



## ELECTRICAL ACTIVITY



# Build a cup speaker

### Materials

- two alligator clip leads
- masking tape and scissors
- paper cup
- a piece of sandpaper
- 24 gauge or higher magnet wire
- headphones
- C or D cell battery
- couple donut magnets
- a working audio device



*Original Source: Exploratorium Teacher Institute*

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### Instructions

1. Using the sandpaper, sand the enamel off the last 5 cm of each end of the magnet wire.
2. Wind the magnet wire around the battery, leaving 10 cm free at each end.
3. Slide the wire off the battery and wrap the free ends around the wire coil to hold the circular shape in place. Leave a few cm of wire sticking out from both ends of the coil.
4. Tape the coil to the bottom of the paper cup on the outside.
5. Attach an alligator clip to each of the two ends of the wire coil.
6. Place one magnet inside the bottom of the cup. Use some tape to hold in place.
7. Using scissors cut off the earpiece end and using wire strippers remove some of the plastic overing and separate the two wire strands. If there is a third wire, a ground wire, just bundle it with one of the other strands.
8. Attach the free end of the alligator clip leads to the two strands of wire on the headphone plug.
9. Plug the phone plug into your radio, phone, or other device.
10. Turn the device on and play some music (you may have to turn the volume up louder than you normally would).
11. With one hand, hold the cup to your ear. With your other hand, bring a magnet closer and closer to the coil of wire. It should hold in place when close enough to the other magnet and you should hear the sound produced by your homemade speaker.



**Congratulations, you now have a cup speaker!**