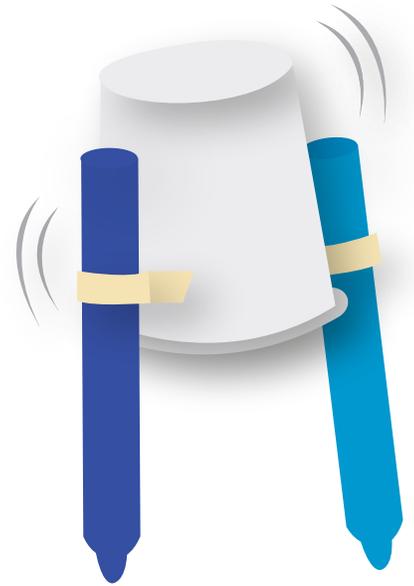


# Scribble Bots

Celebrate National Robotics Week by building your own scribbling bot!

## Collect:

- AA Battery
- 1.5v hobby motor, can be found at Radio Shack
- 2 lengths of 4" long electrical wire
- Wire stripper
- Glue stick
- Duct tape
- Rubber band
- Washable markers
- Recyclable container, like a strawberry basket or clean yogurt container



## Power your motor

1. Strip the ends of the two lengths of electrical wire.
2. Attach one end of each wire to the metal tabs on the motor.
3. Wrap a rubber band around the battery lengthwise and slip the other end of each wire under the rubber band so that one wire is touching the positive side of the battery and the other wire is touching the negative side. Your motor should start spinning!
4. To turn off your motor, pull one wire back out from underneath the rubber band.

## Build the bot

5. Tape your motor and battery to the top of the recyclable container. Make sure that your motor is near the edge of the container with the motor arm sticking off the edge.
6. Push a glue stick onto the part of the arm that spins on the motor.
7. Give your scribble bot legs by attaching markers to the sides with tape.
8. Reattach the wires to the battery again so that your bot starts to move and shake.

## Experiment!

9. Try trimming down the glue stick from one end to offset the motor, or making the length of the motor arm longer. How does this affect how your bot moves?
10. Lay down some paper and remove the caps from the markers. Watch as your scribble bot traces a jittering path around the paper!



## How does it work?

The offset weight that was added to the motor makes the scribble bot vibrate and move. A cell phone works in the same way by having an offset motor inside that makes it vibrate. Adding markers to your bot makes it possible to see the pattern that the vibrating motion makes. You can change this pattern by changing variables like the number of legs of the bot, the height of the markers, the length of the motor arm, or the length of the weight.

