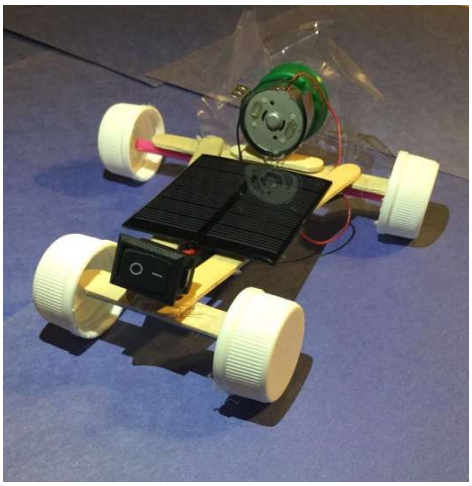
Solar Powered Car

Grades (6-12)



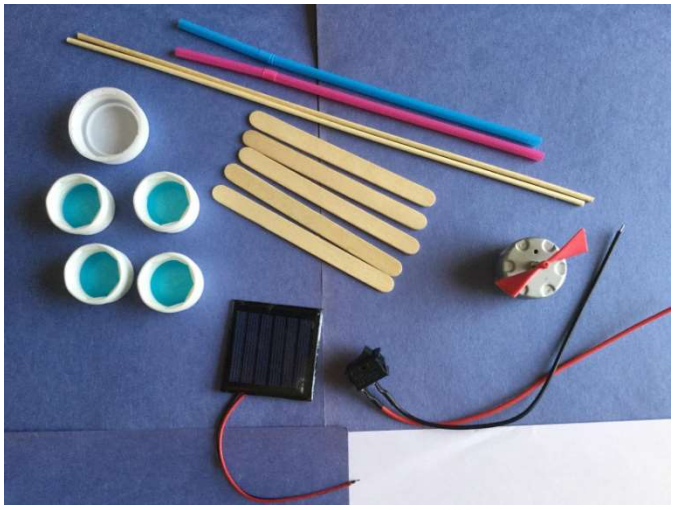
You will use your knowledge and understanding on solar energy and learn how to apply it in order to calculate the energy into the system and the power output. You will also learn about the importance of efficiency.

Follow the instructions provided. Remember to be creative and have fun! ☺

Final Product

Materials Needed for Project:

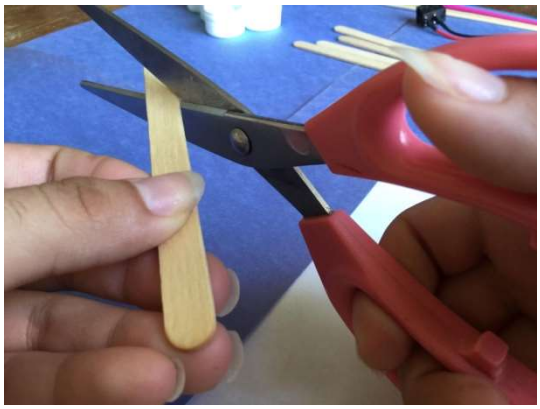
Quantity	Item	Item Label	Included Yes/No
5	Popsicle Sticks	A	Yes
2	Straws	B	Yes
2	Wood Stick	C	Yes
5	Bottle Caps	D	Yes
1	Hot Glue Gun	E	Yes
1	3V Solar Panel	F	Yes
1	DC Motor	G	Yes
1	On/Off Switch	H	Yes
1	Pencil	I	Yes
1	Scissors	J	Yes
2	Water Bottle		Optional
1	Fan Blade		Optional

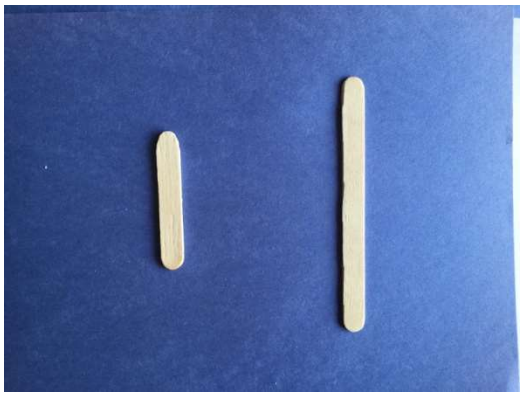


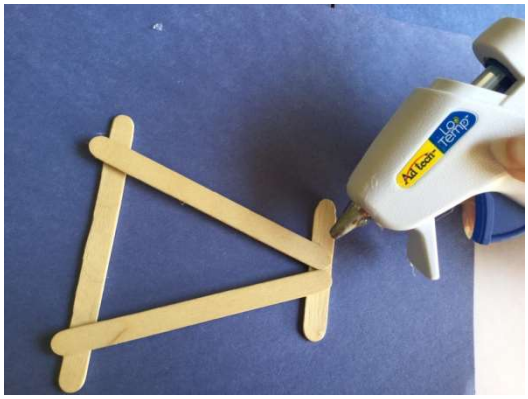
Materials Needed

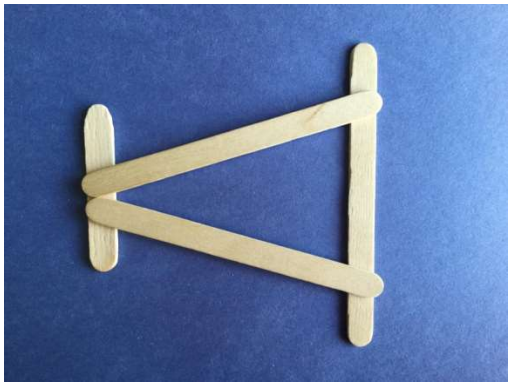
Procedure:

1. Grab a popsicle stick and cut it into a smaller piece with a length of 6 cm. Get 3 more popsicle sticks and place them in a triangular manner. Hot glue gun all the sticks into place.

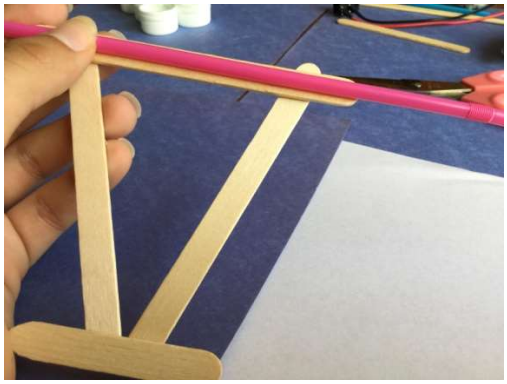
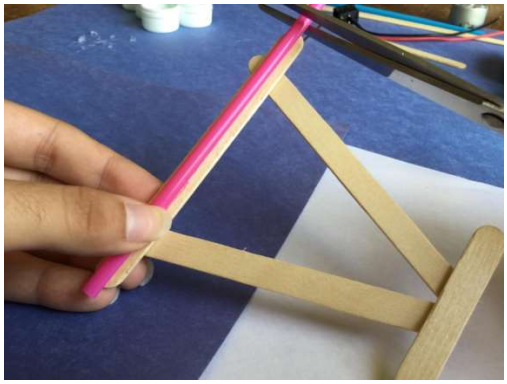
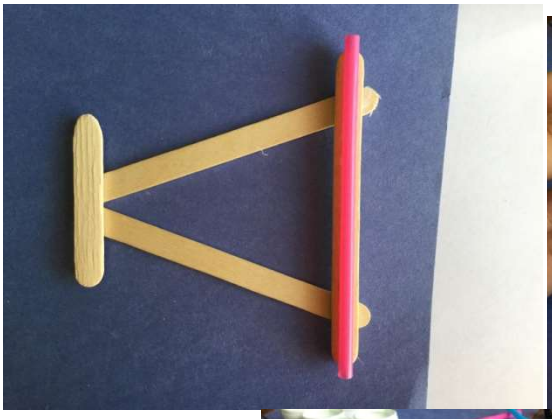
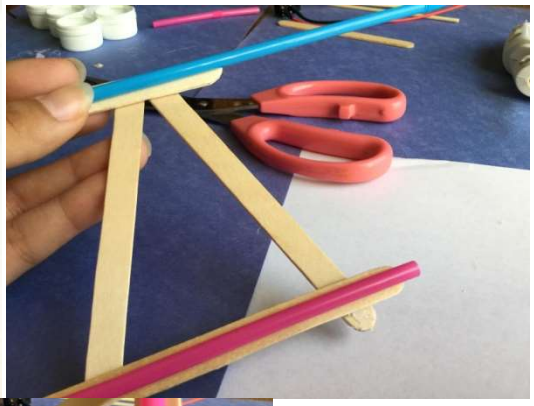
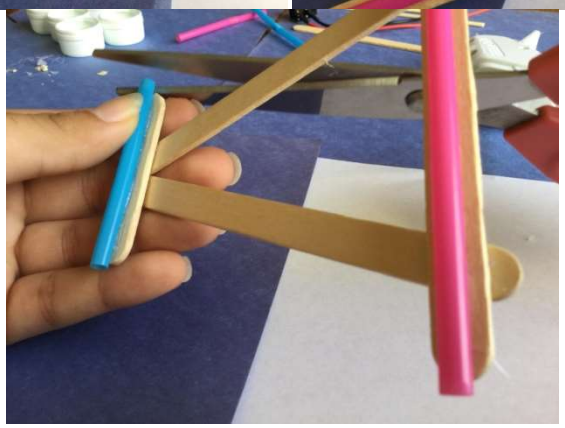




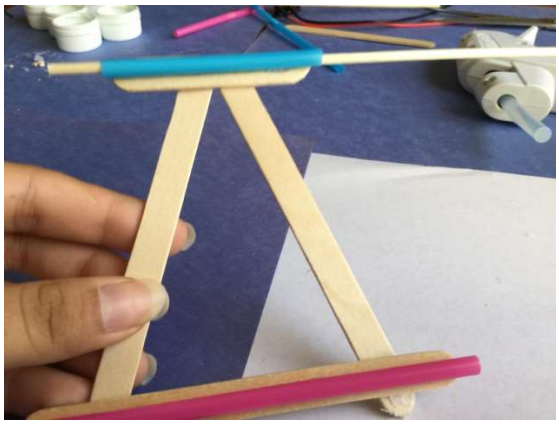
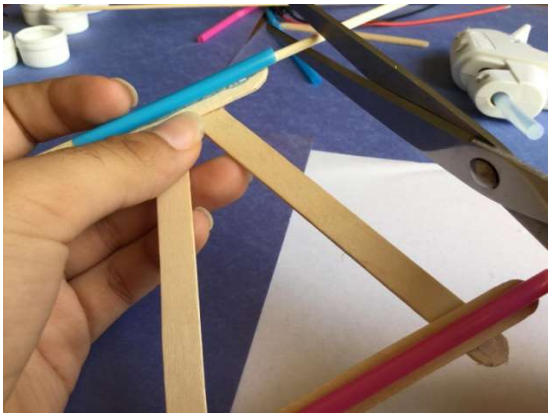




2. Get two straws and attach them on top of the longest and shortest popsicle sticks. This will be the front and back of your solar car. Remember to cut the straws to adjust them to be the same size as the popsicle sticks. Glue each straw on the popsicle sticks accordingly.

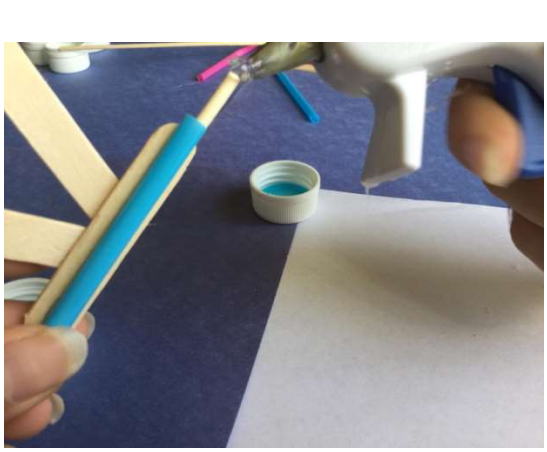
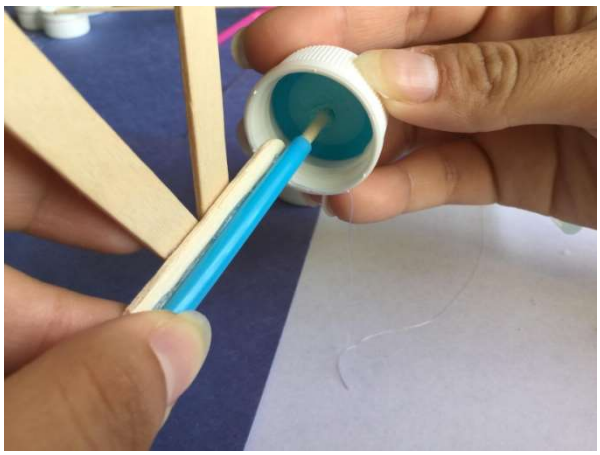
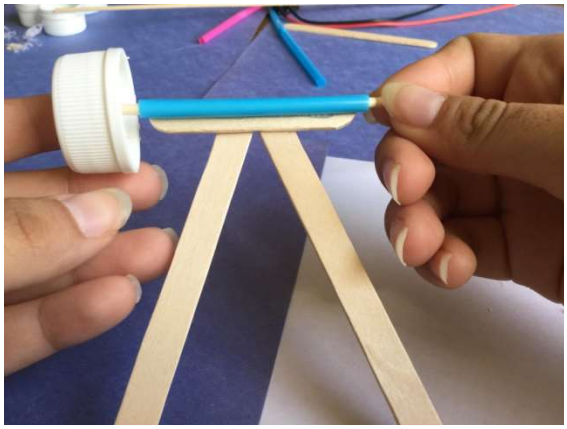






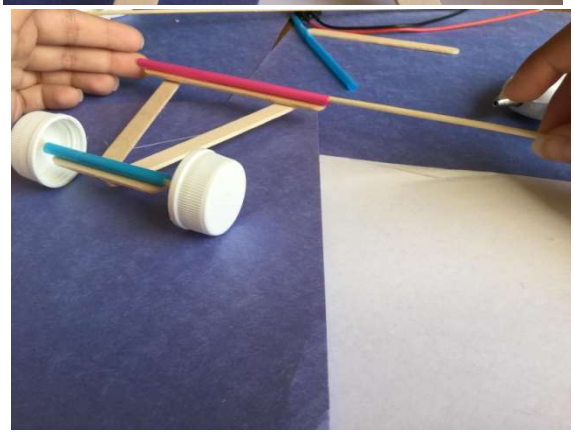
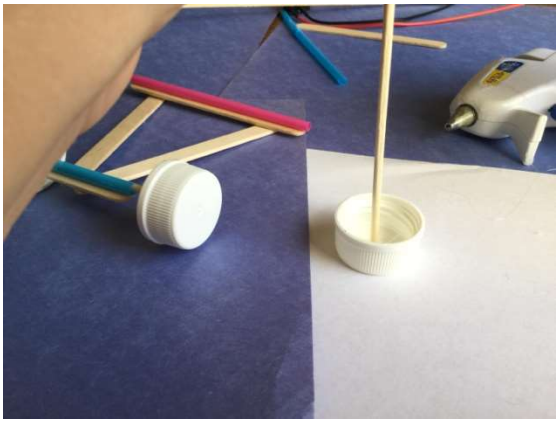
3. Insert a wood stick inside the straw and cut the remaining length so the distance between the straw's edge and stick's end are 1 cm apart. Do the same for the other ends of the straws/wood sticks.

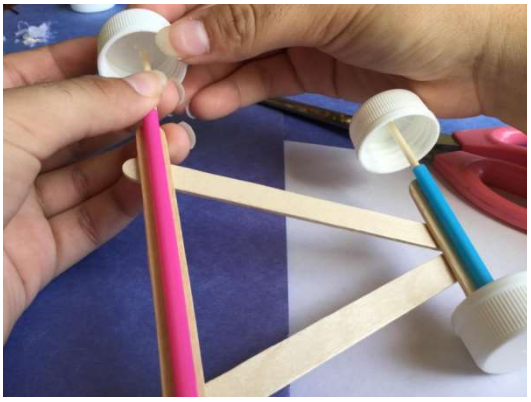



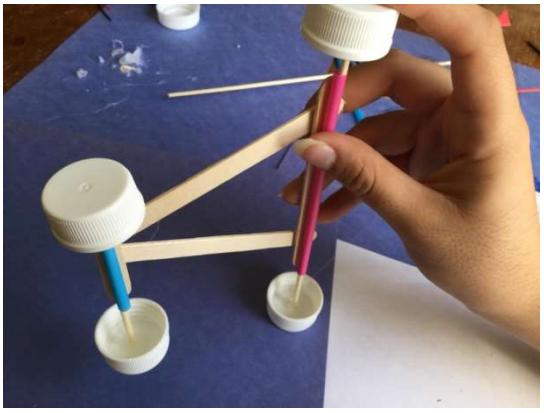

4. Hot glue gun the tip of the wood stick and the inside of the bottle cap and join them together. Before gluing anything else, make sure to fit the wood stick into the straw and

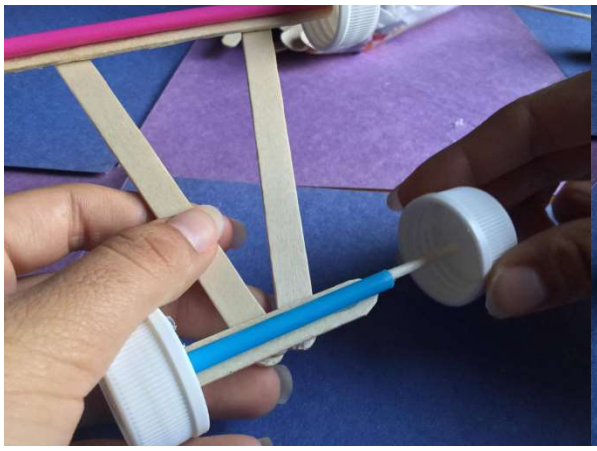
measure the distance between the bottle cap and the edge of the straw so the car can have mobility. Without pulling out the wood stick from the straw, you will hot glue gun the inside of another bottle cap with the other side of the stick. Repeat this same procedure for the other wood stick.

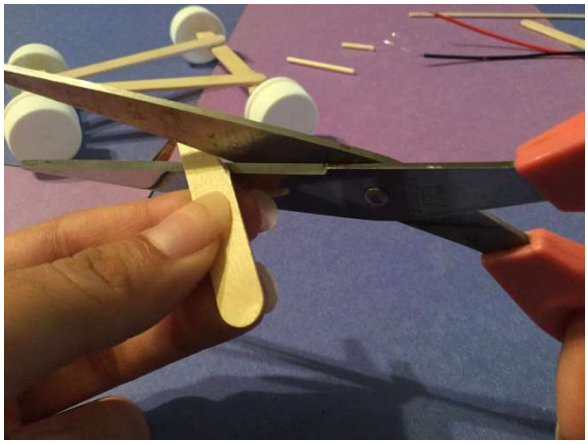
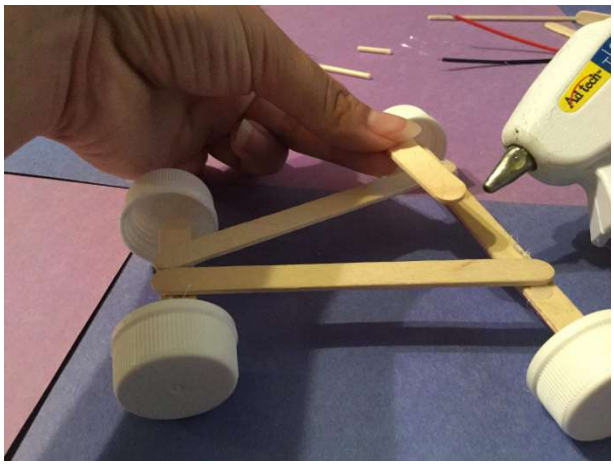
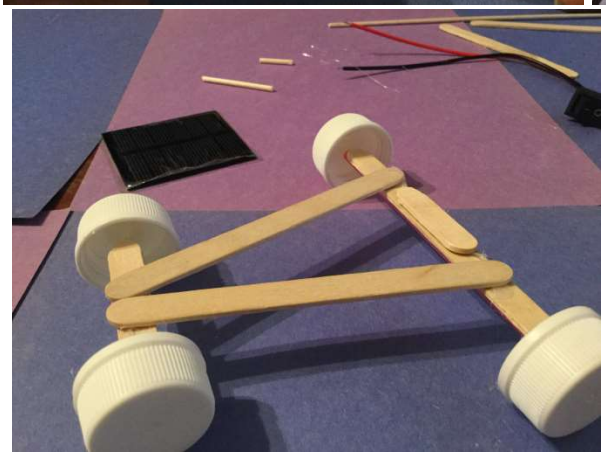
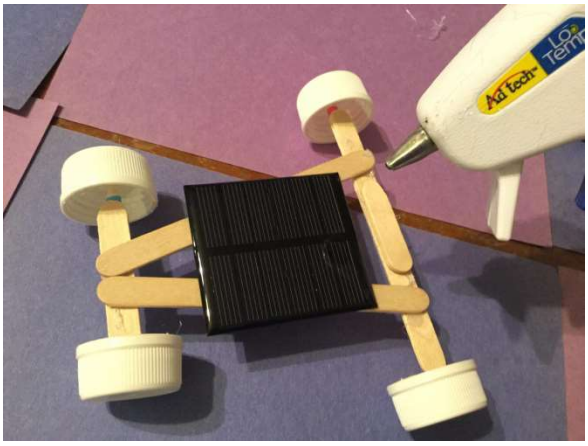






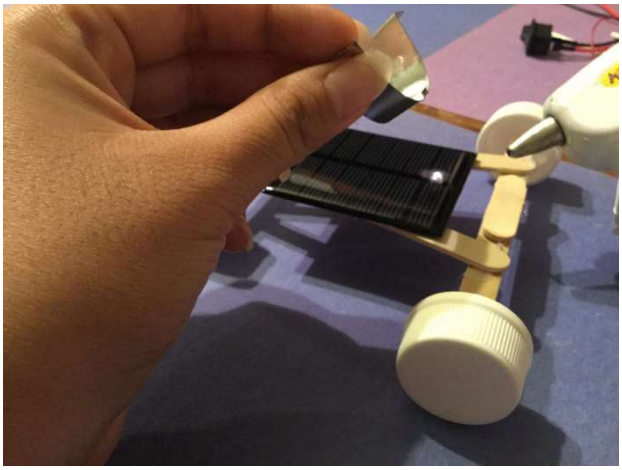


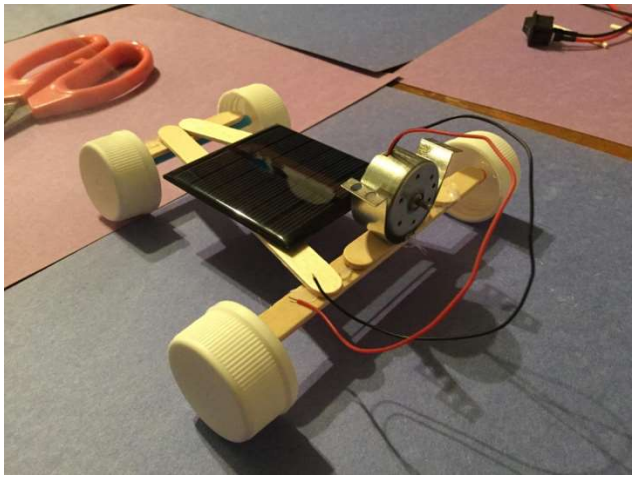


5. The car should be stable and have good standing. If not, rebuild the axel and wheels. The straws must be on the bottom of the car. Cut a popsicle stick into a small piece with a length of 3.5 cm. Hot glue gun it in the middle of the back side of the car. Grab the bottle cap with the DC motor inside and glue it on top of this small popsicle stick. Now, hot glue gun the 3V solar panel on the two inner diagonal sticks of the car.

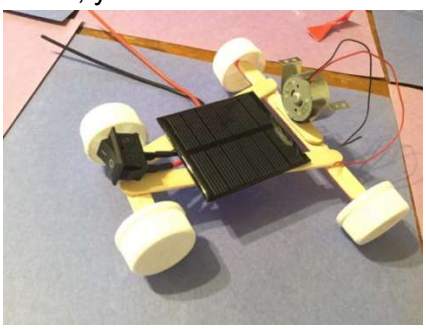
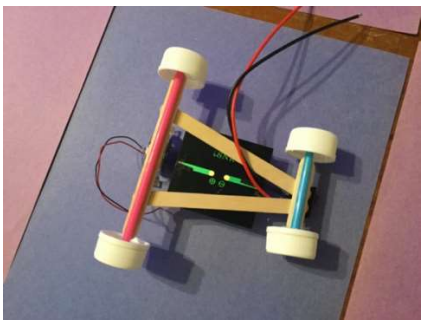
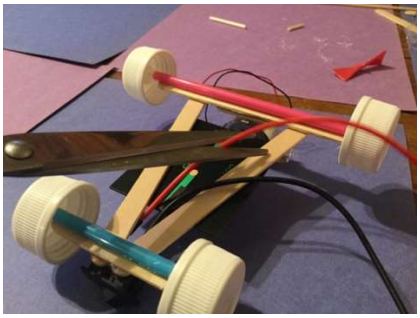
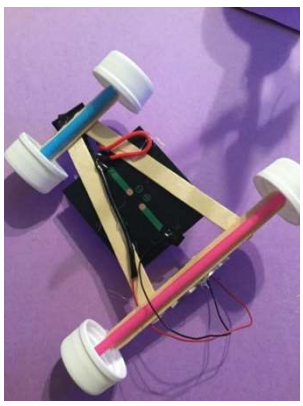
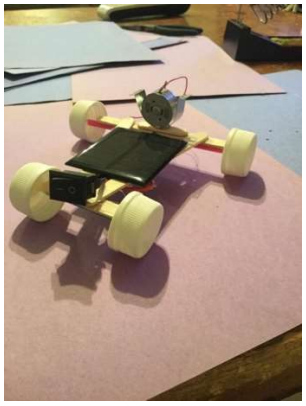
6. Grab the bottle cap with a hole in it and hot glue gun the DC motor into it. You can also use the base that comes along with the DC motor.



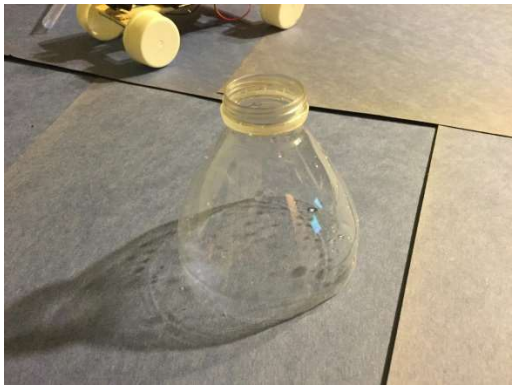


7. Connect one of the 3V solar panel wires to a wire from the On/Off switch button. Glue the switch button on the front (small) side of the car. Adjust the wires so they are not loose on the bottom side of the car. The remaining wire from the solar panel and switch

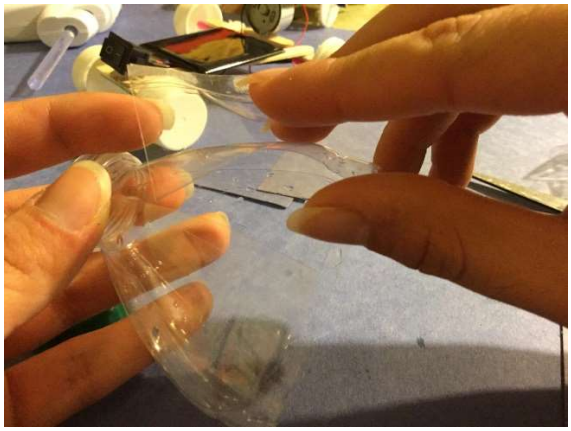
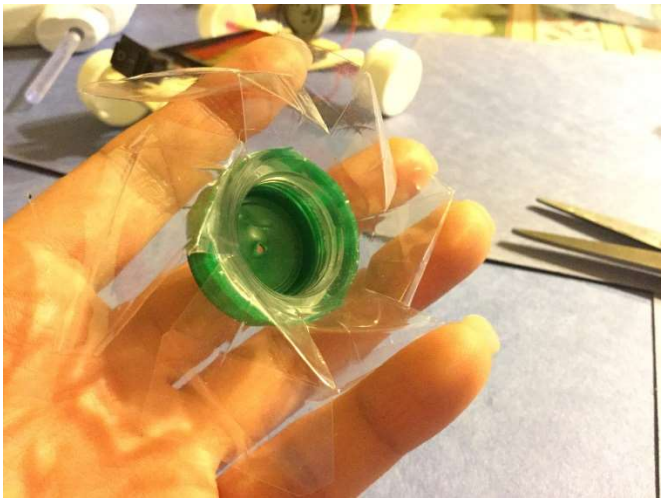
will be connected to each wire of the motor, respectively. Be really careful when you connect the wires, you can secure them with electrical tape.

8. Time to create a fan blade. Get an empty water bottle. Note: It should be a really lightweight bottle. Cut the top portion of the bottle.

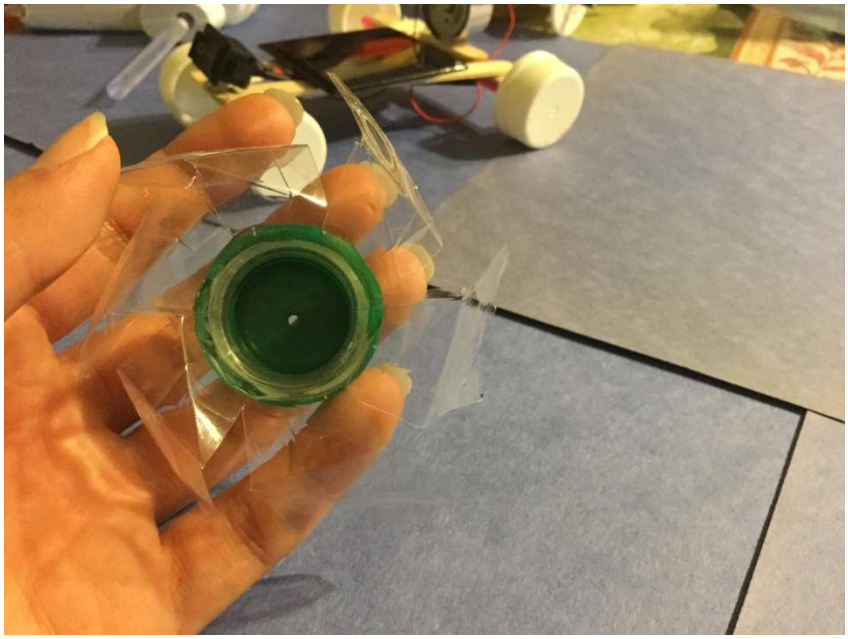



9. Make a vertical cut all the way before reaching the bottle's cap. Do this several times until you have six equal sides. Fold each side to enable them to be "tilted blades". You will fold two times as if creating a zig-zag line. Refer to the picture shown below.

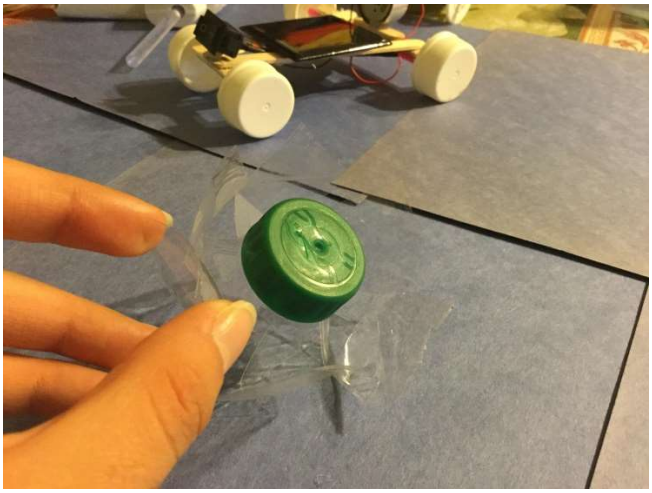




10. For our fan blade, we decided to use a Dasani bottle cap rather than the lightweight's bottle cap because it was more resistant and sustainable. It is recommended to use firm

bottle cap. Pierce a hole in the middle of the cap. Insert the lightweight bottle into the Dasani cap.



11. Attach the “propeller” to the motor. The DC motor will be inserted into the hole on the bottle cap.



12. Take your car on a ride outside in this hot sunny day!