# Audition Location

Stay very still, listen very carefully, and try to recognize the sounds going on outside of your room. Chances are you could identify the sounds fairly well. You probably could even judge how far away the sounds were.

Your sense of **hearing or audition**, is useful not only to help you identify different sounds, but also to help you determine different directions and distances. This occurs because you can detect sound waves from two ears each located on either side of your head. In this way your ears work with your eyes to give you a 3 – D view of your world.

Let's do some experimenting to examine how this works.

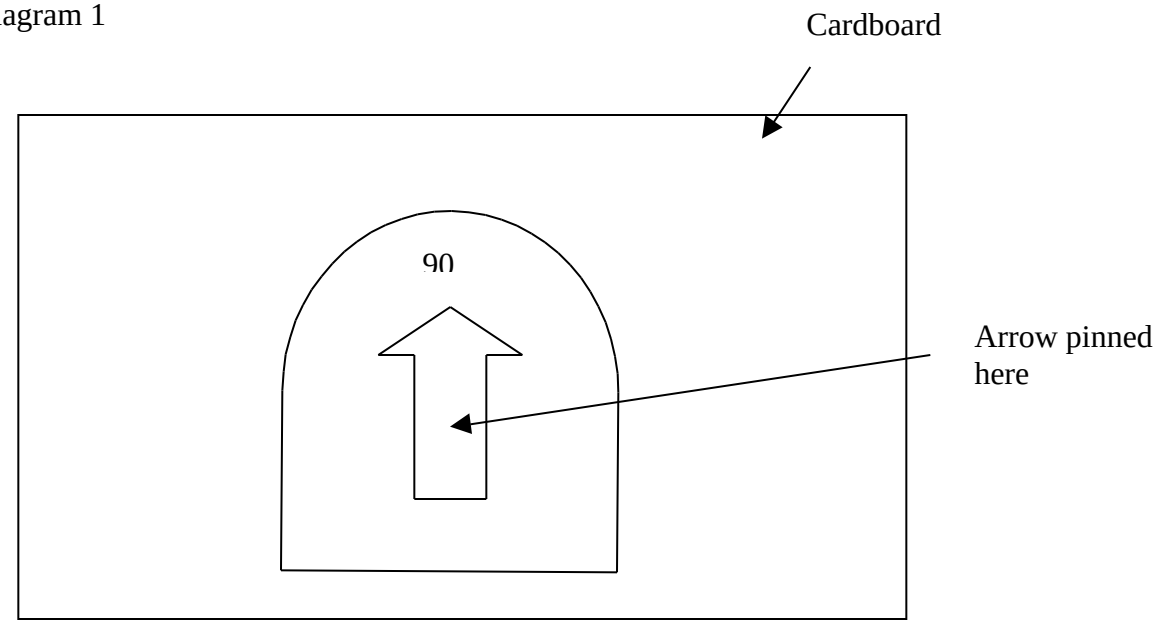
**Materials**

- Blindfold
- Earplugs
- Scissors
- Cardboard
- Thumbtack
- Audition Location Testing Device Pattern and Arrow

**Procedures**

- Cut out the Audition Location Testing Device Pattern and Arrow found on the last page.
- Thumbtack the Arrow and the Device to the cardboard as indicated. (See Diagram 1 below)
- Have your subject sit about 3 meters (10 feet) away from you with the Device in her/his lap with the arrow facing straight ahead at the 90 degree mark.
- Blindfold your subject.
- Staying about 3 meters from your subject, move to anywhere on an imaginary semicircle in front of your subject. *(NOTE: Stay within the range of the arrow, which can rotate up to 180 degrees.)*
- Stop and clap your hands once loudly.
- The subject should use his/her hand to point the arrow toward where he/she thinks the sound came from.
- Record the results in **Data Table 1**. If the arrow is *pointed directly at you check* *HIT*. If the arrow is *not pointing directly at you check* *MISS* *and record about how many feet off the arrow is.*
- Now rotate to another position on the semicircle, clap, and record as before. Do this 8 more times for a total of 10 trials.
- Now have your subject place an earplug in her/his left ear. Repeat the test in the same way.
- Now have your subject remove the earplug from the left ear and put it in her/his right ear. Repeat the test in the same way.
- Switch places and repeat all procedures. Record the results in **Data Table 2**.
- Complete **Challenge Activities**.

Diagram 1




**Data Table 1**
Subject's name: _____

| Trial | With both ears | | With right ear only | | With left ear only | |
|---|---|---|---|---|---|---|
| | **HIT** | **MISS** | **HIT** | **MISS** | **HIT** | **MISS** |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |

**Data Table 2**
Subject's name: _____

| Trial | With both ears | | With right ear only | | With left ear only | |
|---|---|---|---|---|---|---|
| | HIT | MISS | HIT | MISS | HIT | MISS |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |

**Challenge Activities**

1. Under which condition were you able to locate the sound of the claps **best**: with both ears, with right ear only, or with left ear only? _____

2. Under which condition were you the **least** successful? _____

   Why do you think you were so unsuccessful under this condition? _____

   _____

3. Imagine that you tested someone who was visually impaired. How would the results compare with your results? _____

_____

Explain your answer. _____

_____

4. Calculate the percentage of direct hits with:

   - Both ears: _____
   - Right ear only: _____
   - Left ear only: _____

***** *You can calculate % by dividing the number correct by 10 and then multiplying that number by 100. For example, if you got 8 HITS, you divide 10 into 8* ( 8/10 = .80 ) *then multiple by 100* ( .80 x 100 = 80% ).

5. For more information about audition, try visiting these websites:
   http://www.asha.org/
   http://www.hearnet.com/
   http://www.bme.jhu.edu/labs/chb/
   http://www.sightandhearing.org/

**Idea adapted from *Neuroscience for Kids,***
*http://faculty.washington.edu/chudler/neurok.html*

**AUDITION LOCATION TESTING DEVICE AND ARROW**