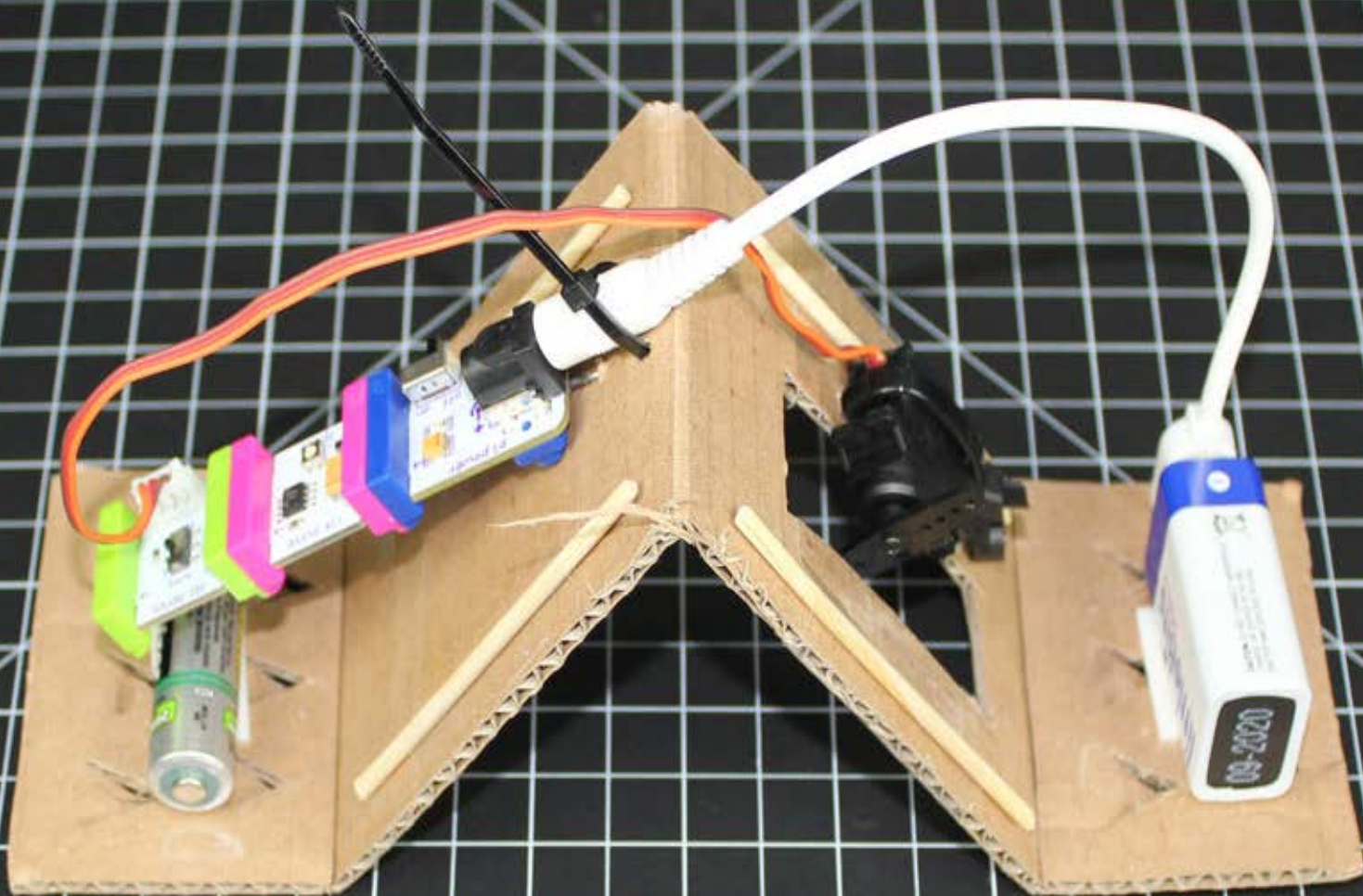


Makerspace Project:

Make an inchworm using littleBits

Step-by-Step
Instructions



Makerspace Project:

Make an inchworm using littleBits

Step-by-Step Instructions

Materials Needed:

- (1) Jumbo paperclip
- Cardboard – 3” x 12”
- (1) AAA battery (for weight only)
- Bamboo skewers or dowel rods
- Double sided tape
- (1) Small ziptie
- (1) Large ziptie
- Packaging tape
- (1) 9v battery

Makerspace Project:

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littleBits® Needed:

- (1) P1 Power Bit
- (1) i16 Pulse Bit
- (1) o11 Servo Bit w/ servo
- (1) Power cable for 9v battery

Makerspace Project:

Make an inchworm using littleBits

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Tools Needed:

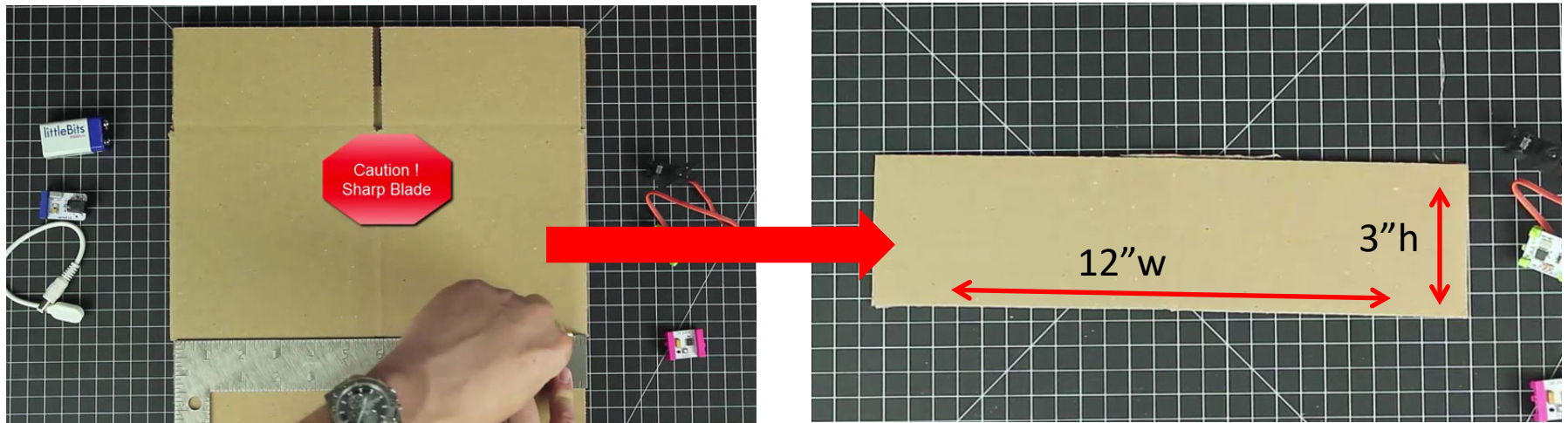
Needle nose pliers
Xacto or utility knife
Wire cutter
Scissors

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STEP 1: Make the inchworm body



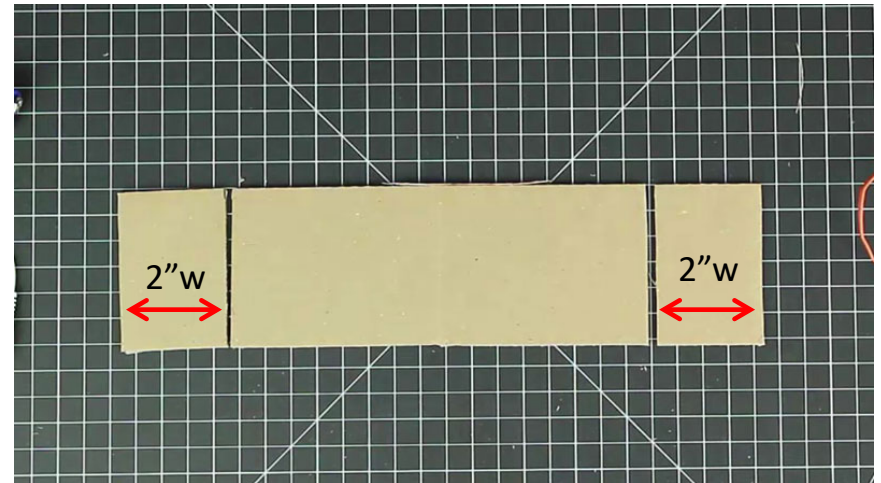
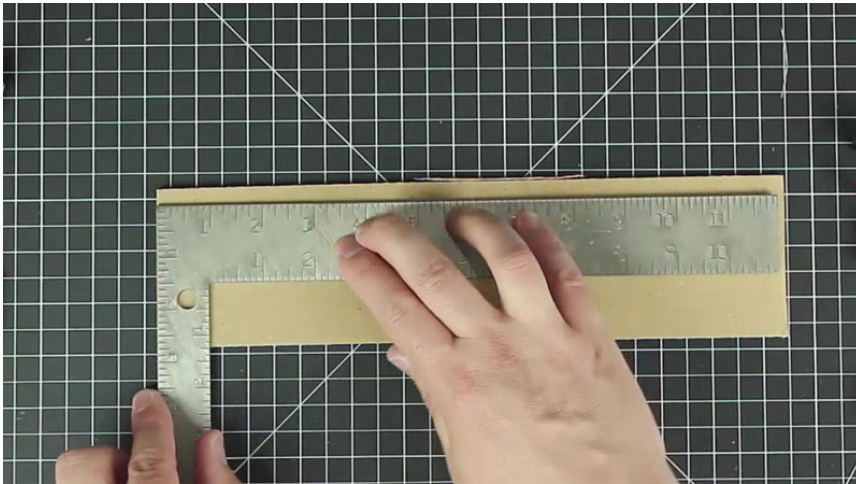
Cut a piece of cardboard to 12"w x 3"h

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STEP 2: Make the inchworm feet



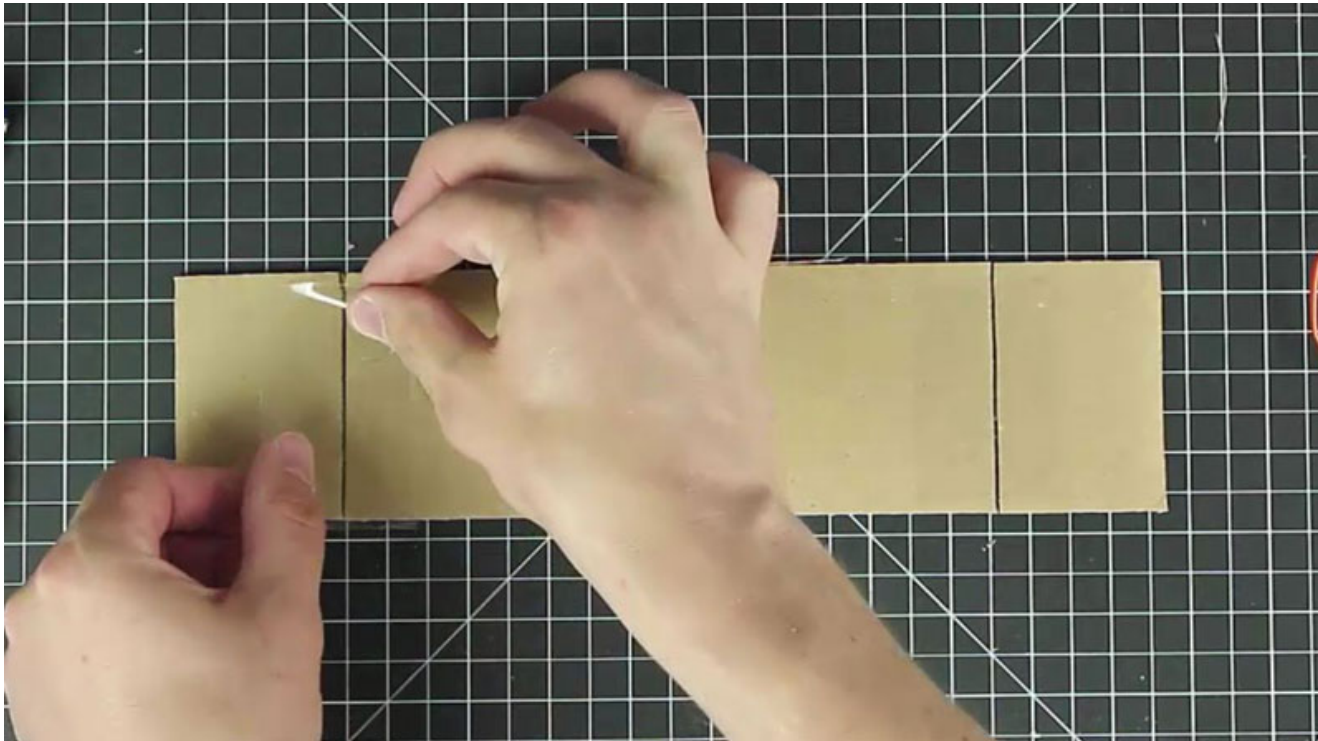
Cut “feet” equally on both sides of body – 2”wide

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Make an inchworm using littleBits

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STEP 3: Tape inchworm feet to body



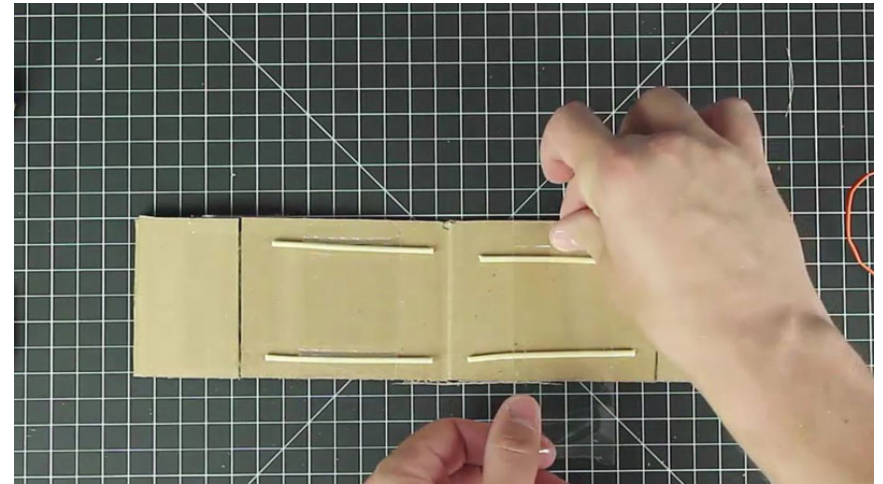
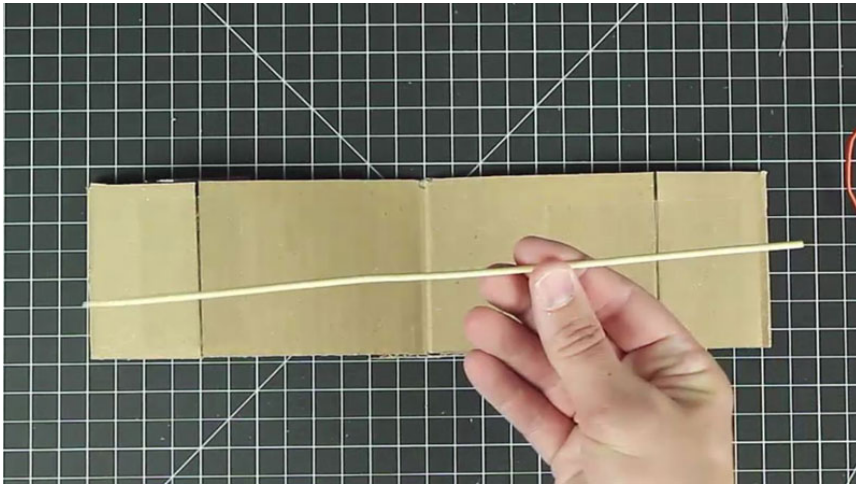
Using shipping tape, secure feet to body. Tape both sides, front and back

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STEP 4: Reinforce body



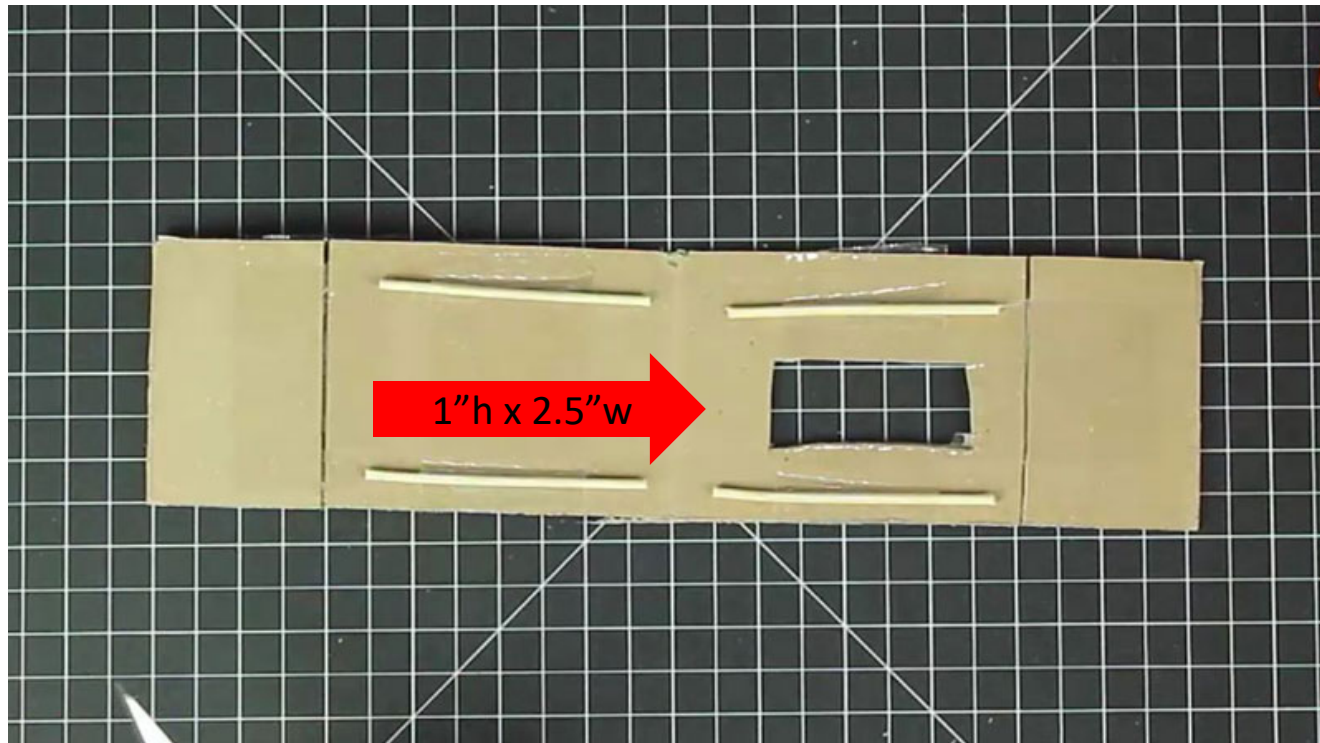
Cut bamboo skewers or dowel rod & tape to back of body for structural strength

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Make an inchworm using littleBits

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STEP 5: Cut opening for servo



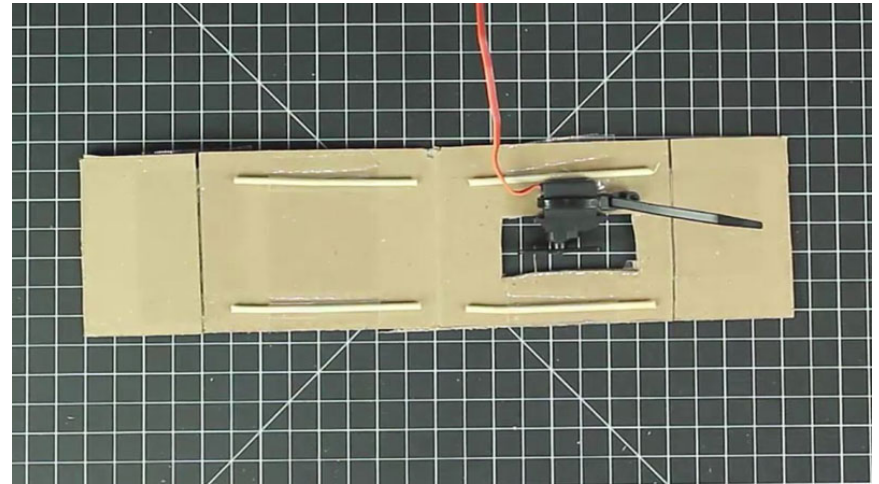
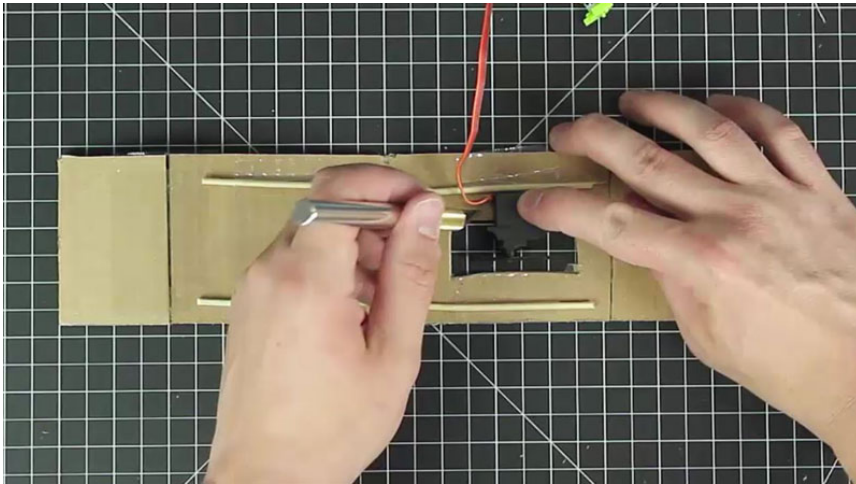
Using a razor, cut an opening in the body measuring 1\"h x 2.5\"w

Makerspace Project:

Make an inchworm using littleBits

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STEP 6: Mount servo bit on body



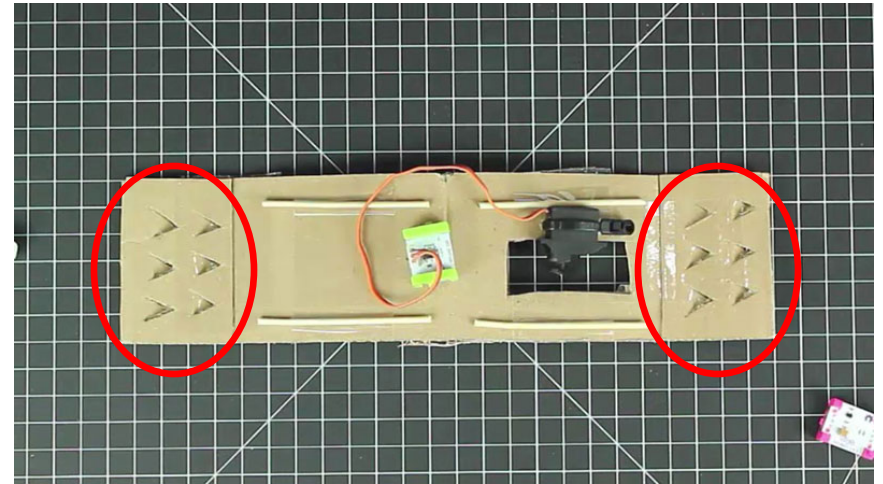
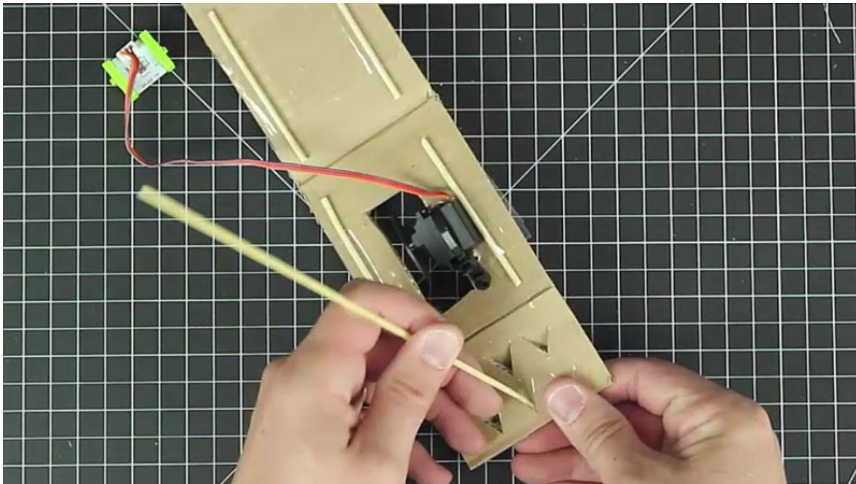
Place the o11 servo bit in the center of the opening and secure to body using zip-ties

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STEP 7: Create traction triangles on feet



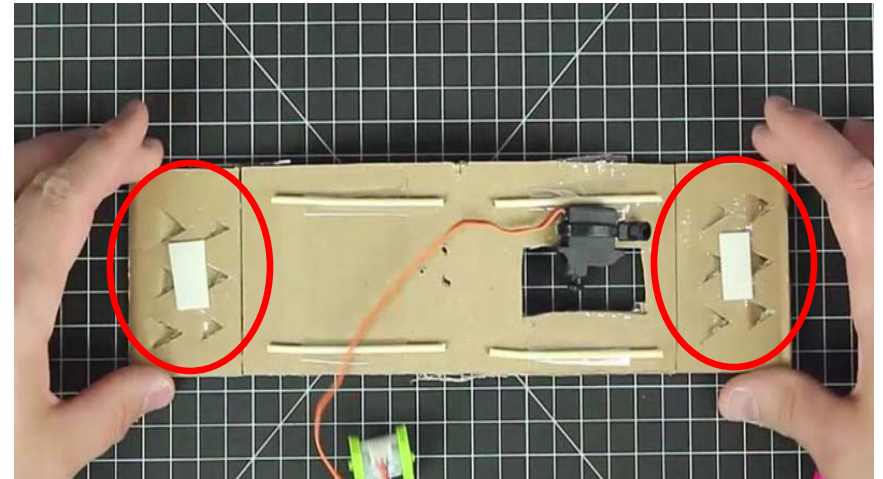
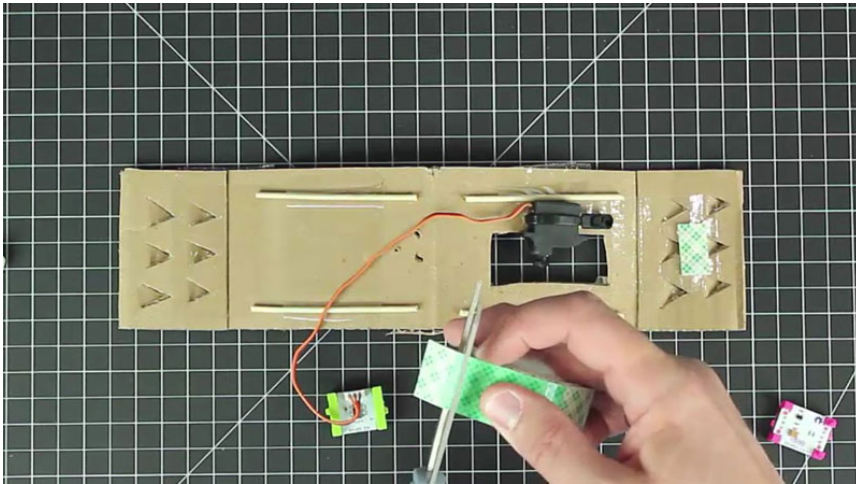
Using razor, cut triangle shapes in both feet. Pop these triangles out using rod. Make sure triangles are going in the same direction.

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STEP 8: Apply double sided tape



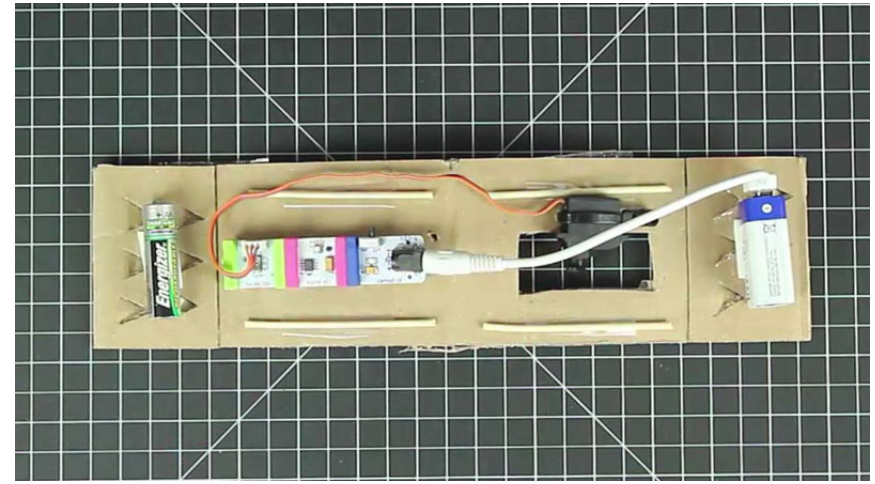
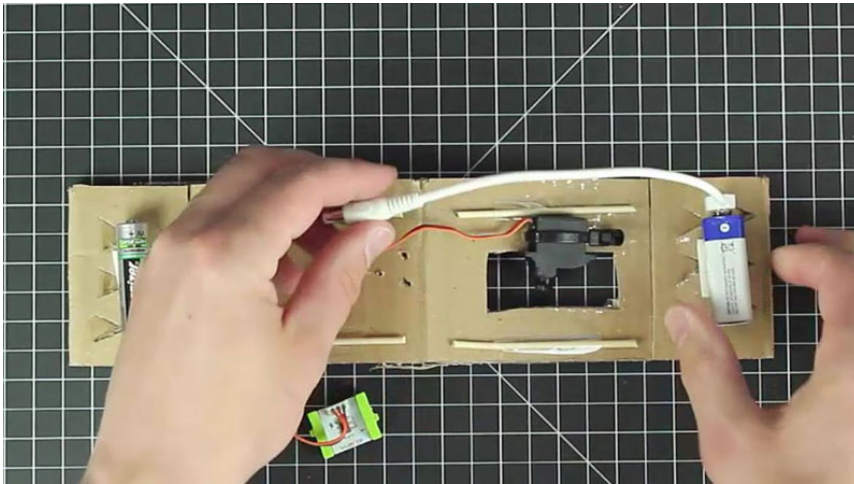
Apply double sided tape to the middle of both feet.

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STEP 9: Add weight and build bit assembly



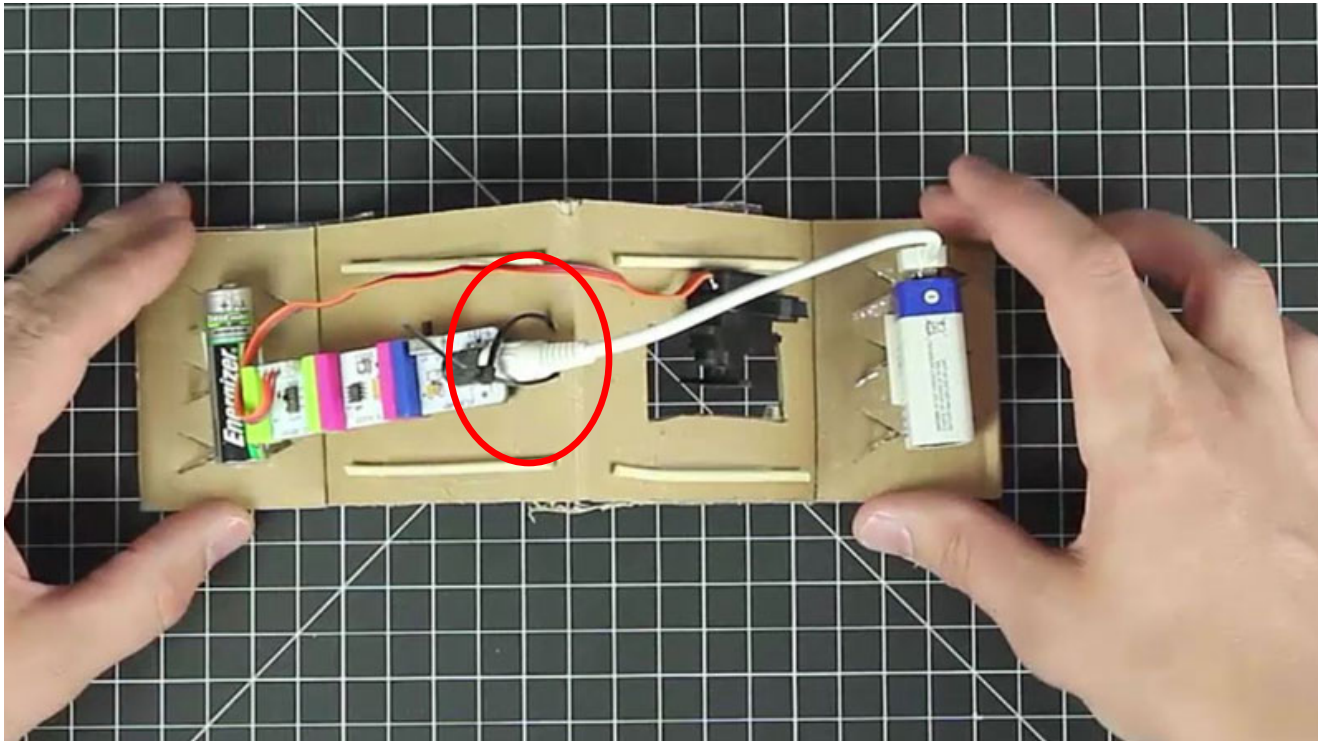
- 1 - The feet need weight on them in order to get traction.
- 2 - Place a battery on the left foot.
- 3 - Mount the littleBits 9v battery.
- 3 - Connect the P1 power bit to the cable and then to the 9v battery.
- 4 - Attach the i16 pulse bit to the P1.
- 5 - Attach the o11 servo bit to the pulse bit.

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STEP 10: Secure bit assembly to body



Using a zip-tie, loosely secure the bit assembly around the cable connection.

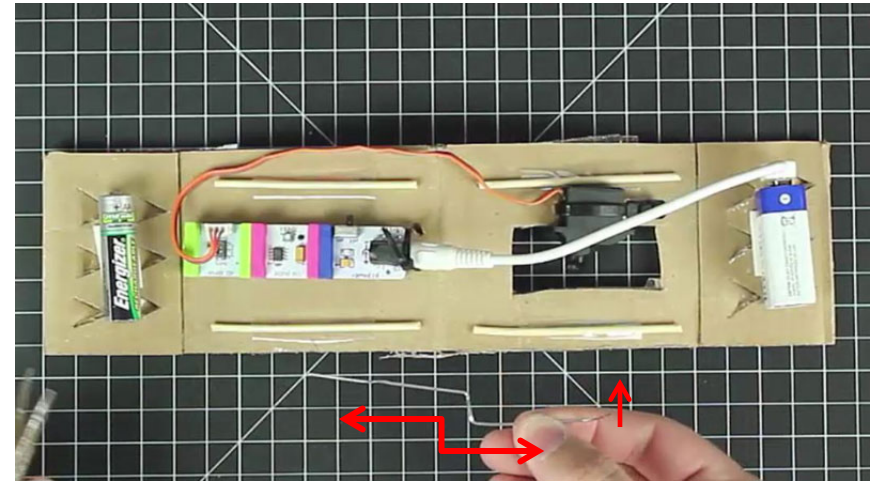
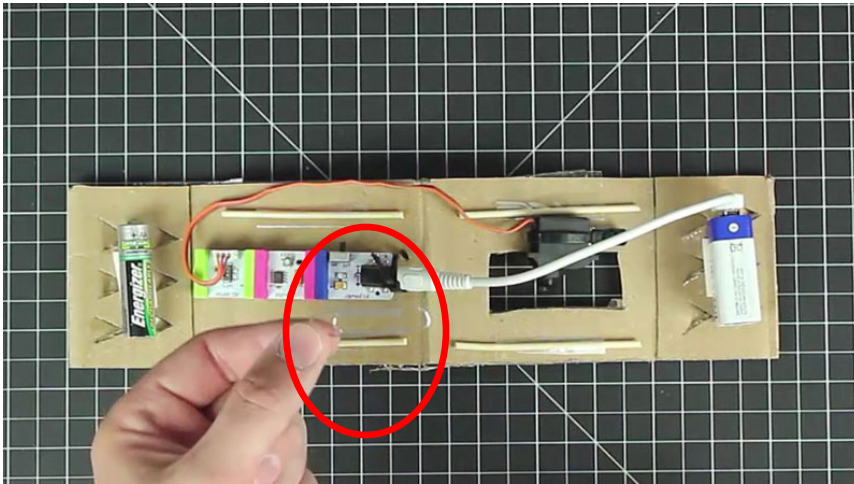
NOTE- Don't tighten zip-tie until later.

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STEP 11: Create servo linkage



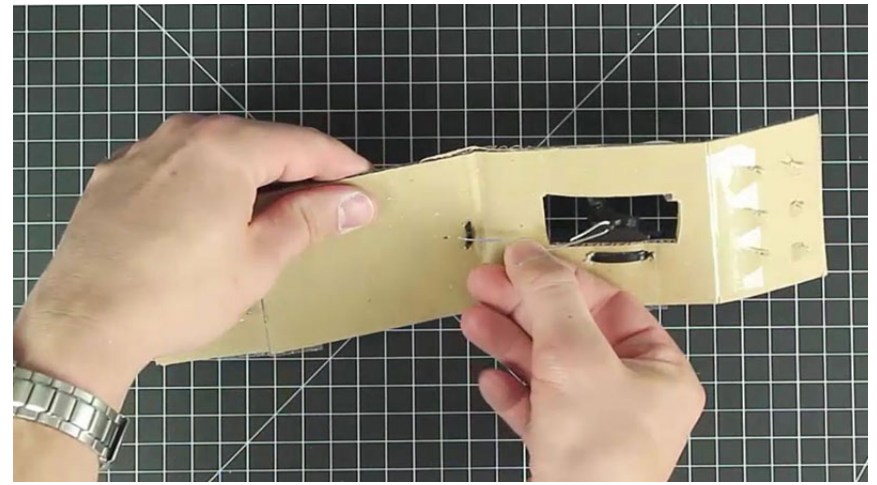
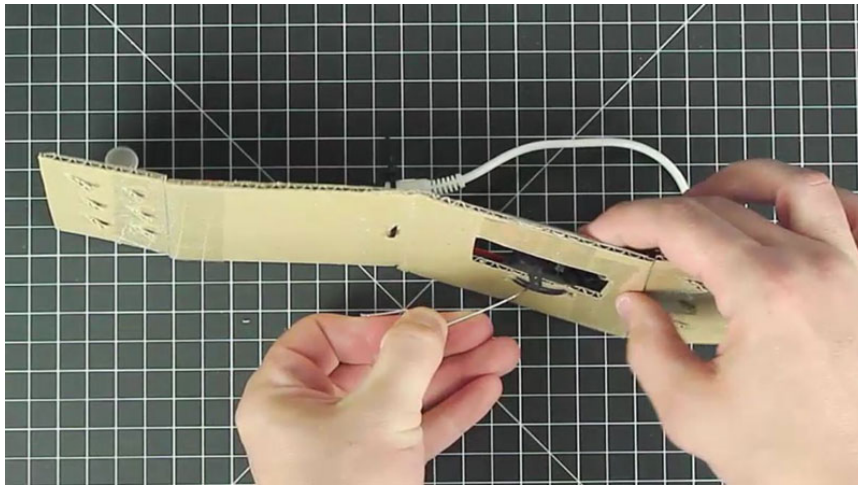
Bend a jumbo paperclip into the shape outlined above.
The far right side goes straight up while the other bends are 90° angles.

Makerspace Project:

Make an inchworm using littleBits

Step-by-Step Instructions

STEP 12: Mount servo linkage



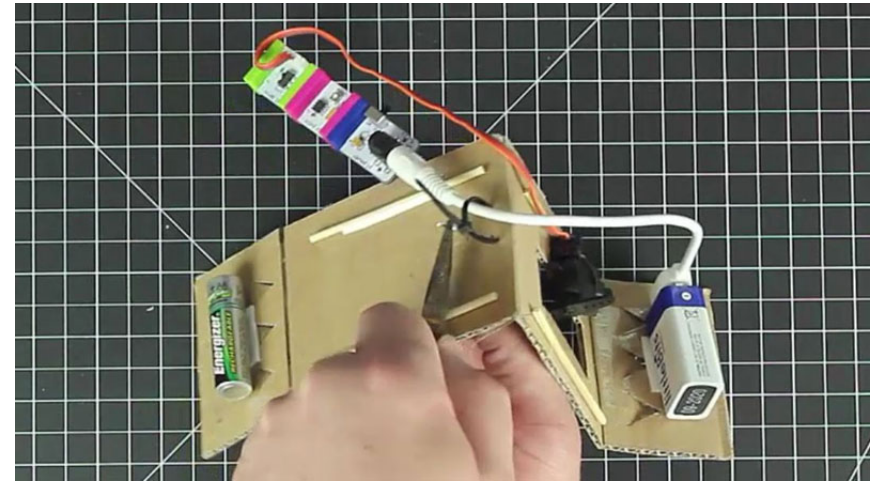
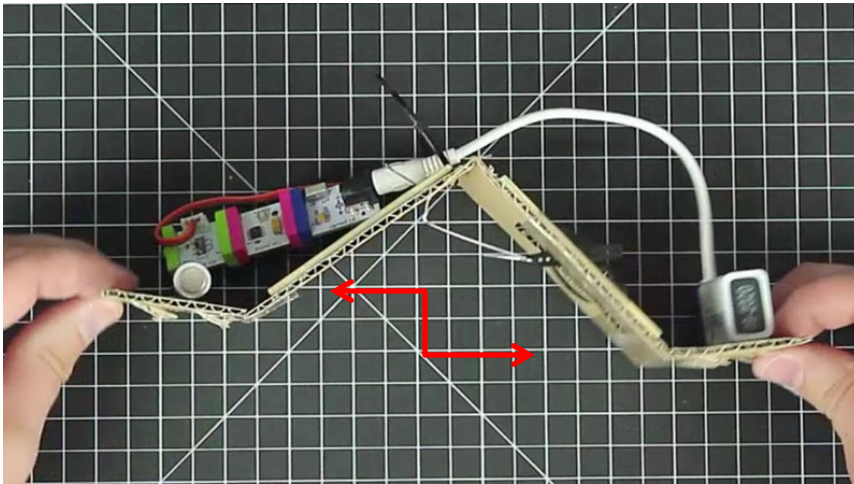
- 1 - Insert the right side of paperclip that is going straight up into hole on servo.
- 2 – Pop the other end through the cardboard just below the zip-tie.

Makerspace Project:

Make an inchworm using littleBits

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STEP 13: Finish servo linkage connection



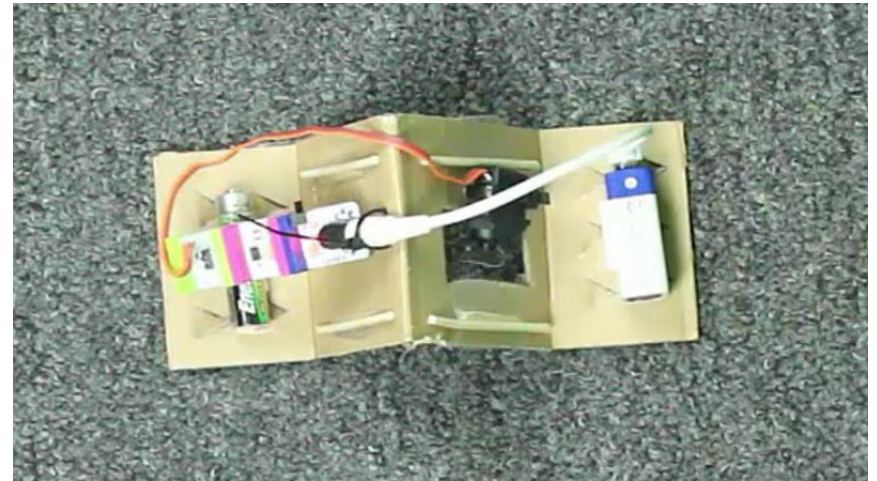
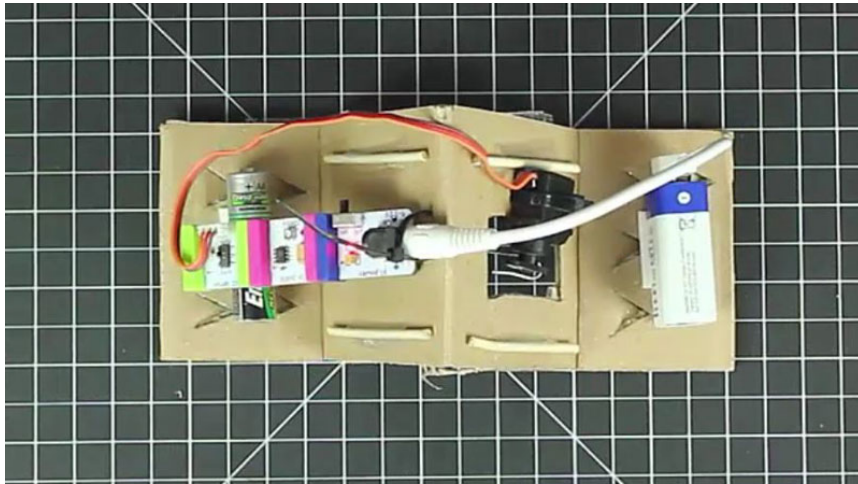
- 1 - Bend the paperclip that came through cardboard for a secure connection.
- 2 - You can now fully tighten the zip-tie around the power cable.

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Make an inchworm using littleBits

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STEP 14: Inchworm complete



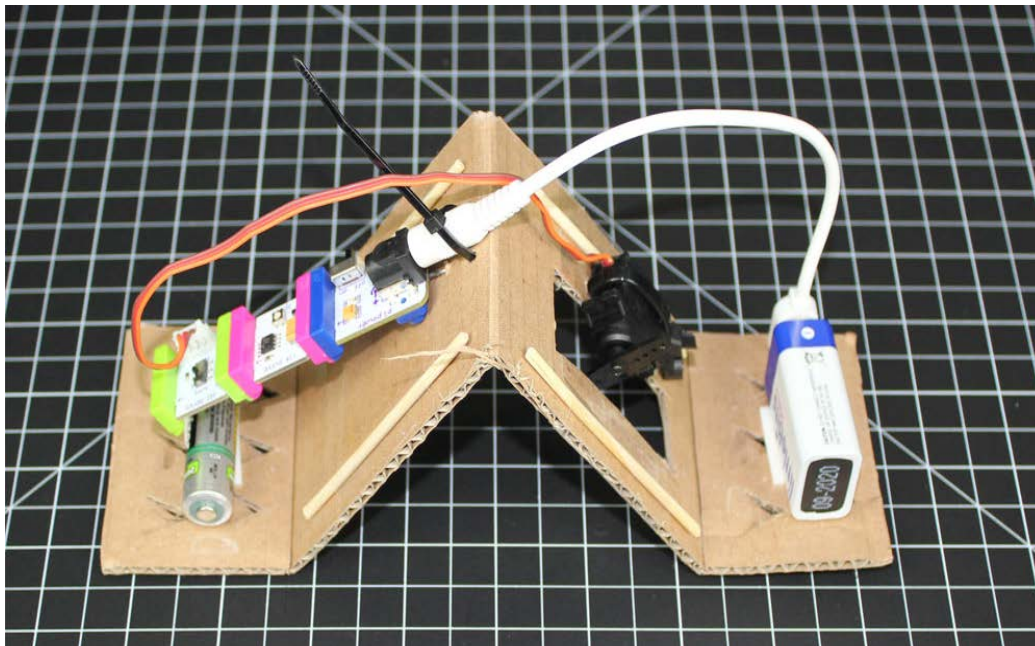
Your littleBits inchworm is now complete and ready to race.
For best traction, it is recommended to use on a carpeted surface.
NOTE – adjust speed of inchworm by turning dial on pulse bit.

Makerspace Project:

Make an inchworm using littleBits

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See It In Action On YouTube !



Watch the video - <https://youtu.be/pl3aZYr-JEU>