L30- Testing Your Hearing and Deafness

Hearing test

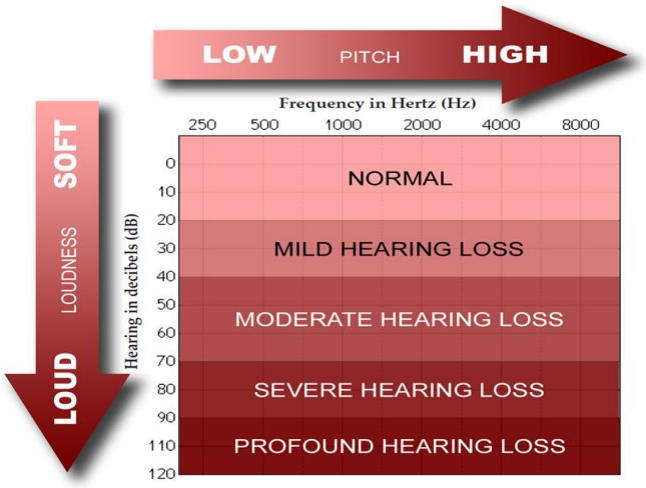
- **Hearing can be measured by behavioral tests using an audiometer. Electrophysiological tests of hearing can provide accurate measurements of hearing thresholds even in unconscious subjects.**
- **Hearing graphed on an audiogram, a graph of the softest sounds you can hear.**
- **To determine your subjective audible sensitivity, it is possible to make an audiogram.**
- **This measurement is frequency dependent and gives the test person tones in different loudness levels on air-contacted earphone, and on a bone-conducted earphone afterwards (bone conductor for comparison with the vibration sensitivity in the ear canal).**
- **It is necessary for the examination that the test person is pressing a button in the moment he can perceive the signal to show the examiner/physician that he is able to hear the tone at a certain frequency/sound level.**

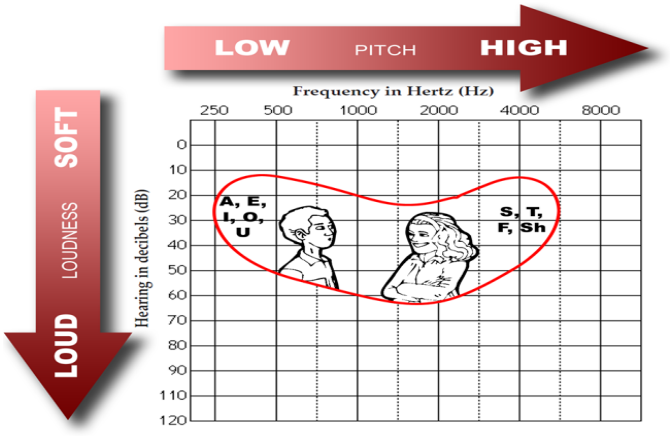
What is an audiogram?

An audiogram is a graph that shows information about a person's hearing abilities. An Audiogram is a hearing test that measures the softest sound you can hear. The softest level at which you can hear a sound is called the threshold.

The audiogram measures sound intensity, or loudness, in decibels which are listed from 0 decibels at the top to 120 decibels at the bottom. Running from left to right is frequency, or pitch, which is measured in hertz. The frequency starts on the left side with 125 hertz and goes up to 8000 hertz on the right side. This is just like a piano keyboard that has the lowest frequencies on the left and the highest frequencies on the right.
On a typical audiogram you will also see two lines: One red and one blue. The red line represents the hearing in your right ear and the blue line represents your left ear.
If your audiogram does not have colors, then the line with the X's represent your left ear and the line with the "O's" or circles represent your right ear.
So once your graph is filled in (x represents the left ear, o the right), it shows your hearing sensitivity for different frequencies at different intensities (at different pitches and different volumes).

At the frequency which runs from left to right. Vowels such as A, E, I, O and U are the lowest pitch and fall towards the left side of the hearing range. Consonants, such as S, T, F and Sh are higher pitched and fall towards the right side of the hearing range. Often times these higher frequencies are also associated with women's voices.
This section of the audiogram is commonly referred to as the speech zone because most human voices reside within this range of frequency and volume.

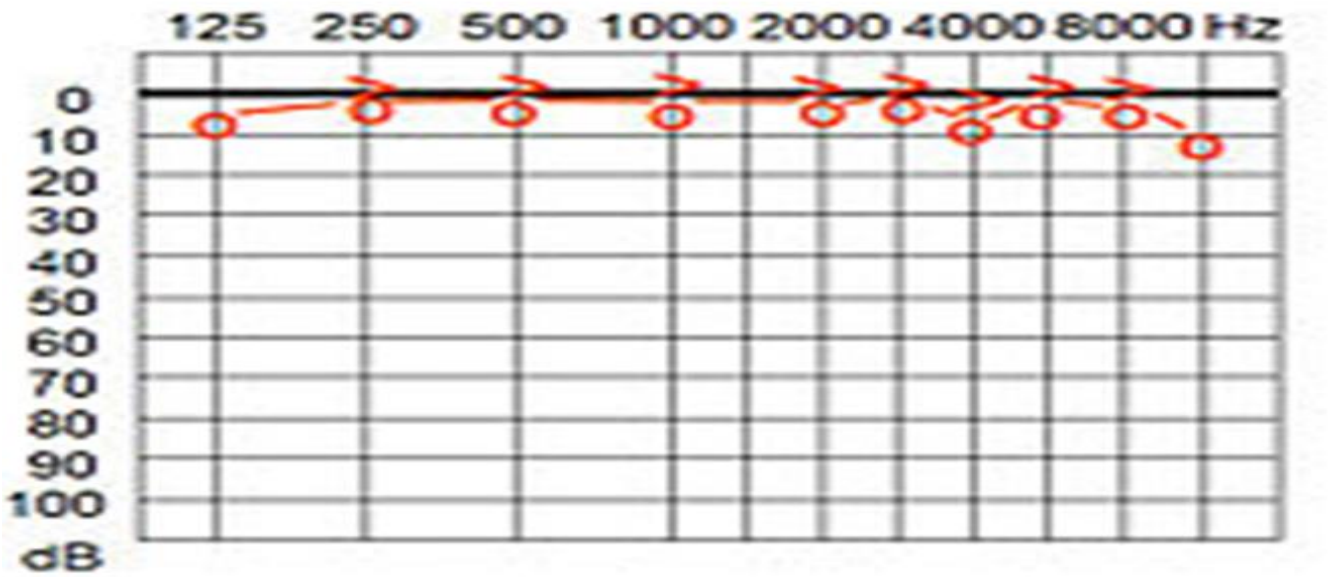




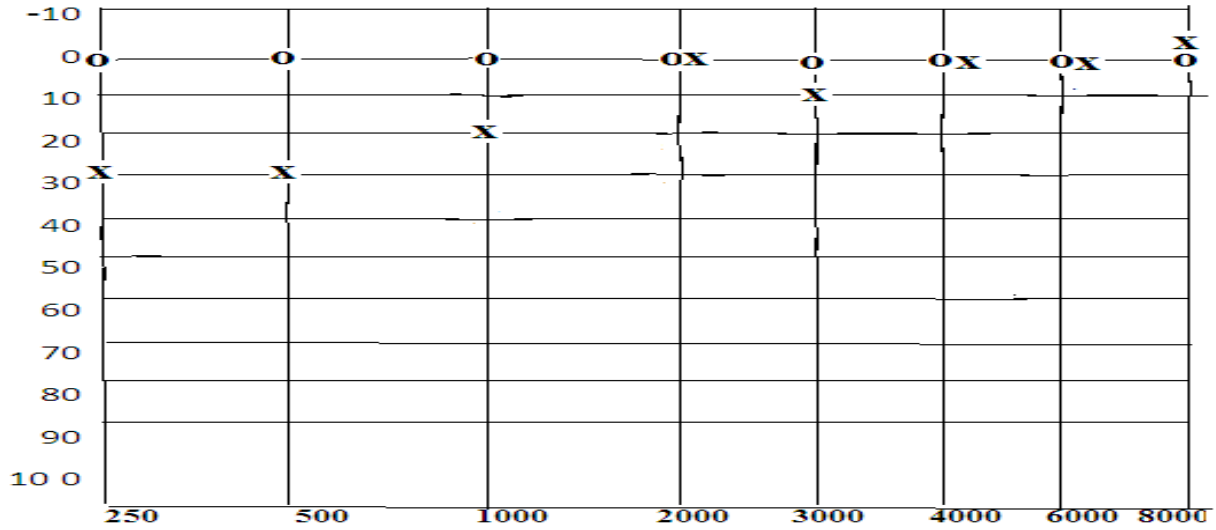
Your hearing loss is classified according to how far down the graph the marks go, and in what frequencies the loss occurs

Classification of Hearing Loss	Hearing Threshold
Normal hearing	0 to 20 dB
Mild	21 to 40 dB
Moderate	41 to 55 dB
Moderately-severe	56 to 70 dB
Severe	71 to 90 dB
Profound	91+ dB

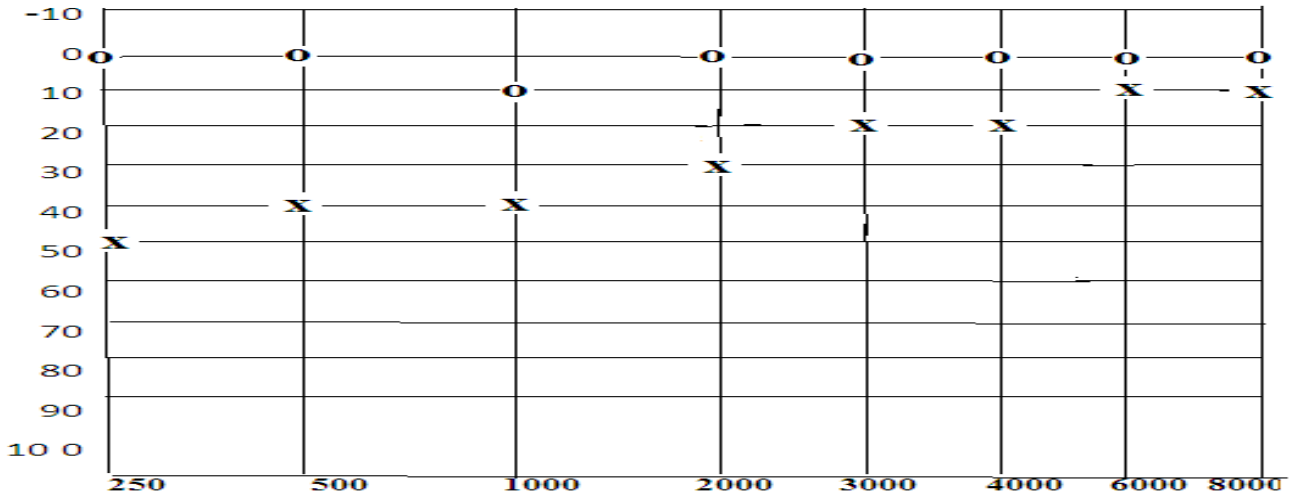
1. Normal hearing ranges from 0 to 20 dB in all frequencies.



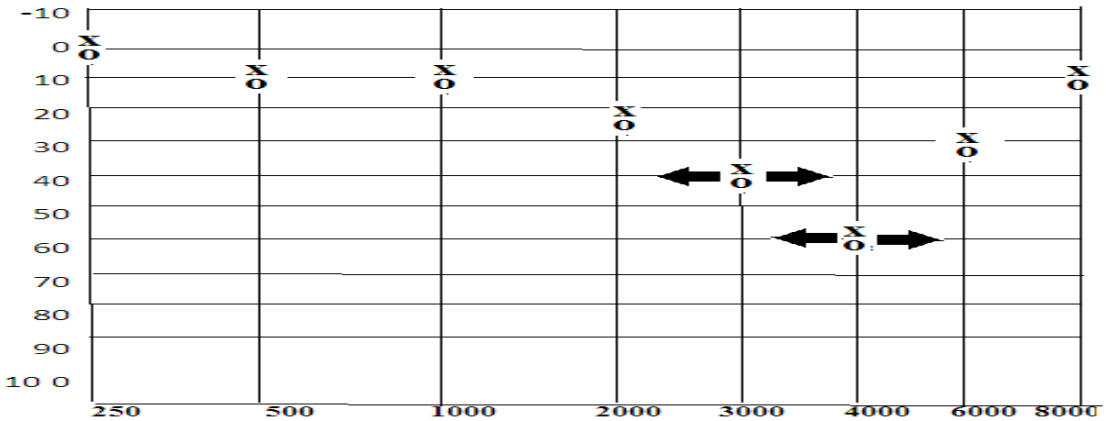
2. Audiogram of deafness resulting from wax . × for air conduction and o for bon conduction



3. Problem with the small bones (ossicles) in the ear (otosclerosis) Stiffening of the chain of small bones in the middle ear prevents sound from passing easily through to the inner ear.

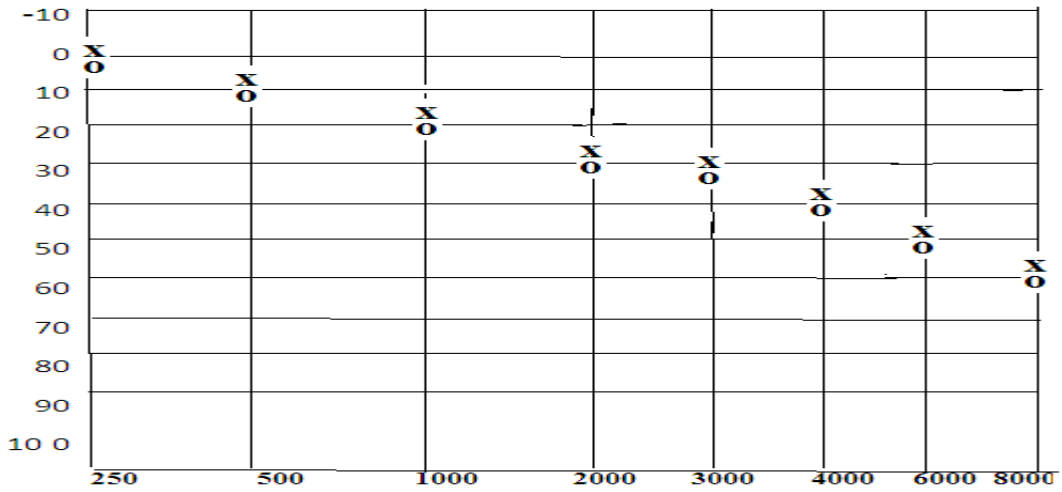


4. Atypical noise-induced hearing loss in the region of 4000 Hz .
× for air conduction .and for bon conduction. The black triangles indicate thresholds for bone conduction .

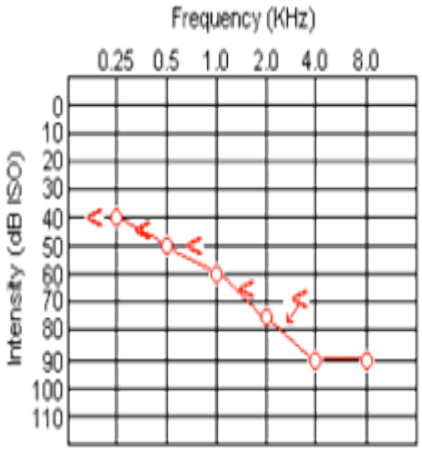


5. Audiogram of the old age type of nerve deafness in the left ear

× :for air conduction and o : for bon conduction

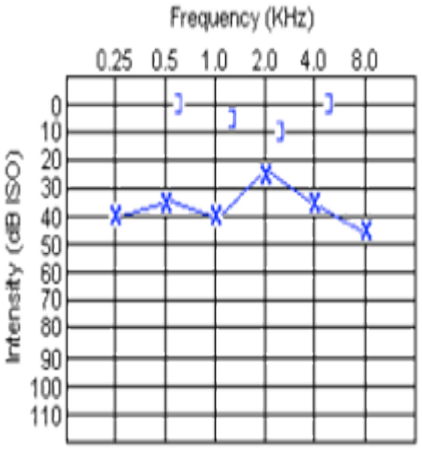


SENSORINEURAL HEARING LOSS



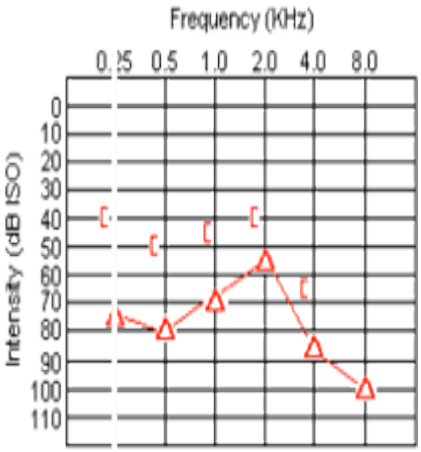
Moderate to severe sensorineural hearing loss

CONDUCTIVE HEARING LOSS



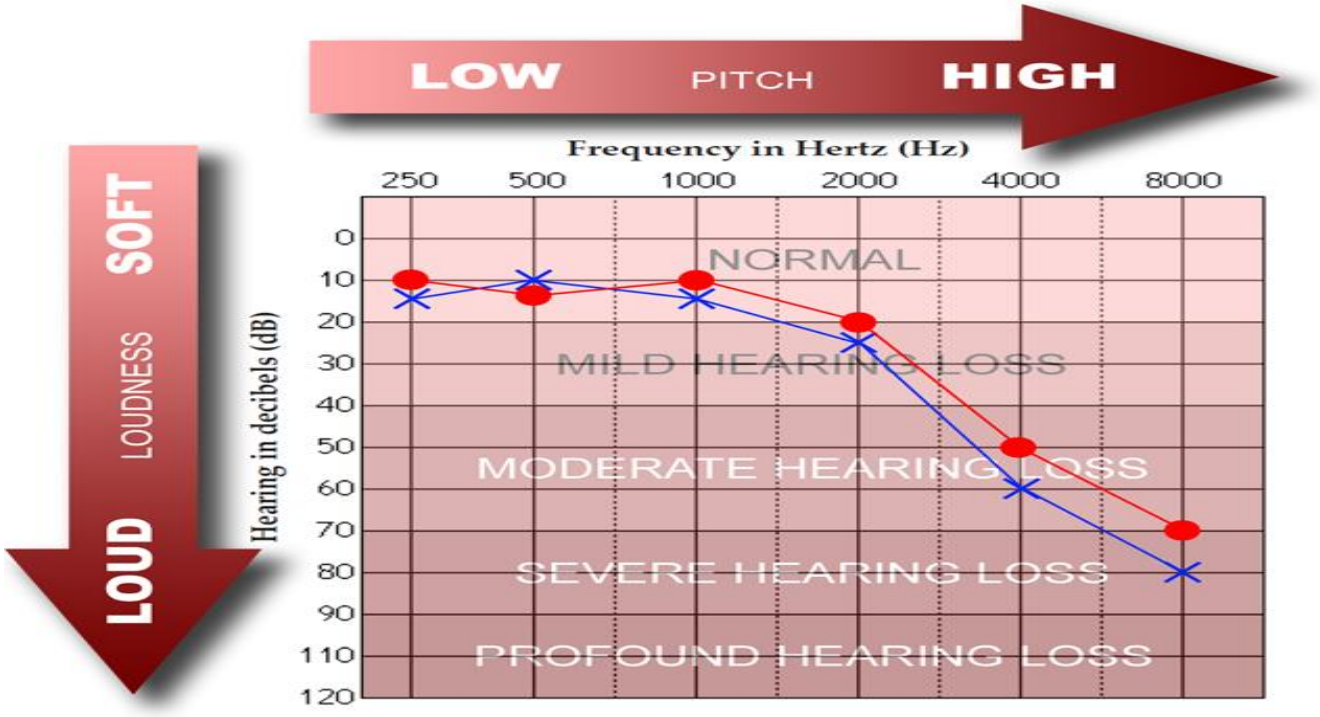
Mild to moderate conductive loss

MIXED HEARING LOSS



Moderately severe to profound mixed loss

This person has hearing that falls into the normal range up to about 1500 hertz. At 2000 hertz their hearing starts to make its way into the mild hearing loss category, more so for the left ear. At 4000 hertz there is a significant difference and the hearing is now in the moderate hearing loss category. At 8000 hertz this person's hearing falls into the severe hearing loss category.


LOW
PITCH
HIGH
LOUD
LOUDNESS
SOFT
Frequency in Hertz (Hz)
250
500
1000
2000
4000
8000
Hearing in decibels (dB)
0
10
20
30
40
50
60
70
80
90
110
120
NORMAL
MILD HEARING LOSS
MODERATE HEARING LOSS
SEVERE HEARING LOSS
PROFOUND HEARING LOSS