

# Cup Phone

**Best for Ages**

5+

**Workspace**

Flat indoor surface

**Is electricity required?**

No

## Description

Create a communication device and explore sound waves by simply using string and two cups!

### Materials

- **Two items to concentrate sound waves:** paper cups, disposable plastic cups, empty yogurt cups
- **Piercing object:** nail, ice pick, awl, sharp pencil, scissors
- **String for vibration to move through:** cotton string, fishing line, kite string, yarn
- **Two items to keep string in place:** Paper clip, toothpick, tape, bobby pin
- **Scissors**
- **A friend or family member**

### Concepts Explored

- Sound
- Vibrations

### What to Do

1. Carefully use your piercing object to create a small hole in the center of the bottom of each cup. Adult supervision is recommended for this step!
2. Use scissors to cut string about 3 meters or longer, depending on how far away you want to be from the person you are talking to using the cup phones.
3. Thread one end of the string through the bottom of one cup. Thread the opposite end through the other cup.
4. Inside the cup, gently pull the string through a few inches. Tie the string around a paper clip to prevent the string from slipping through the hole. Repeat this step with the other cup.
5. Hand one cup to a friend while you hold the other cup. Slowly walk away from each other until the string connecting the cups is straight and tight. A taut string will make it easier to hear your friend.
6. Speak into the cup while your friend holds the cup to their ear. Switch roles and repeat. What do you notice?



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## Troubleshooting Tips

- Struggling to thread the string through the cup? Use a toothpick to help you poke the string through the hole. Or wet a bar of soap, rub the ends of the string on the soap, and roll the ends using your fingers until the end is pointy. Now the string will slide through easily.
- Tying knots can be tricky. Take time to practice knot tying. An easy way is to make a loop and then put one end under the circle and pull tight.



What happens if the string isn't taut?

What happens if you hold the center of the string while talking?

How do different materials change the quality of sound?

## What is Happening?

- **Sounds** are heard when vibrations reach your ears and stimulate the nerves inside. These nerves then send electrical signals to your brain and you hear a sound.
- **Vibrations** are created when you speak into the cup. When you talk into one of the cups, the vibrations of your voice travel into the air and the cup, then from the cup into the string, and then into the other cup where it then hits your partner's eardrum.
- The cups concentrate the sound waves and cause them to be heard at longer distances. They also block outside sounds from disturbing what you are hearing.

## Taking it Forward

- Learn more about sounds by checking out these books at your local library:
  - Hip Hop Dog by Chris Raschka
  - Pokko and the Drum by Matthew Forsyth
- If you like this activity, you'll also like these [Amazeum You](#) activities:
  - Metal Noise Makers
  - Funnel Horn
  - Balloon Saxophone