

Recycled Cellphone Speaker



Supplies

Cardboard Paper Towel Tubes

Plastic Containers

Scissors

Ruler

Hot Glue Gun & Glue Sticks

Cellphone

Markers

Optionally: Paint, Knife

**Parental supervision required*

Instructions:

- 1 Use your scissors to cut a hole in the bottom of your two plastic cups or containers. The holes should be just large enough to fit your paper towel roll inside.
- 2 Align the speakers on your cell phone with the middle of your paper towel tube. Using a marker, make an outline of your phone's base on the tube.
- 3 Move your phone safely away, then cut out this outline, leaving a flap to help keep the phone securely in place. Like with the plastic cups, ensure this hole is just big enough to fit the phone for best results.
- 4 Next, choose an object to be used as your amplifier's base. This could be a cardboard box or plastic container, but it should be sturdy and balanced enough to hold the weight of your phone without toppling.
- 5 With all of our pieces prepared, use a hot glue gun to affix the plastic cups to the ends of your tube and affix the bottom of the tube (opposite the phone-shaped hole) to your base. Allow the glue to cool and dry.

If you don't have, or prefer not to use, a glue gun - feel free to use Ehlmer's glue for your amplifier.
- 6 Test out the balance of your amplifier before completely trusting your phone in it. If it seems off balance, think of how you might revise your design to be more sturdy. You could use a different base or add in supports.
- 7 Once your construction is sturdy, test it out! Play a song, podcast or audiobook and see if your amplifier makes your phone easier to hear.

Now that we have your prototype, how can you make it even better? What other inventions can you construct with these materials and tools?

**Parental supervision required. Recommended for ages 6+*