



## Curiosity Guide #407

### Sense of Hearing

Accompanies Curious Crew, Season 4, Episode 7 (#407)

#### Sound Confusion

Investigation #5

#### Description

One ear, or two?

#### Materials

- A group of friends
- Blindfold

#### Procedure

1. One friend closes his or her eyes and puts on a blindfold.
2. Form a circle around that friend, with each person in the circle about 10 feet away from the friend in the middle.
3. Have different people make sounds, one at a time. Each time, the blindfolded person points to where he or she thinks the sound came from. Repeat several times with different sounds and different people making the sounds.
4. Now the person should plug one ear and try the process again.

#### My Results

## Explanation

Your brain is used to determining location from both ears. Identifying the location of sounds is much easier when you can use both ears. Sound generally is louder with the closer ear and is detected slightly faster. Although this is hard to differentiate consciously, our brain interprets the stronger, quicker sound entering the closer ear as being located on that side of the body. When only one ear gets the signal, the brain does not have a comparison sound from which to work, which makes identifying the sound's location more difficult.

**Think about this:** Our pinnae capture and emphasize sound frequencies of the human voice. We have a large range in our ability to hear sounds, of 20 to 20,000 hertz. The hertz is a measurement of how many sound-wave cycles there are in one second. But what about other animals? Whales also hear at 20 hertz, but their range extends to 100,000 hertz! Bats can detect a range from 1500 to 100,000 hertz, while frogs have a range from 600 to 3,000 hertz. And did you know that crickets have ears in their knees? When we think about the animal kingdom, the sense of hearing is present in vertebrates and insects, but is especially strong in mammals and birds. Now you're getting a sense of hearing!

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