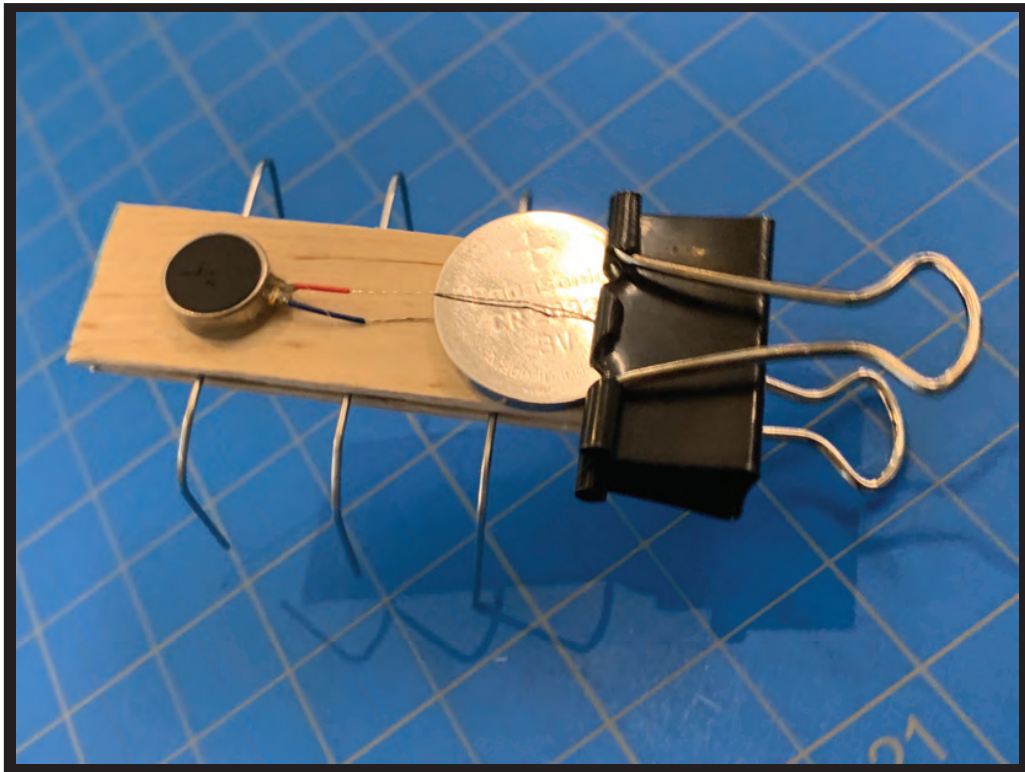


SHIFTING RHYTHMS

VIBRATING SCORPION

Time Estimate: 1 hour



Tags: Design, Mechanical

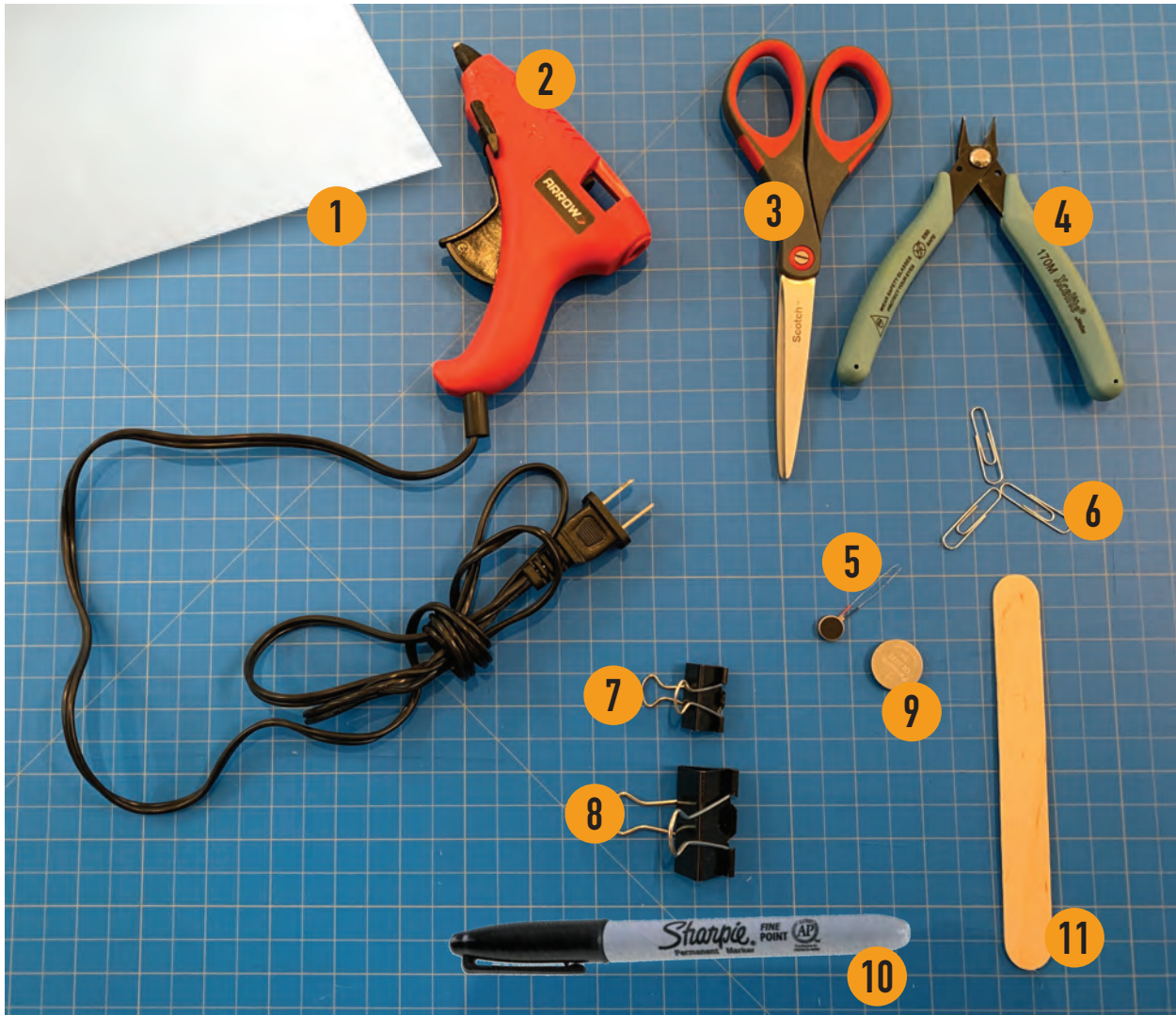
What is a Vibrating Scorpion?

The Vibrating Scorpion is a little bug-like toy that uses a vibrating motor and a battery to move around and crawl across the table.

Here are a few things to think about once you've built the vibrating scorpions...

- What happens if you put the scorpion on a soft surface, like the carpet? Does it move around as well?**
- Try moving the clip around so it's attached at a different angle. Does this change how your scorpion moves around? Can you get it to draw different types of pictures with the marker?**
- Can you think of a way to attach another marker to your scorpion and make it draw with two markers at once?**

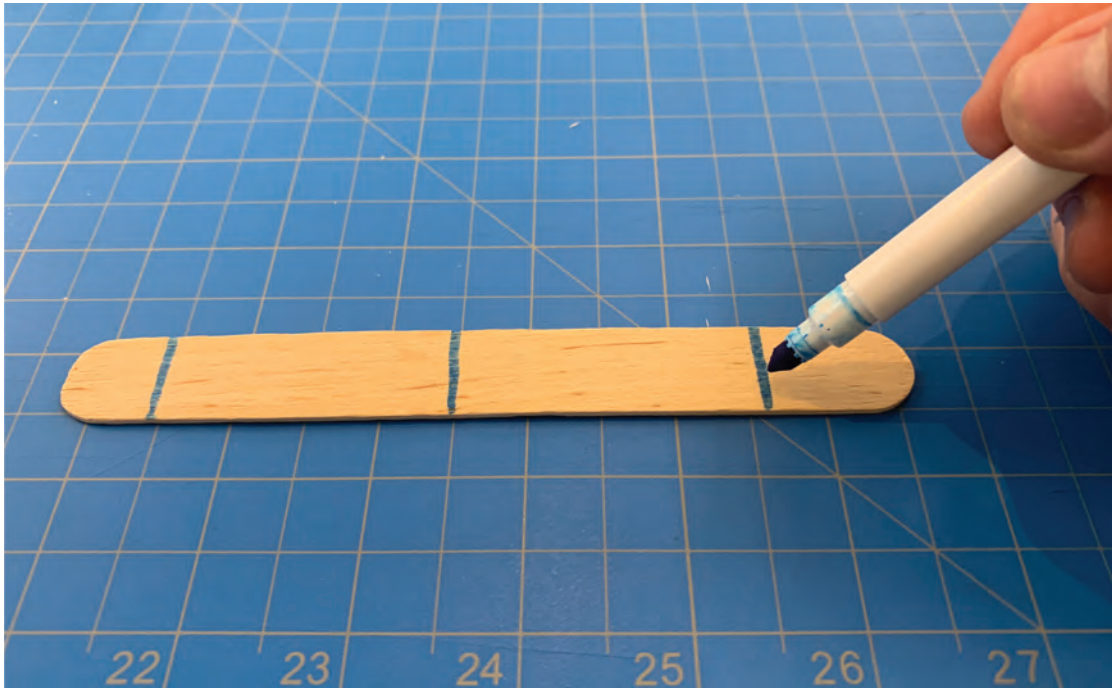
Part 1: Materials and Tools



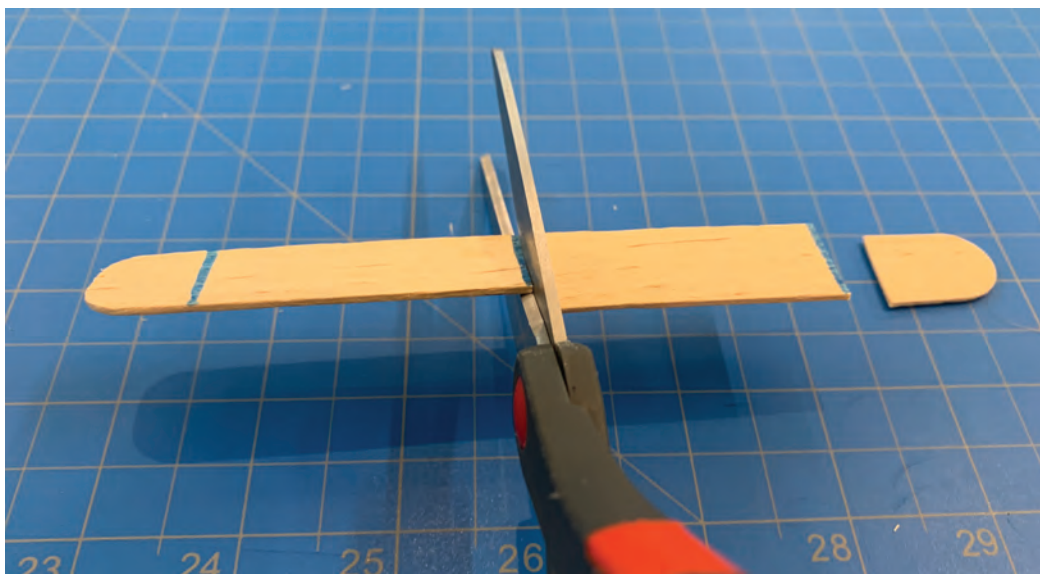
To build your scorpion, you'll need:

- | | |
|--------------------|--------------------|
| 1. White Paper | 7. Small Clip |
| 2. Hot Glue Gun | 8. Large Clip |
| 3. Scissors | 9. Battery |
| 4. Wire Cutters | 10. Marker |
| 5. Vibration Motor | 11. Popsicle Stick |
| 6. 3 Paper Clips | (optional: paint) |

Part 2: Making the Scorpion Body

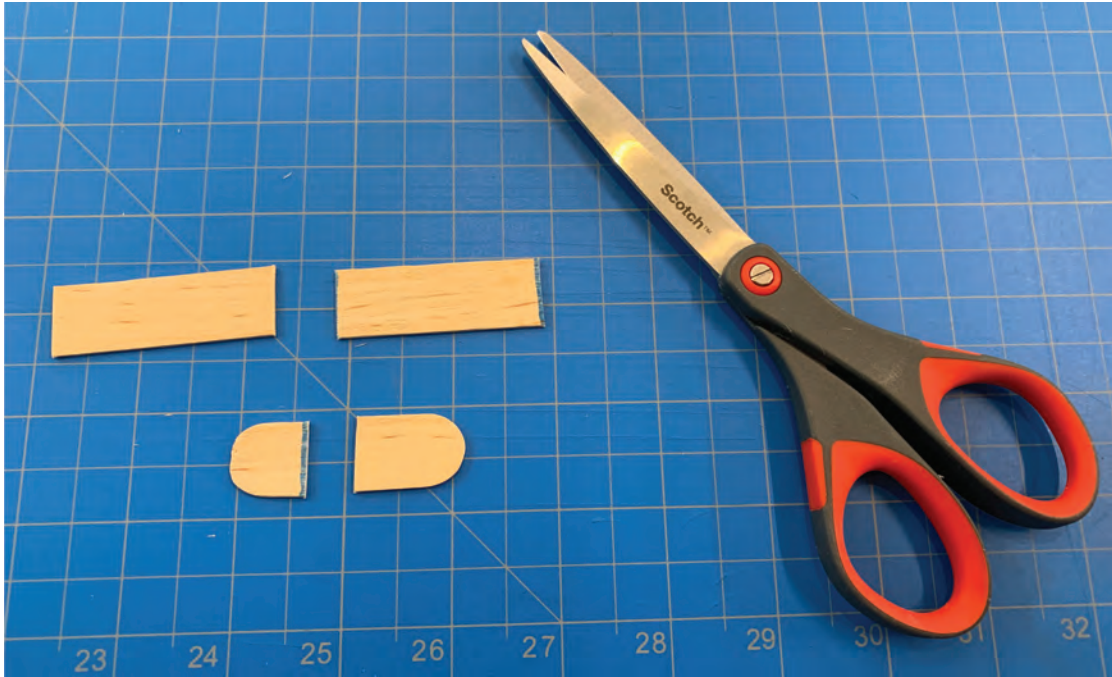


Draw 3 lines on your popsicle stick: one in the middle, and one at each end.

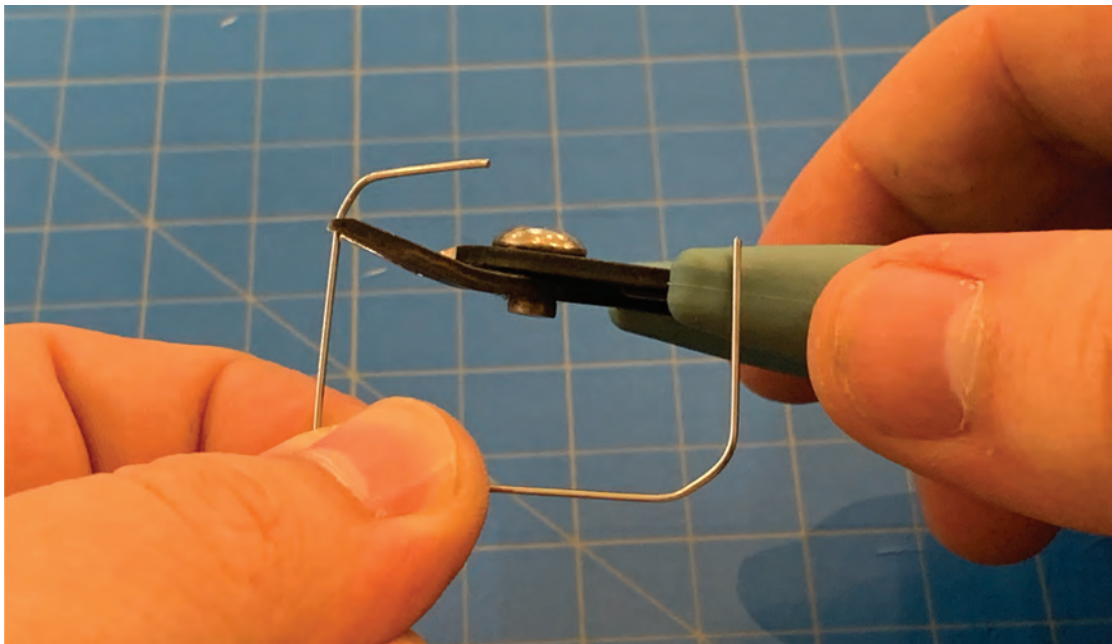


Use the scissors to cut the popsicle stick on the lines.

Part 2: Making the Scorpion Body

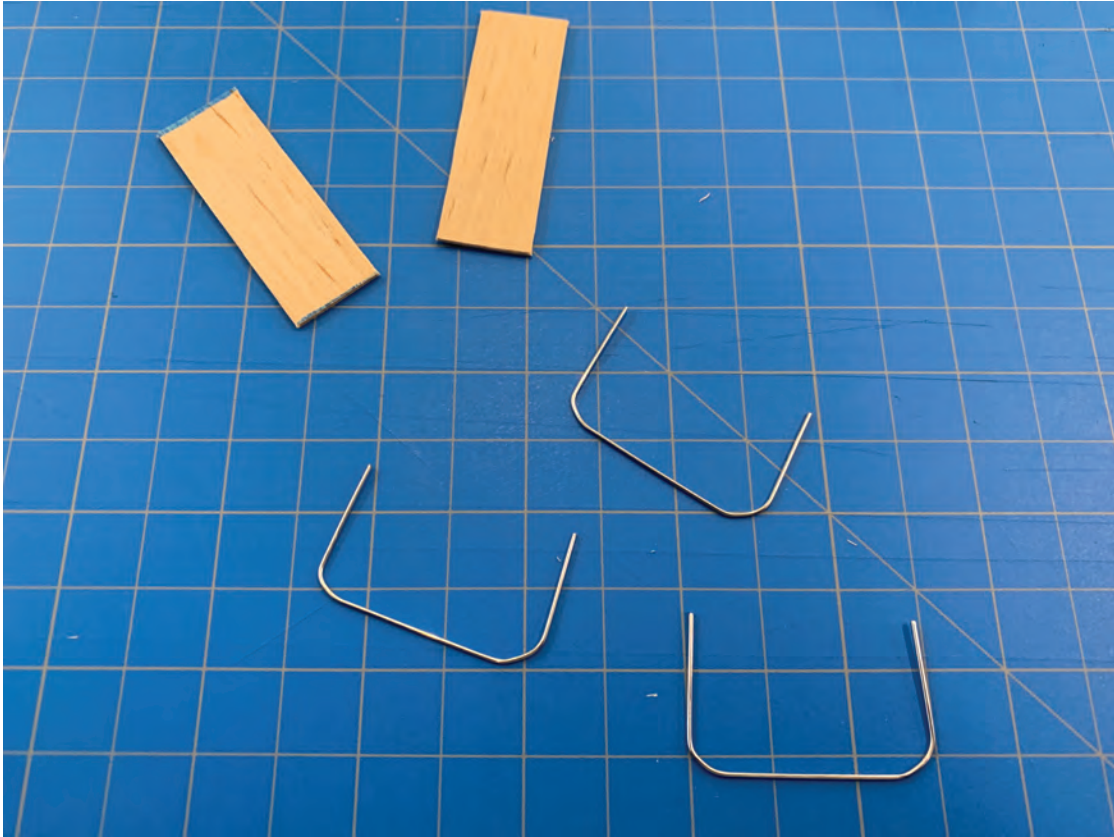


You should have two rectangles that are about the same size.

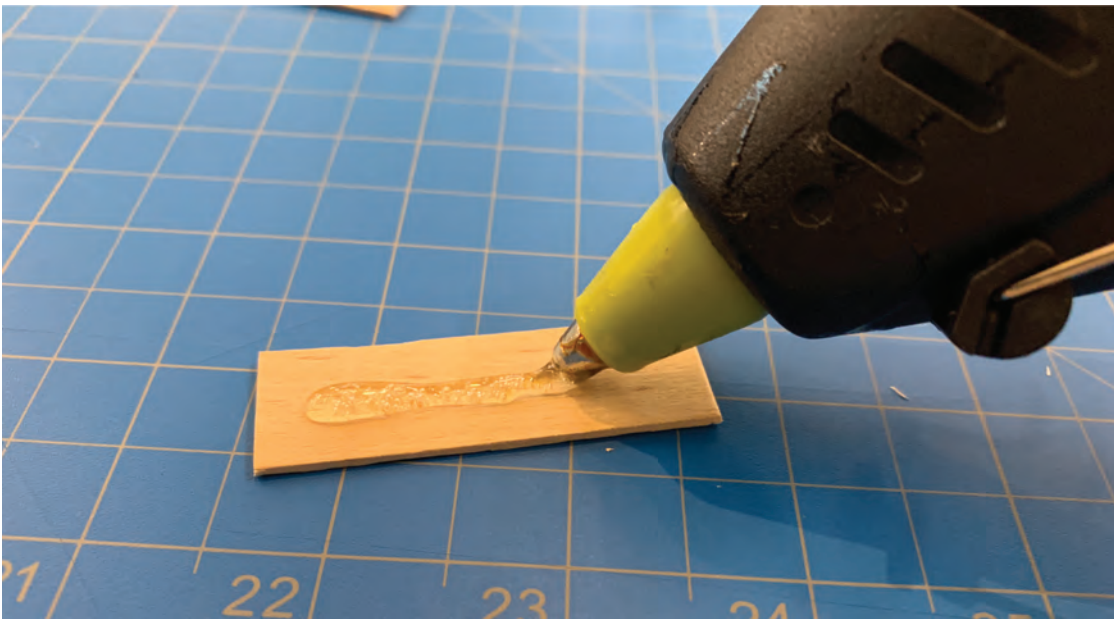


Unfold a paper clip so it makes a U-shape. Cut off the extra corner with the wire cutters.

Part 2: Making the Scorpion Body

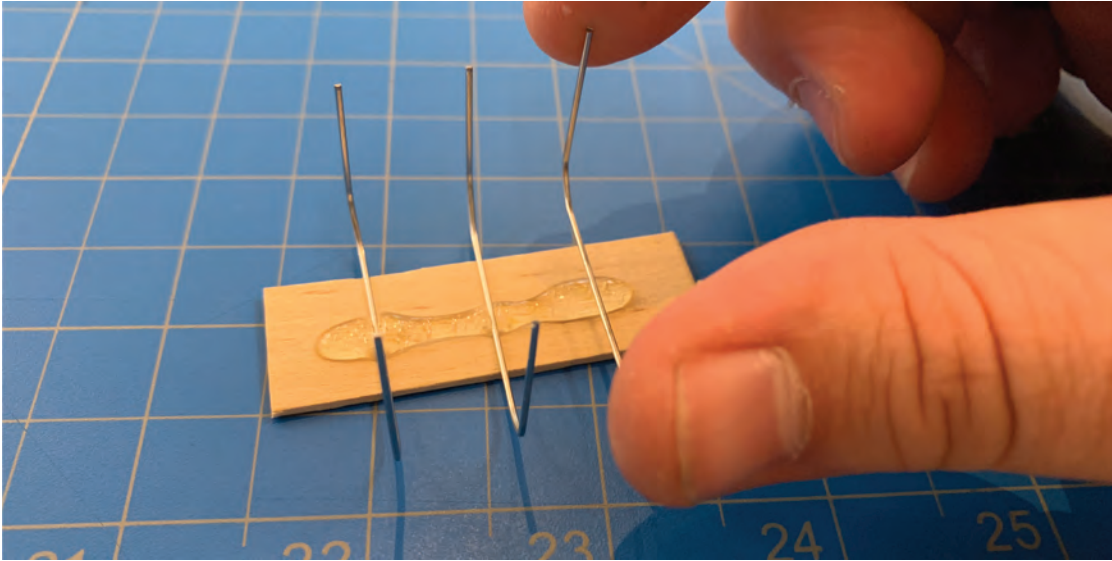


Do the same thing to the other two paper clips.

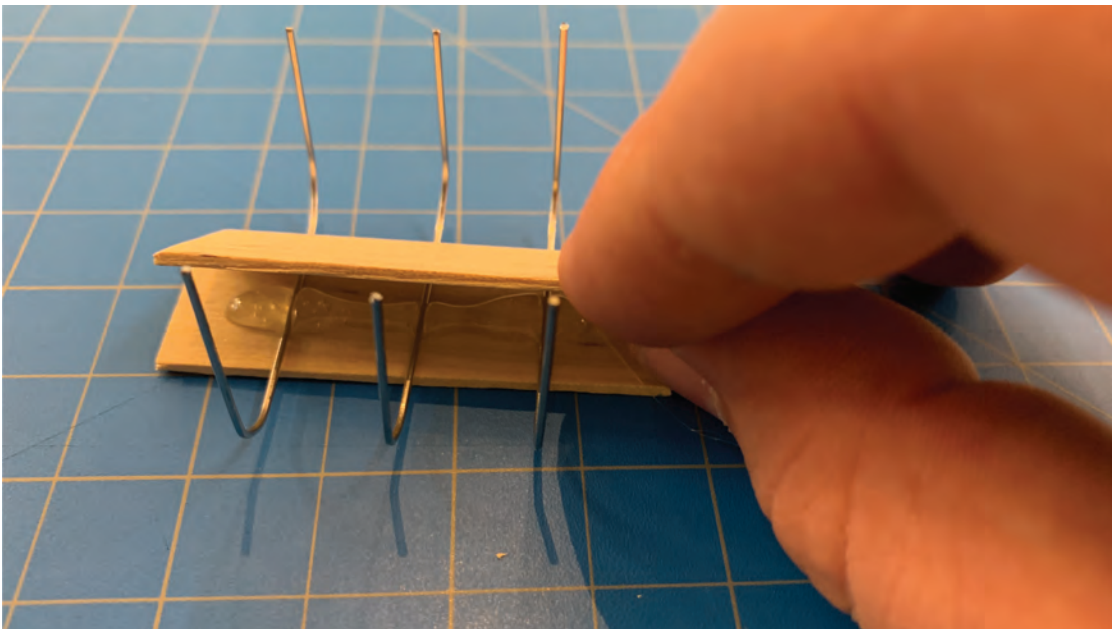


Put a line of hot glue on one of your popsicle stick rectangles. Make sure you glue across the entire piece.

Part 2: Making the Scorpion Body



Add your paper clips to the glue so the ends stick up into the air. You may have to let the glue dry for a few seconds so they will stay in place.



Add the other rectangle on top of the legs, like you're making a sandwich.

Part 2: Making the Scorpion Body

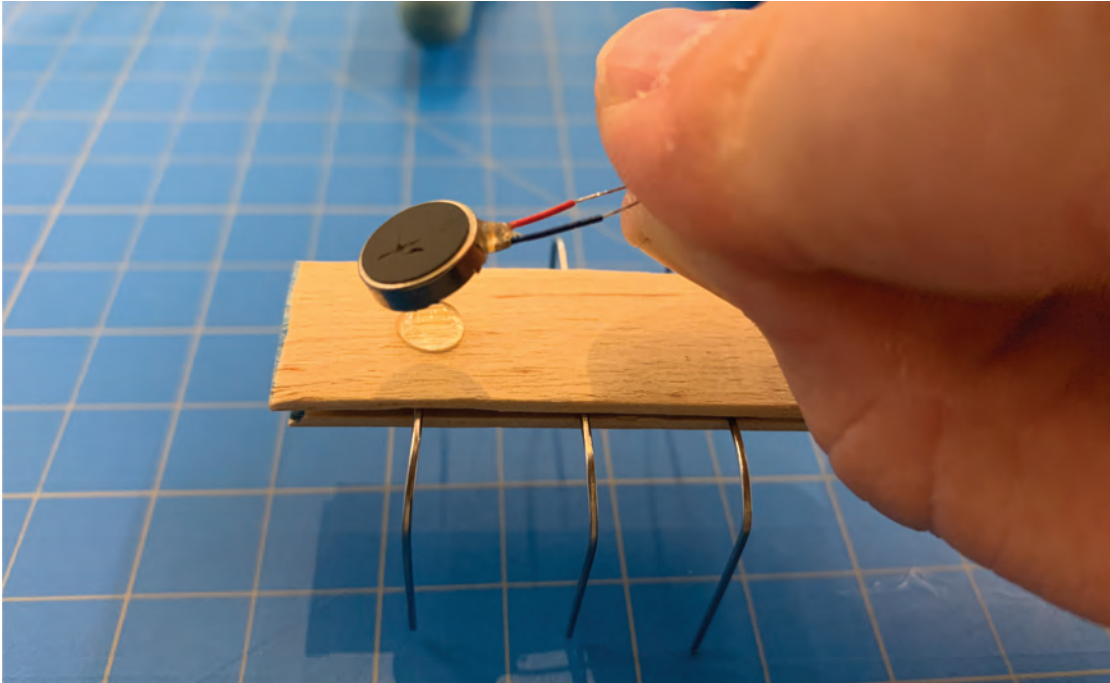


Count to 30 while the glue dries, then flip the scorpion over so it stands up on its legs.

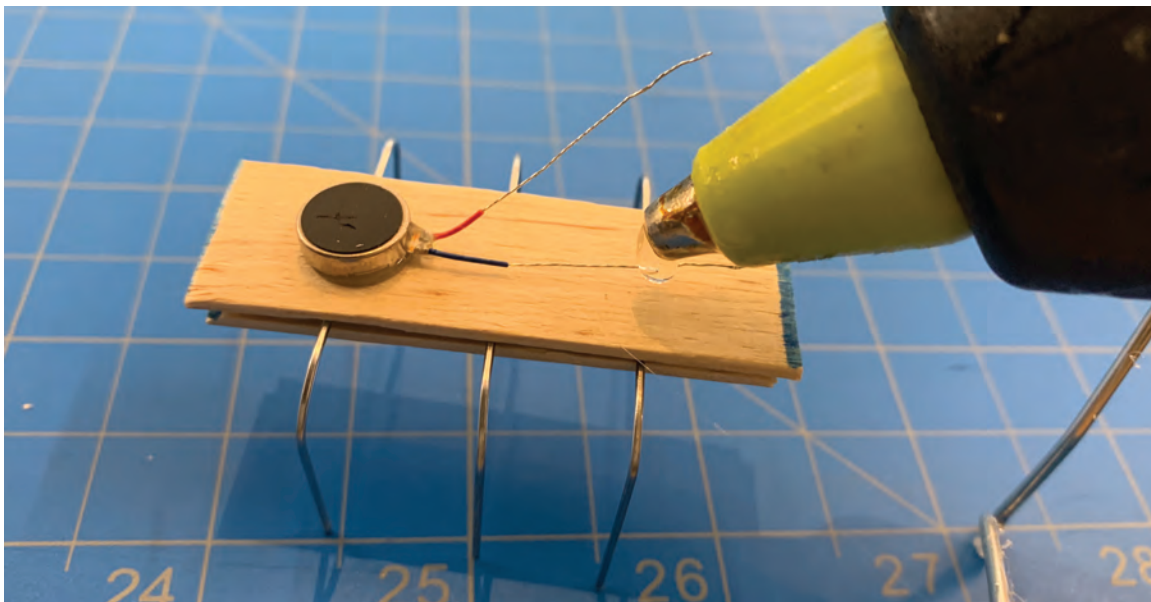
You just finished making the scorpion's body!

Now is a good time to paint or decorate your creation if you have extra time.

Part 3: Adding the Electronics

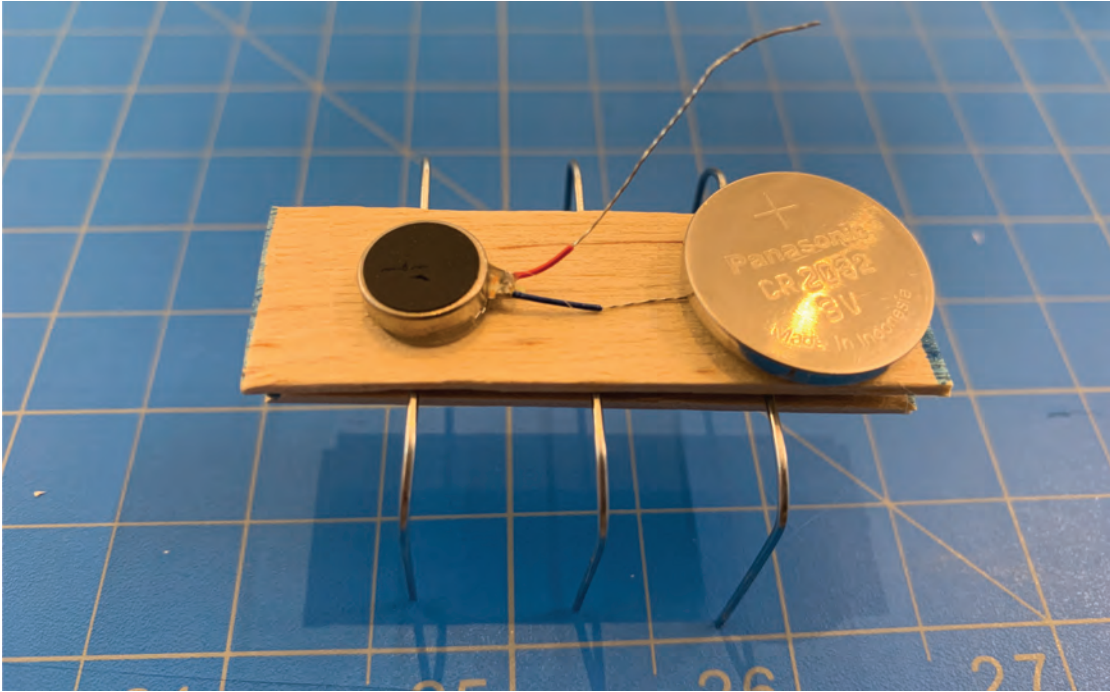


Put a small dot of hot glue on one end of the top popsicle stick. Put the motor on this glue so that the wires run across the top from side to side.

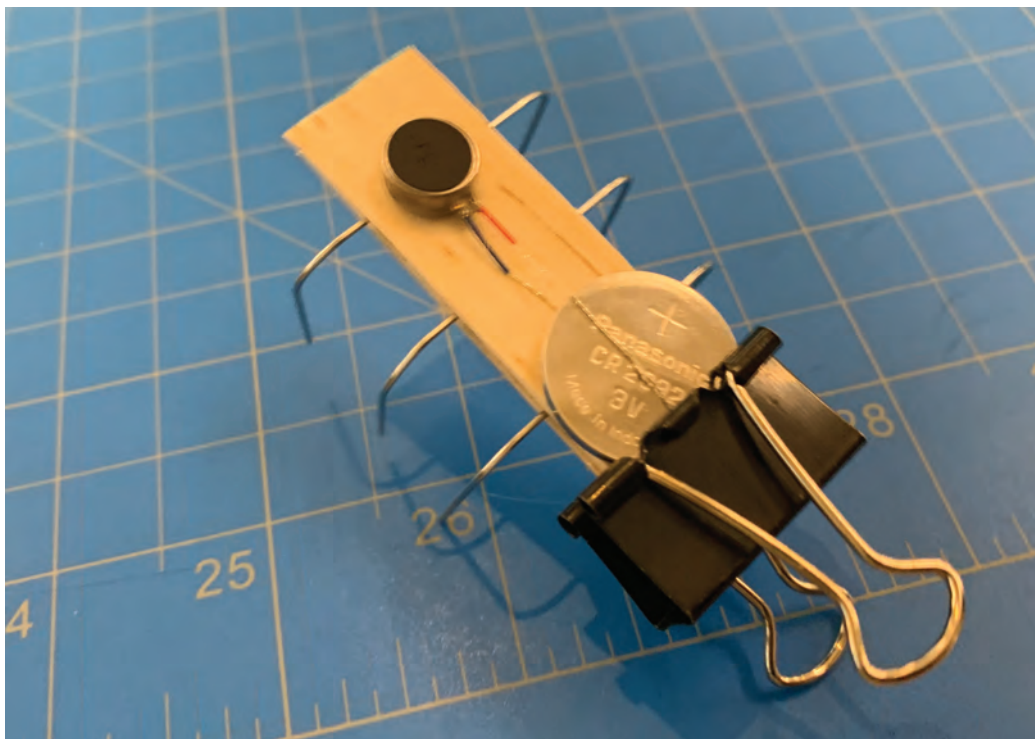


Bend the red wire up, and put a little dot of glue on the end of the blue wire.

Part 3: Adding the Electronics

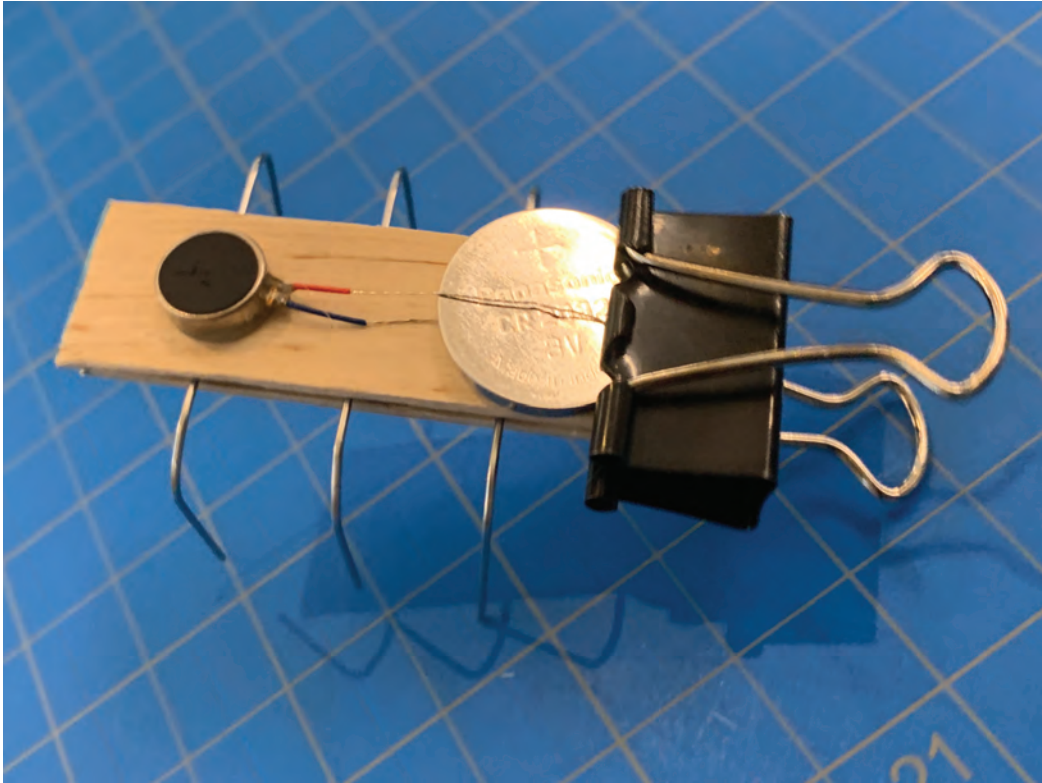


Stick the battery onto this dot of glue so that the side with the words (the '+' side) is facing up.

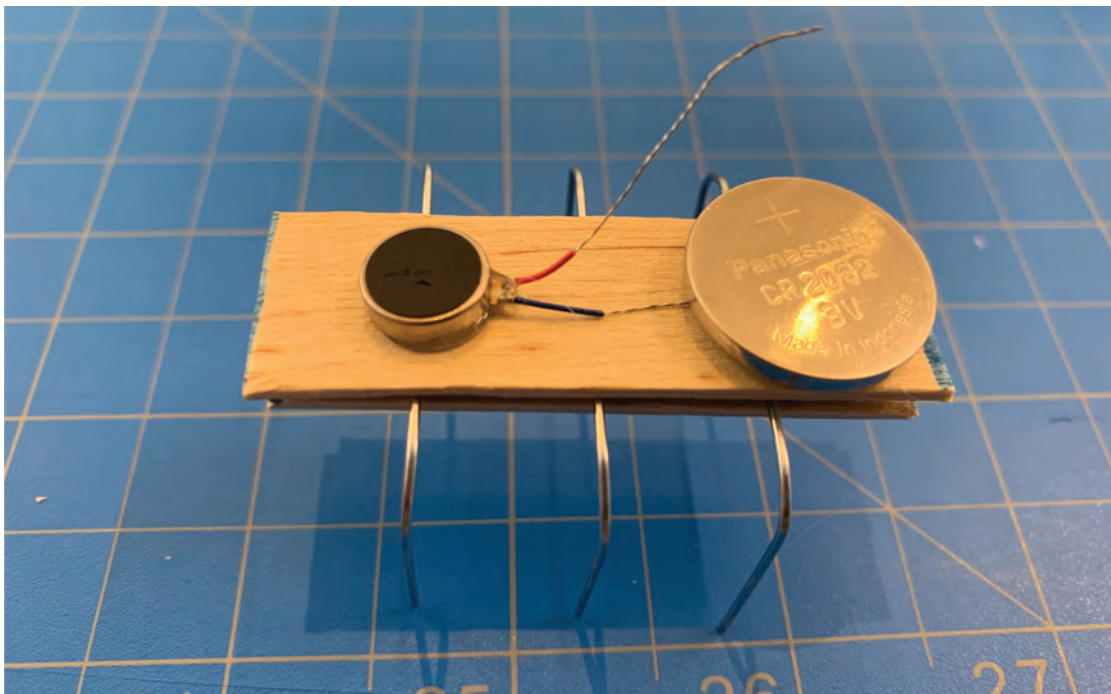


Add the small clip to the end so that the red wire gets clipped to the top of the battery. Your bug should start to vibrate!

Part 4: What Can My Scorpion Do?

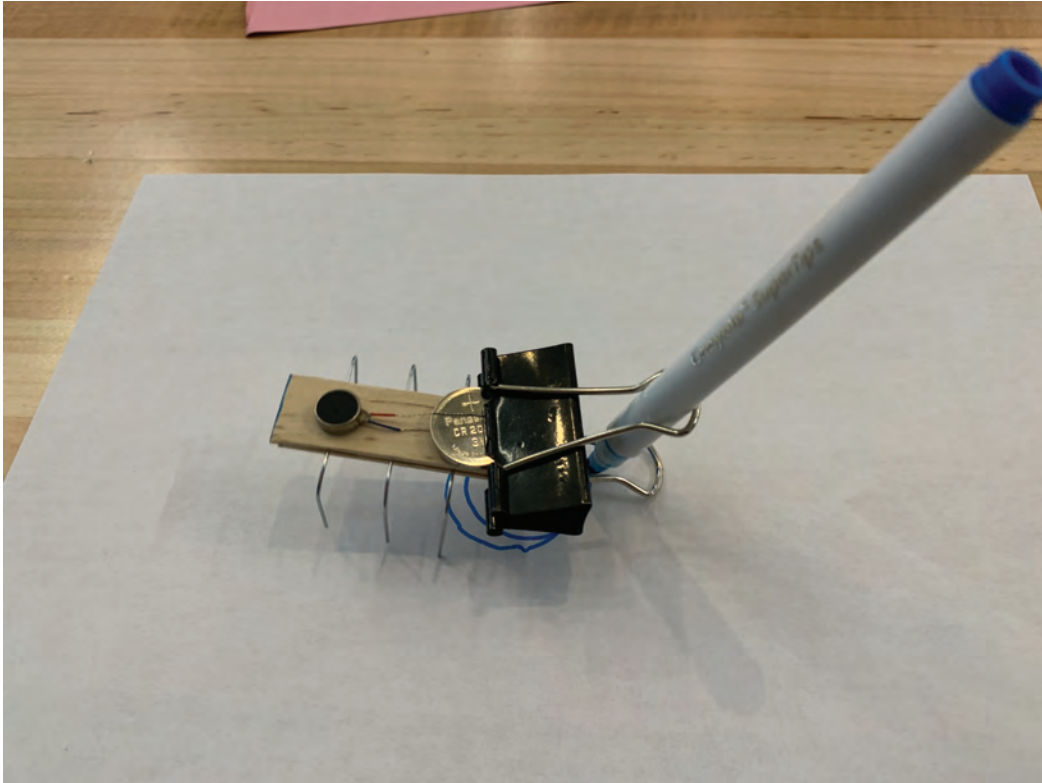


Place your scorpion on a hard, flat surface and watch it move around!

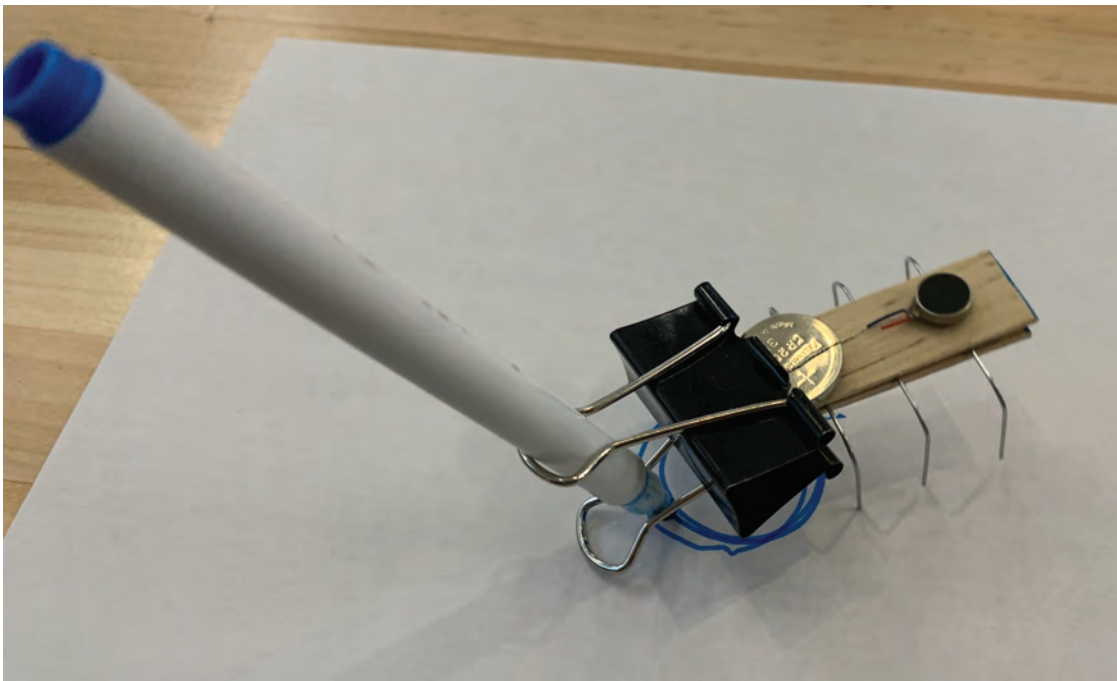


To turn off your scorpion, just take off the clip and disconnect the red wire from the battery.

Part 4: What Can My Scorpion Do?



Change out your small clip for a big clip, and then pick a marker and slide it into the clip.



Place a piece of white paper under it and watch it move around and draw!