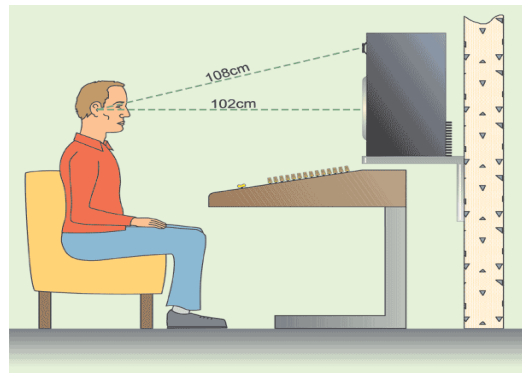
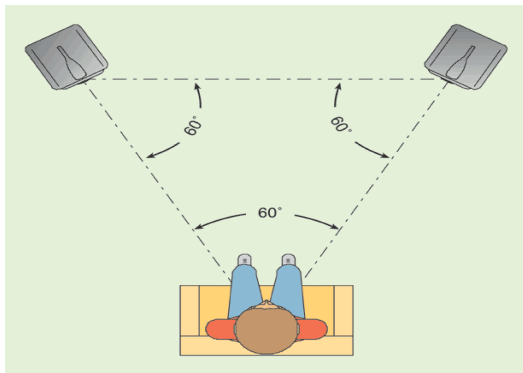


The level-meter is going to be needed since we have a room to monitor our sounds. The purpose of a level-meter is to alert you to excessive volume levels and for frequency response at your 'sweet spot'.

The fifth subject is placing your speakers in the corners of your room. Why? Some problems with boosting the bass, resulting in inaccuracies. The ideal speaker position will place the listener and speakers at points on an equilateral triangle, as shown in the diagram below.



*Courtesy: Sound on Sound Magazine.*

Placing the speaker symmetrical is very important because walls, floors, and ceiling interact with speakers.

## THE NEAR-FIELD MONITOR

We do not have to confuse ourselves with the monitor of a computer screen since they share the same name.

When you visit a professional studio, you will notice that large monitors have been mounted at considerable distances, around six to ten feet away from the mixing engineer. On the contrary in home or budget studios, near-field monitors have become the norm to monitor. With this technique, small but accurate and efficient speakers are placed from three to six feet from the mixer's ears, with the head and speakers forming a triangle (equilateral). The speakers should point toward the ears and be at ear level.

Benefits of using near-field monitors:

- They minimize the impact of room acoustics on the overall sound, as the speakers' direct sound is far greater than the reflections coming off the room surfaces.
- They do not need to produce a lot of sound (volume) because of proximity (closeness) to your ears.
- Closer also means relaxation of the requirements of the amplifier.

## PASSIVE OR ACTIVE MONITORS

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There are two main types of monitors: the active monitor and the passive monitor.

- **Active monitors** incorporate the amplification needed to drive the speakers from a line-level signal.
- **A passive monitor** consists of only the speaker and crossover, so they require an outboard amplifier.

## HOW TO CHOOSE A MONITOR

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It is recommended to go for active near-field monitors due to their reliability and durability. Here are some tips for choosing a monitor.

1. Go for the monitor that best suits your listening space and imperfect hearing response. That is, choose the part that colors your sound the way you prefer.
2. Take along a couple of your cds and try several monitors to capture the preferable listening experience.
3. Go for magnetically shielded speakers since most of our computer screens would be placed between them. They will prevent any monitor distortions of your computer screen.

### *Reflections*

One of the realities in audio production is that what we hear when listening to our song through a pair of monitor loudspeakers is **a combination of the direct sounds (on-axis), after it has reflected from the walls, corners, and other objects within our rooms**. These two combinations unfortunately create illusions of low frequencies (bass) and every sound we hear is inaccurate. But there is good news for budget studio owners. Below are some practical solutions.

### *Solution 1*

Evidently, small rooms cannot generate very deep bass so the best option is to acquire monitors with a flat response down to around 60 – 70 Hz (this information can be located at the back of the monitors) and rolls off gradually towards the low-end of the spectrum. At this point, the room will not affect the bass-end quite as much.

### *Solution 2*

The positioning of the monitors is crucial to eliminating inaccuracies caused by the on-axis and off-axis effect. The distance between the speakers and the nearer surfaces should ideally be as random as possible, to stop all of the reflections combining at the same frequency.

*Rule 1*

Keep the speaker at least a foot from the wall in front of you, and at least 18 inches from the sidewalls.

*Rule 2*

In rectangular rooms, it is wise to keep the speakers far away from the corners and sidewalls as possible. This reduces the extent of reflections between the listener and the walls.

*Rule 3*

The speakers should be erected on stands a little way behind the desk.

*Rule 4*

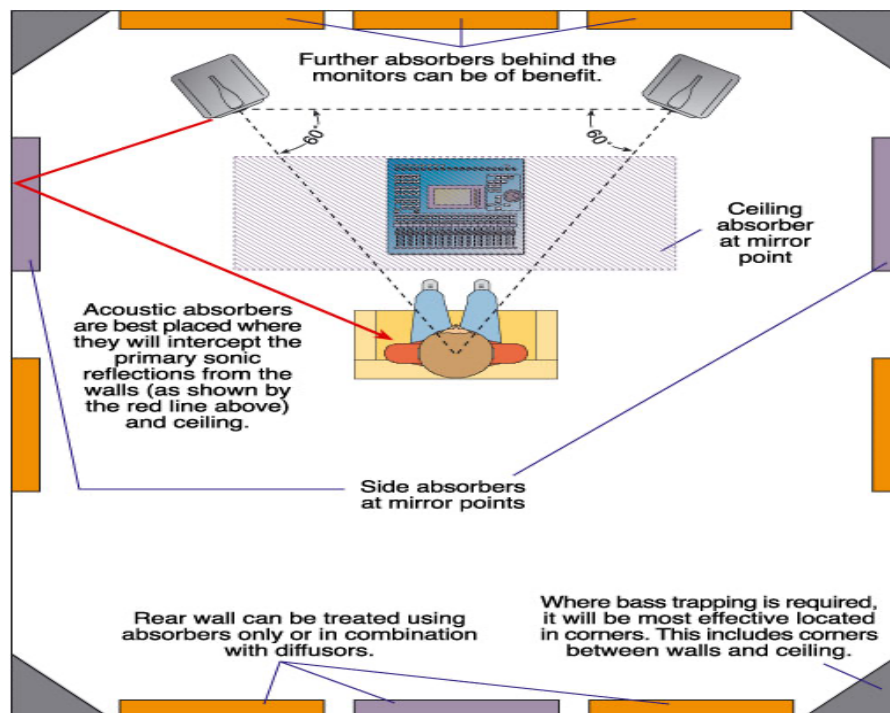
The tweeters must be pointed towards the head of the listener.

*Rule 5*

Ensure that the speakers do not rattle or vibrate on the stands.

## MONITORING AND ROOM ACOUSTICS

One will be puzzled to know that the perfect recording environment is the great outdoors. Since that is not possible, the only suitable thing to do is to acoustically treat our home studios. However, we must understand the concept of sound waves and room acoustics.



*Image Source: Sound on Sound Magazine, All Rights Reserved*

The diagram above explains how to apply basic acoustic treatment to a typical home studio room. The **absorber panels shown in purple** are the most important but adding in the **orange absorbers** would improve the situation further. Acoustic foam is a common choice of absorber in this application. If bass trapping is required, then it is usually most effectively applied in the room corners (including those corners between any of the walls and the ceiling). Note also the angles and positions of the monitors in comparison to the listening position — arranging the three points in an equilateral triangle will help give a natural stereo image.

Sound waves produced from your monitors radiate out to the borders of your studio, are then reflected, and interact with each other. This can be like the ripple effect. The desired result is not pleasant, so to speak.

Three types of sound reflection theories exist. They are known as **axial, tangential, and oblique modes**.