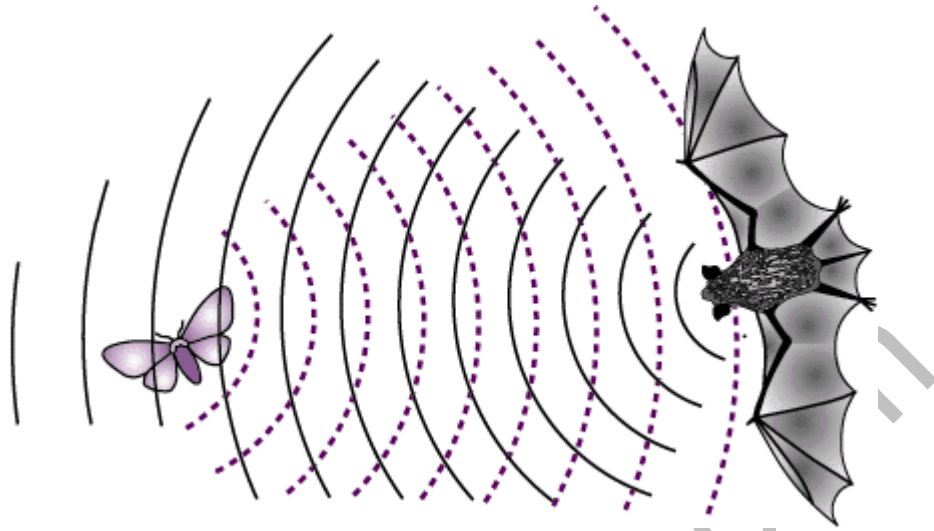


## What is Echo?



**Bats make high-pitched sounds while flying, which bounce off objects in the form of echoes. This gives the bats information about the distance and direction of the objects**

When we speak loudly in a big empty hall, we hear our own sound repeatedly. This is called echo. An echo can also be heard by shouting near a deep ditch or a well. The thunder of clouds is another example of echo.

We know that sound travels from one place to another in the form of waves. The velocity of sound in the air is 340 meters per second. When we speak, the sound waves emanating from our mouth spread out in all the directions. When these waves meet a wall or some other obstacle in their way, they are reflected back. These reflected waves are heard by us as an echo. Hence echo is produced when sound waves are reflected by some obstacle. But all objects do not reflect sound. There are some objects like wood, jute, cardboard etc. which absorb sound.

To hear an echo, it is essential that the obstacle reflecting the sound waves must be situated at least at a distance of more than 17 meters from us. This is because the effect of sound persists on our ears for one-tenth of a second. If one sound signal has reached the ears and within one tenth of a second another sound signal- reaches our ears, it will not be distinguished because during this period the effect of the earlier sound is persisting in the ear. Sound travels about 34 meters in one-tenth of a second. As such, if the object reflecting the sound waves is situated 17 meters away from the speaker, the time taken for the sound to travel this distance from the speaker's mouth to the object and back to him would be one-tenth of a second and the reflected sound can be distinguished by our ear as an echo.

## ***What is Echo?***

In Modern buildings architects use methods and materials which reduce echoes and favor good sound transmission. Auditoriums are built with rounded corners and few large flat surfaces. This prevents sound-waves from being reflected to any one position. They are scattered in many directions and the only sounds heard are those sent out from the source. Some fiber-boards having many holes are used for making rooms sound-proof. By the use of these materials the sound-waves are either absorbed or scattered so that production of echo is reduced. Radars and sonar's work on the principle of echo.

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