Electric Car

A small motor and a small battery will make a small car go fast.

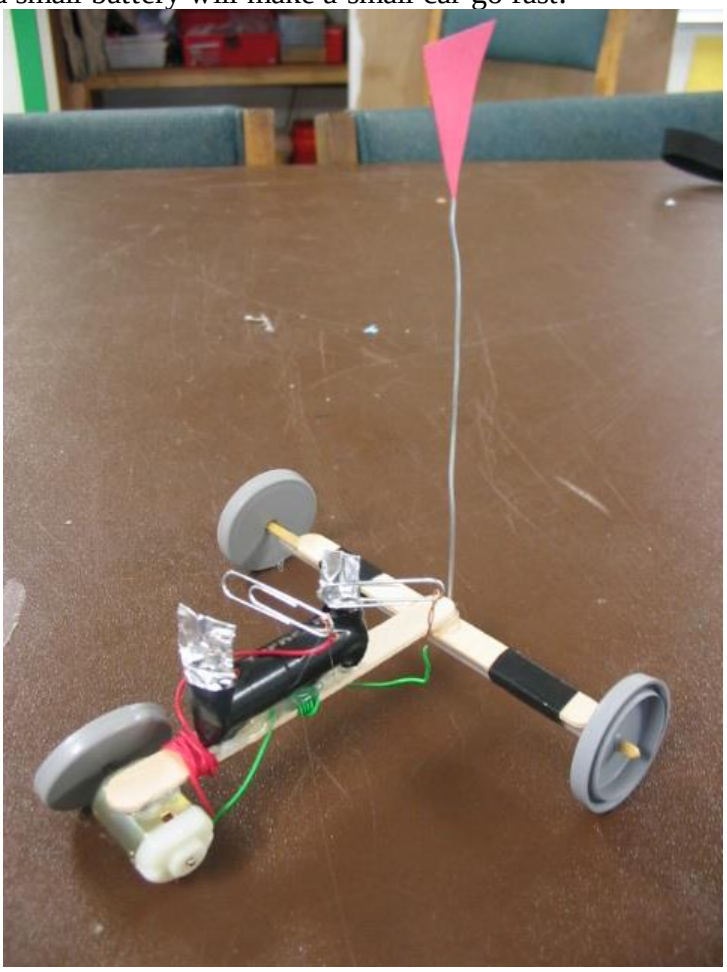
Parts:

1	Model
3	Film can lids or other circles for wheels
2	Popsicle sticks
1	Bamboo skewer
1	Straw
	Wires
	Aluminum foil
1	Battery, AA
1	Motor
2	Paper clips (small)
	Wire and paper for flag

Extra Tools:

Nail for making axle holes
Black tape
Wire strippers
Paper and markers for decoration

Decoration: Colored paper



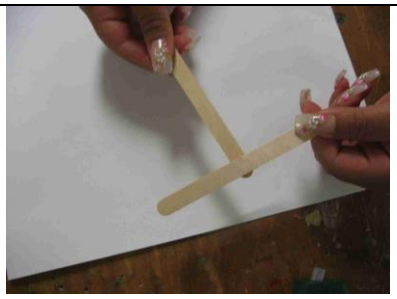
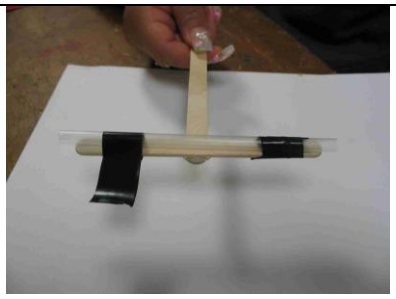
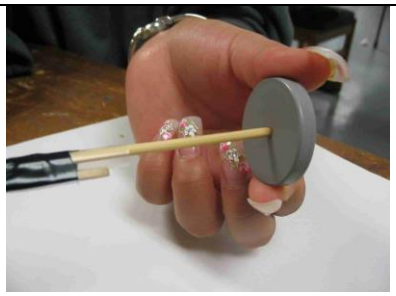
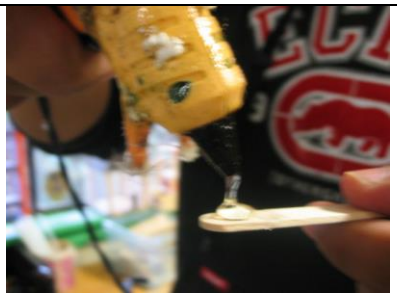
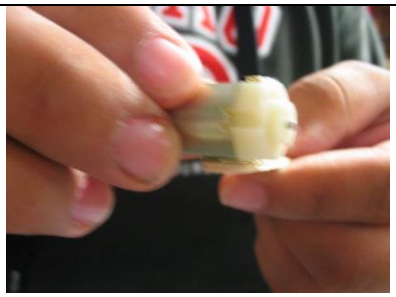
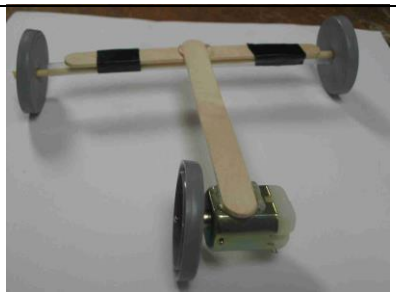
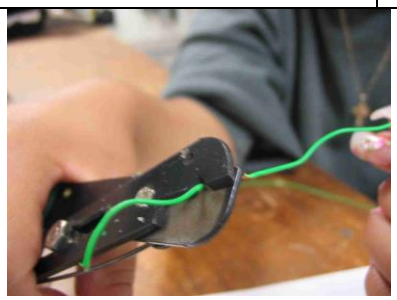
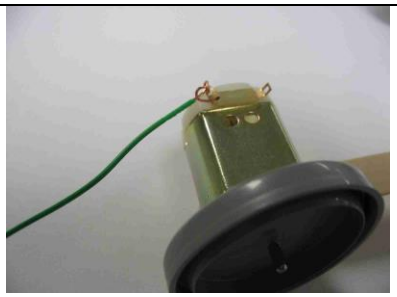
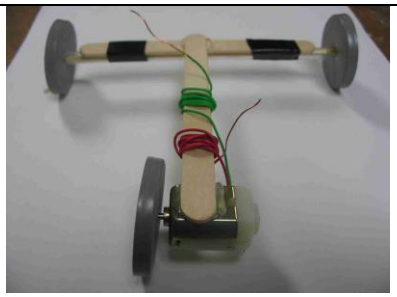
Concepts:

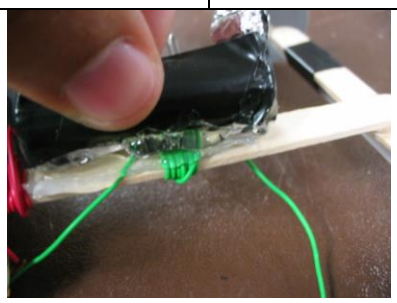
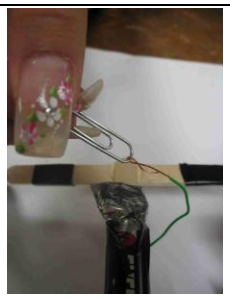
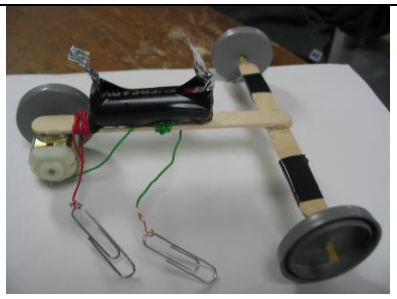
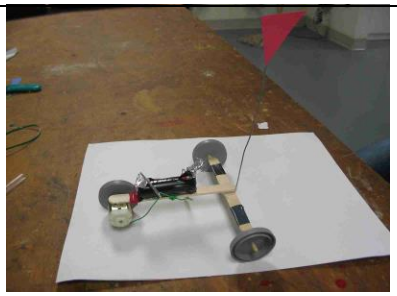
1. The car gets its energy from the battery.
2. The motor will only work if connected in a complete circuit to the two sides of the battery.
3. If you reverse the wires, the motor will go the other direction.

Questions:

A. Where does the car get its energy?
B. How can you make the car turn corners?
C. How could you make a car like this that goes even faster?
D. What can you do to make your car change directions?

How we build it:

Hot glue the tip of one Popsicle stick to the center of the other one. It should look like a T. Cut a straw a little bit longer than the Popsicle stick. Tape the straw to the Popsicle stick. If the straw sticks over the ends, the wheels will not rub on the Popsicle stick.	 
Make a hole on the center of the 3 film can lids with a small nail. Slide a bamboo skewer inside the straw. Put one wheel onto each end of the skewer. Cut the excess length, including the dangerous point, off the bamboo skewer.	 
Hot glue the motor to the end of the Popsicle stick so that the shaft is exactly 90 degrees to the stick.	 
Press the last wheel onto the motor's shaft. If necessary add glue to the end of the shaft to secure the film can lid..	 
Strip both ends of both wires. Connect the wires to the motor and wrap excess wire around the Popsicle stick.	  

Cut two pieces of aluminum foil and fold them several times into long rectangular shapes. Tape the pieces of aluminum foil tightly to the battery leaving a bit of foil sticking up on each side.	 
Hot glue the battery to the top of the Popsicle stick. Connect paper clips to the ends of both of the wires.	  
Connect the paper clips to the foil pieces sticking up off the battery. It should go! Reverse the wires and watch what happens.	 

A bit more info:

Batteries store energy. There are two chemical reactions ready and waiting to happen in every battery. One of them creates excess electrons and the other requires excess electrons. If you connect a battery's positive and negative terminals, the reactions begin happening and electrons go racing through the wire from the negative terminal to the positive one. This is electric current.

The wire you use to connect the terminals may get quite hot if you do this. The battery will also go dead quickly, as all the chemicals are used up in the reactions. To get some work out of the battery, you need to send the current through something that will make use of the current, such as a motor.

Take apart a motor to see what is inside. You will find little coils of wire and little permanent magnets. When the motor has current running through it, those little coils turn into electromagnets. They then push and pull on the permanent magnets, making the motor turn. The electromagnets are turned off and on at just the right time by tiny brushes touching the shaft of the motor. When the electric current is going through the electromagnets in the opposite direction, they push and pull in the opposite direction, and the motor turns in reverse.

By gluing either the front or back wheels at an angle, the car can be made to turn. If you had another motor to control the turn, you could make a remote control car. If you want your motor to go faster, you could put on another battery, but that would also make it heavier. Heavier things generally have more friction, so it may not go faster.