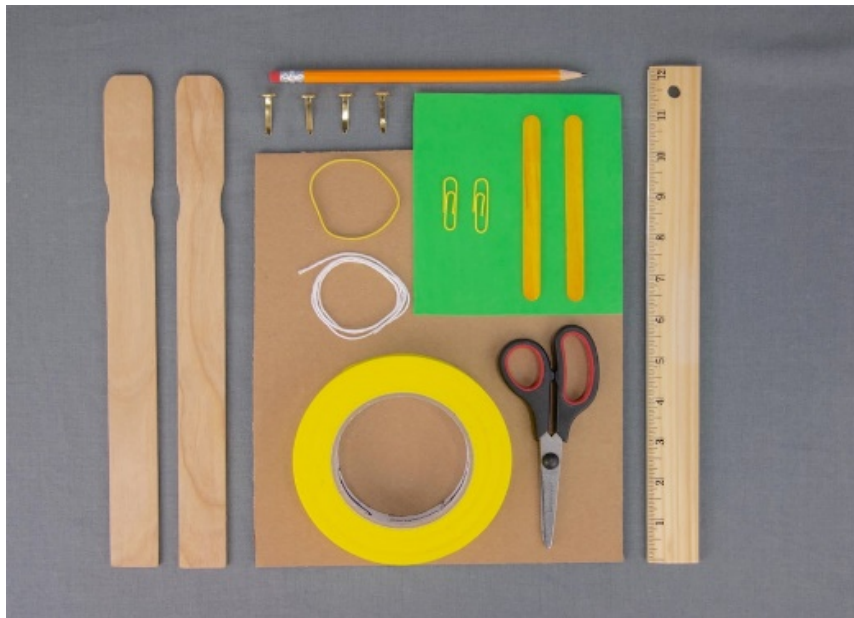


Extending Grabber

STEM SUPPLY LIST

- paint stirrers
- clean and unbent cardboard
- ruler
- scissors
- sharpened pencil
- masking tape
- 1.5" metal fasteners
- 1/8"x3.5" rubber band
- string
- craft sticks, foam, paperclips, or other materials for improving the grabber's grip
- assorted objects to pick up



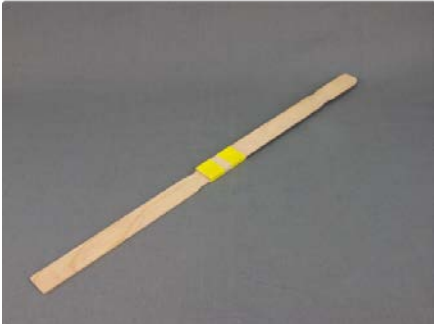
Source: <https://www.instructables.com/Articulated-Grabber-Engineering-Project-for-Kids/>

https://www.youtube.com/watch?v=aNUkqJ_xOq8

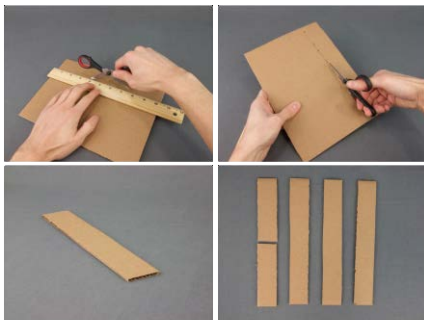
Extending Grabber

INSTRUCTIONS

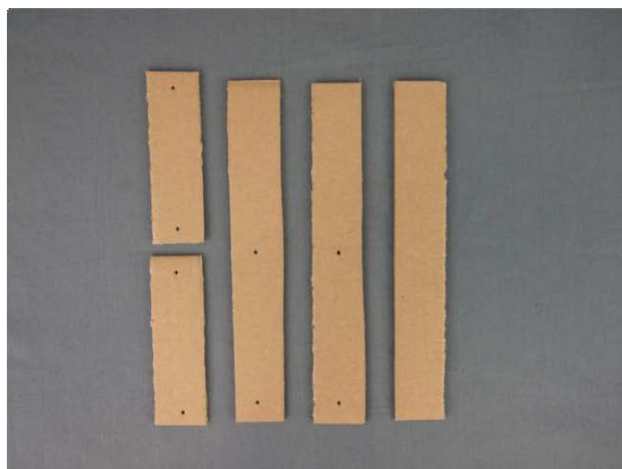
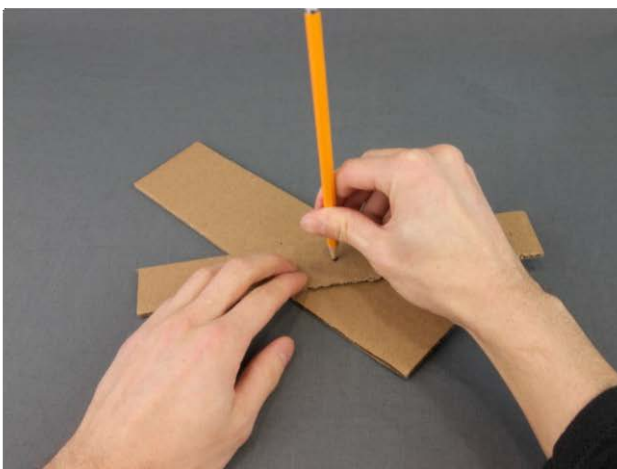
Step 1: Build the handle! Overlap the paint stirrers by about 4" (10cm), and wrap tightly with masking tape in at least 2 places.



Step 2: Cut the cardboard. Cut 10" (23cm) pieces of cardboard that are about 1.5" (3.8cm) wide. An adult may need to prep this step with a utility knife and cutting mat.

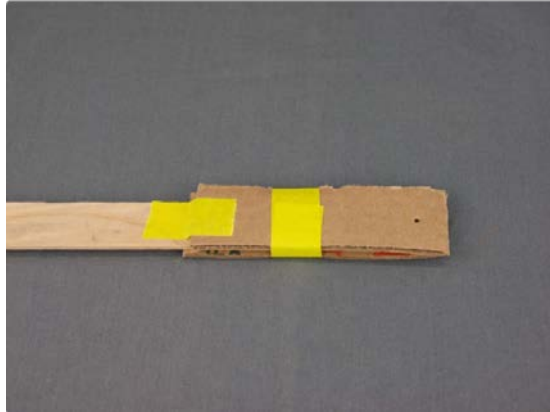


Step 3: Use a sharpened pencil to poke hinge holes into the cardboard as shown. The holes should be at least ½" (1cm) from the edges, and they don't need to be very big. Note that one piece isn't poked at all. Keep your pencil sharp by placing a scrap piece of cardboard behind the area you're piercing.

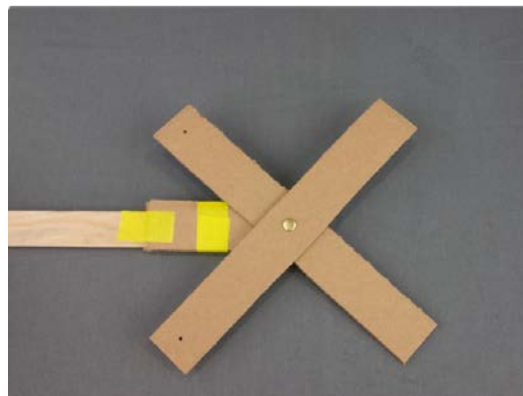


Extending Grabber

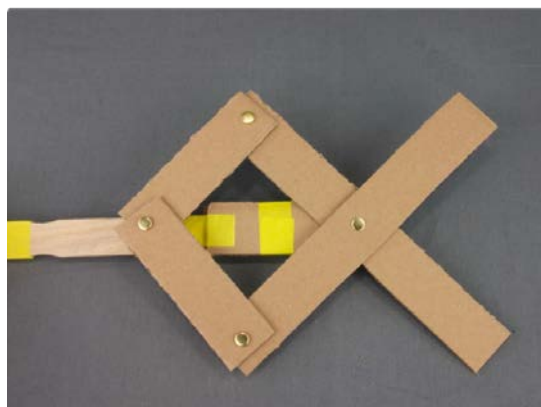
Step 4: Assemble the Grabber Mechanism. Take the piece that doesn't have holes, bend it in half, and tape it to the end of the handle as shown. Overlap most of it with the handle, but leave about 1" (2.5cm) of the folded side not overlapped with the wood. Poke a hole through that part of the cardboard.



Assemble the cardboard as shown using a metal fastener. On the other side, fold the fastener tabs completely flat, and secure in place with a piece of tape. **This step is important! If the fastener tabs are not folded and taped, the grabber will come undone!**

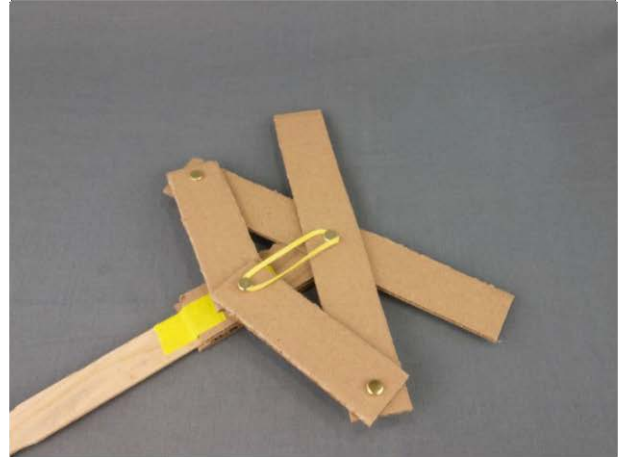
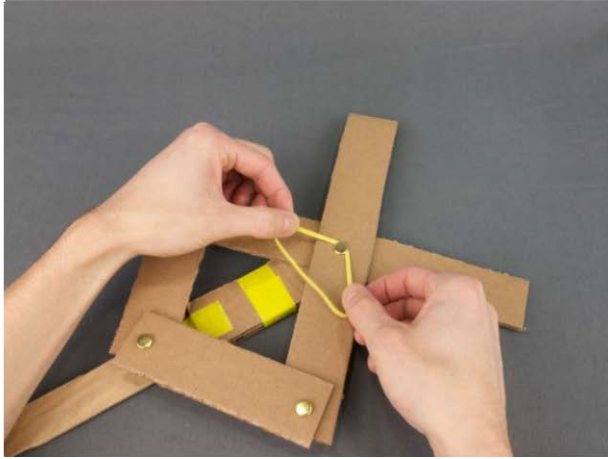


Attach the two 5" (12.5cm) pieces as shown. Remember to fold and tape the fastener tabs.

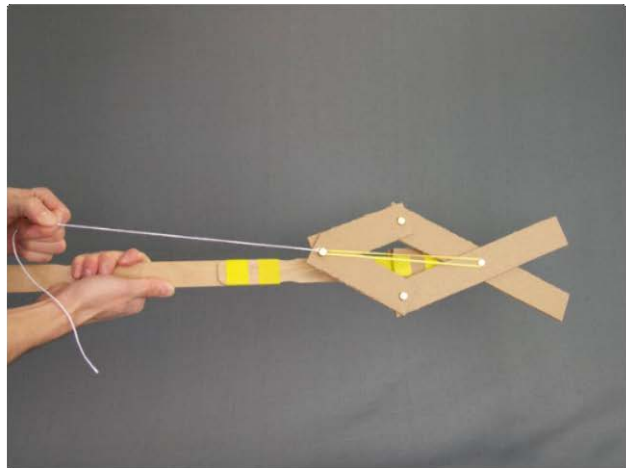
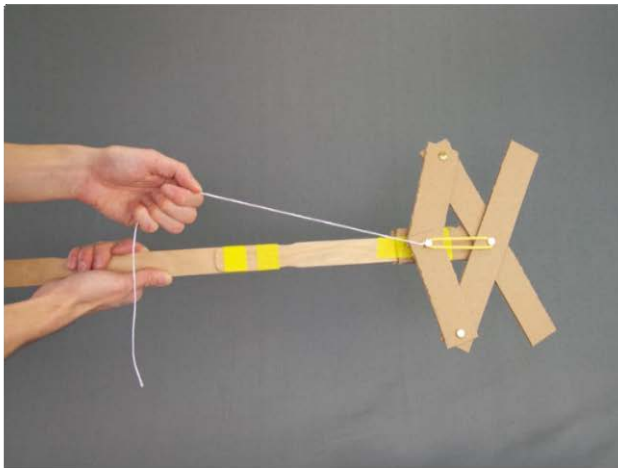


Extending Grabber

Step 5: Attach the rubber band and string! This will help automatically open up the grabber. Start by stretching the rubber band with both hands, and slipping it under the middle fastener as shown, then repeat with the other middle fastener.

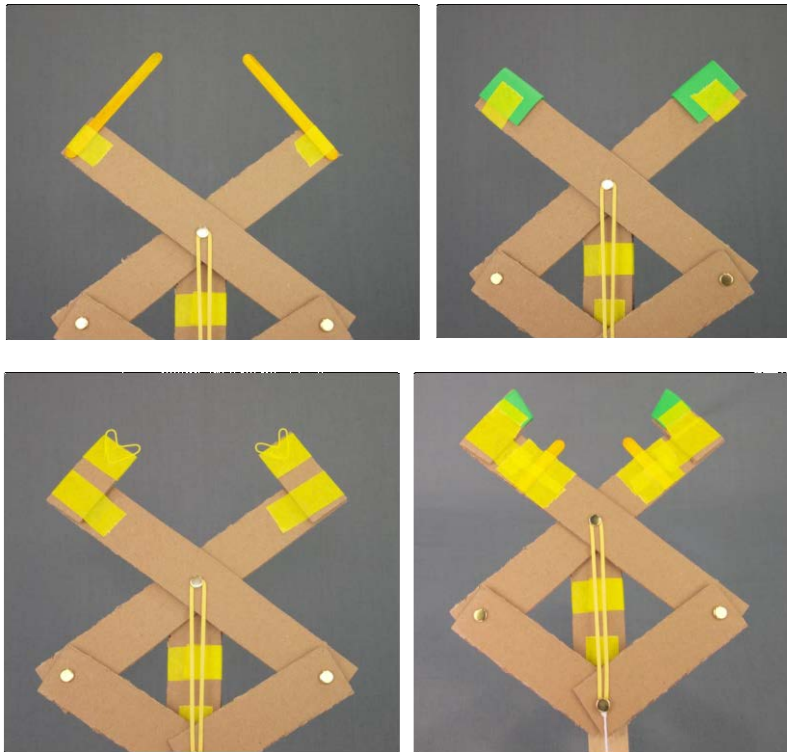


Tie a piece of string to the fastener as shown. The grabber is ready to test! Give the string a tug, and your grabber should close



Extending Grabber

Step 5: Improve the Grabber's Grip! Check out the pictures above for some inspiration.



Step 6: Challenge! Find 3-5 objects of different shapes, weights, and sizes. Try to pick them all up easily!

