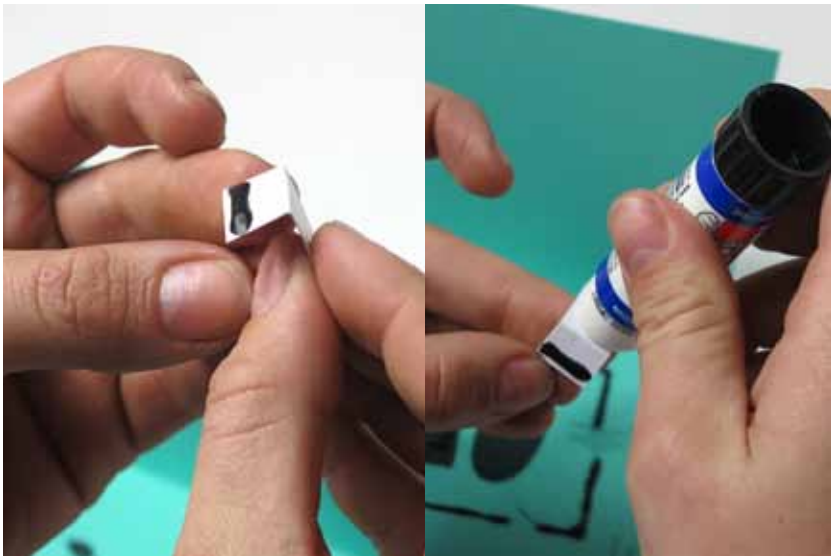
5.1 Then hold the switch in place and turn over and check that the LEDs are on.

note: if they don't the circuit may still not be dry enough so leave it another half an hour and try again.





5.2 Now fold your switch in half and add glue to the half without the bare paint on and stick to the card body to create your finished switch.



6. Your card is finished

Now hold down the switch and watch your card light up!!