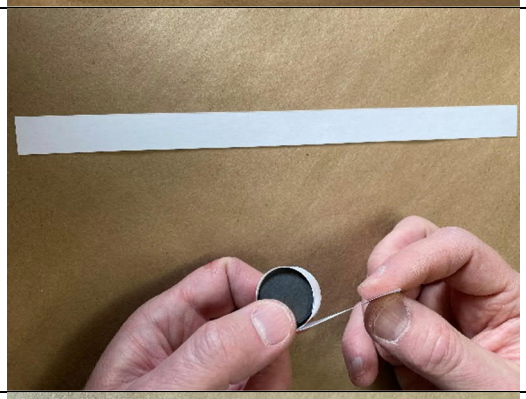
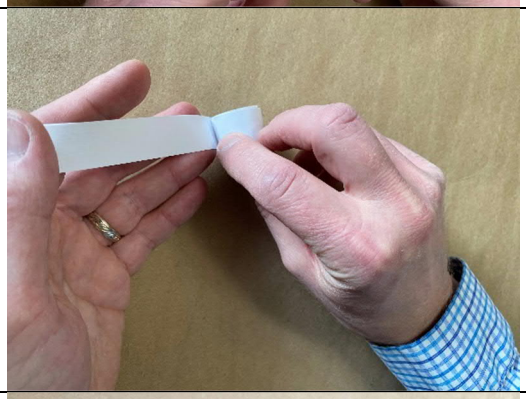
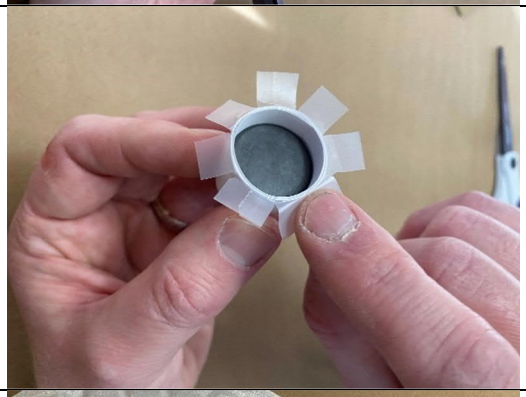
All Pikes Peaks Makes

Making a Speaker

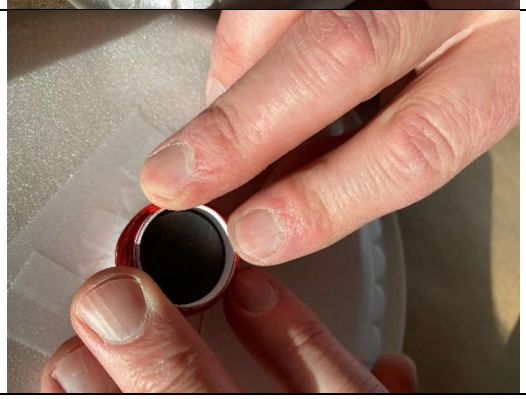
Brought to you by:

	***Supplies needed:*** (3) Magnets – Ceramic (Ø25mm x 5mm) (1) Adhesive Sticker (Circular for Magnet) (2) Paper Strips (.75” x 11”) (2) Paper Cards (2” x 3.75”) (1) Foam Plate (Ø8.875”) (1) Magnetic Wire (30 gauge x 40’L) (1) Cardboard Base Plate (5” x 7” x 1/8”) (1) Wire Connector (with adhesive back)
	Start by rolling one of the .75”x11” strips of paper around the three magnets as shown in the photo to make a paper tube. Tape the paper to form a tube, keeping the tape on the outside of the tube, and not covering the open end of the tube.
	Take the second strip of paper and roll it around the tube formed in the step above. Tape the paper on the outside to form a paper tube, again making sure the tape is not covering the open end of the tube.
	Wrap a piece of tape around one end of the paper tube centered on the end of the tube so that the tape will overhang the end. As shown in the picture.

All Pikes Peaks Makes

	Cut the tape that is hanging over the end of the tube in about ¼” increments. The top will look like a flower as shown in the picture.
	Fold the tape back as shown in the picture.
	Center the tube on the foam plate and press the tape tabs down tight.
	Take additional tape and place them on top of the tape tabs to secure the tube in place.

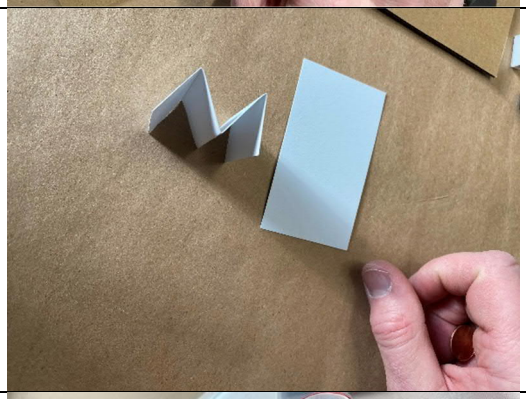
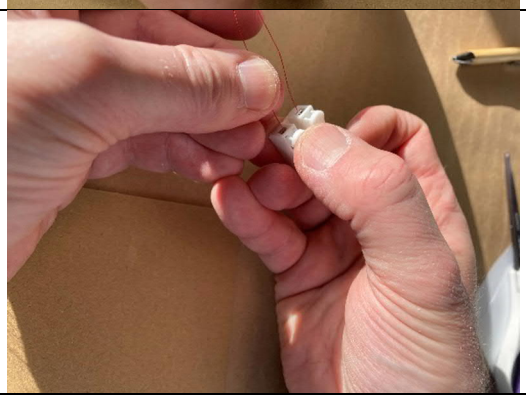
All Pikes Peaks Makes

	Tape the free end of the magnet wire to the bottom of the plate leaving ~4” of wire overhanging the plate edge. Be sure to tape the wire down completely to the bottom of the plate to make the next steps easier.
	Place the wire spool so that the cone shape is down on the paper plate. Using the back of the pen, wrap the wire around the center of the paper tube as shown.
	Wind the wire on the paper tube until there is only a foot of wire left on the wire spool. Keep hold of the wires on the tube to prevent them from unwinding. Ask for help if needed.
	If any of the coil wires come off of the paper tube, push them back down.

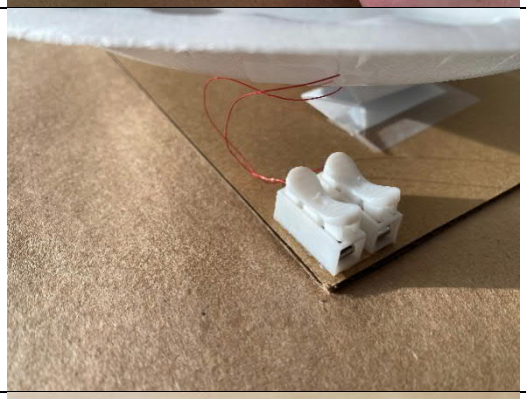
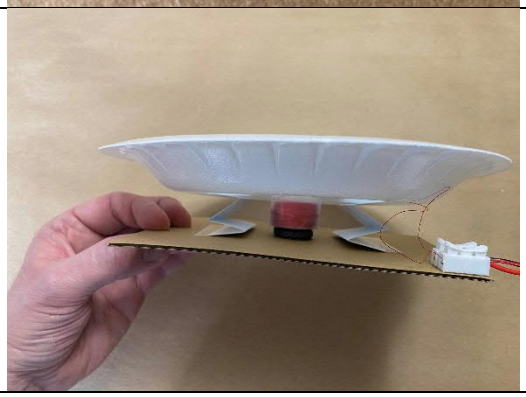
All Pikes Peaks Makes

	Once you are done winding the wire on the paper tube, tape the free end of the wire next the wire already on the plate, leave around 4” of wire overhanging the plate edge.
	Wrap a piece of tape around the coil of wire to secure it in place as shown. Keep the tape close to the plate.
	Tilt the paper plate over to remove the magnets.
	Reach inside the paper tube and remove the first paper tube and discard. Make sure the second paper tube stays in place taped to the plate.

All Pikes Peaks Makes

	Using a coin or the back of a scissors, scrape the red varnish coating off of both ends of the wire, approximately ½". *Magnet wire is coated with a varnish that prevents the flow of electricity; this is how we are able to wrap the coils of wire on top of each other without a short circuit.*
	Fold the card stock in half and the fold each end back, crease well. As shown in the picture.
	Tape the ends of the card stock to the bottom of the foam plate. One on each side. Note that the wires should be next to one of the cards as shown.
	Connect the speaker wires into the end of the terminal strip, by pushing the plastic strip down and inserting the wires.

All Pikes Peaks Makes

	Using the double sided circular tape, adhere the magnets to the center of the cardboard as shown.
	Place the foam plate on top of the magnets, and tape the ends of the cards down to the cardboard base.
	Adhered the white terminal to the corner of the cardboard base.
	Your speaker is now complete. The speaker should have ~4 ohms of impedance. This can be connected to an amplified signal for testing.

You can try different experiments like removing magnets, holding on to the plate to feel the vibration and change in sound, etc.