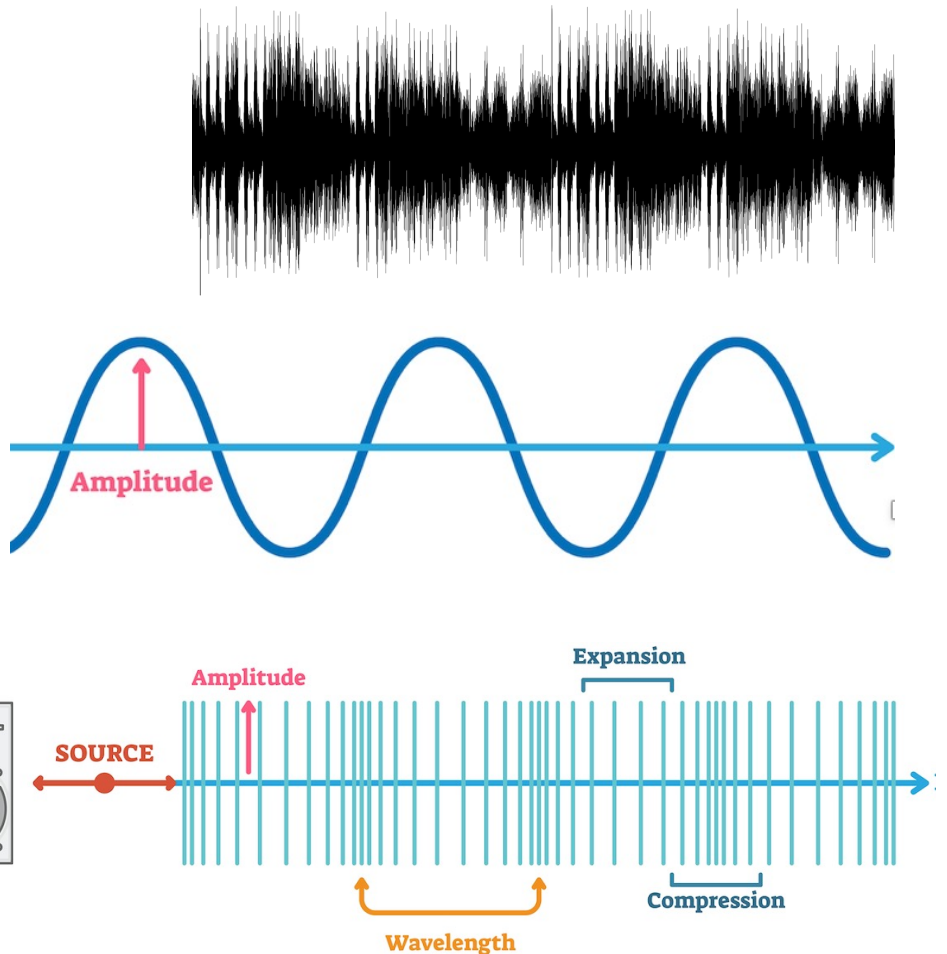
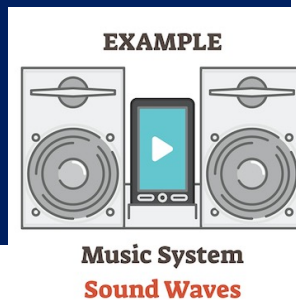


Sound, Sound Energy and Speed

- Hearing Sound
- Creating Sound
- Moving Sound
- The Speed of Sound



Preview File

Please enjoy this preview of your Student Version of the presentation. Please note within this sample file:

- Some slides appear blank because they have been removed
- Student versions have portions of the text removed which is given in the teacher version and appear as _____ which the students are to fill in
- Other slides may have on them, this represents writing that has been removed on this sample

**The paid full version of your resource includes
both Google Slides and PowerPoint and is
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Question

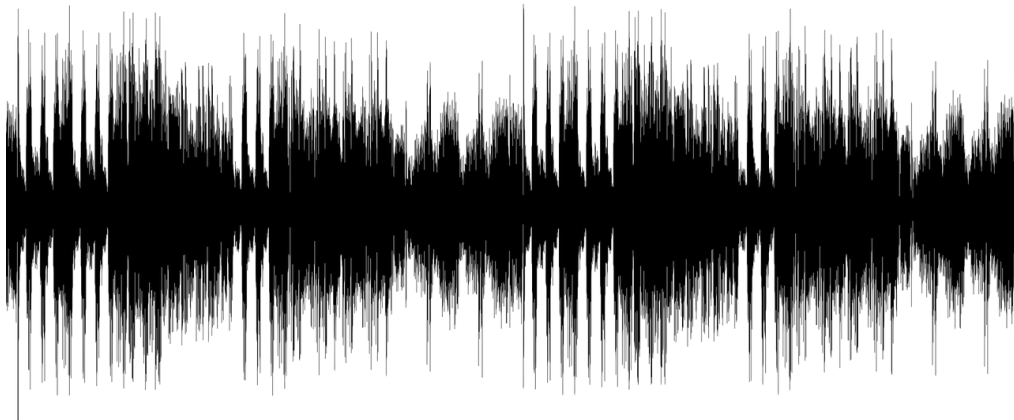
If a tree falls in the woods, does it make a sound?



Sound

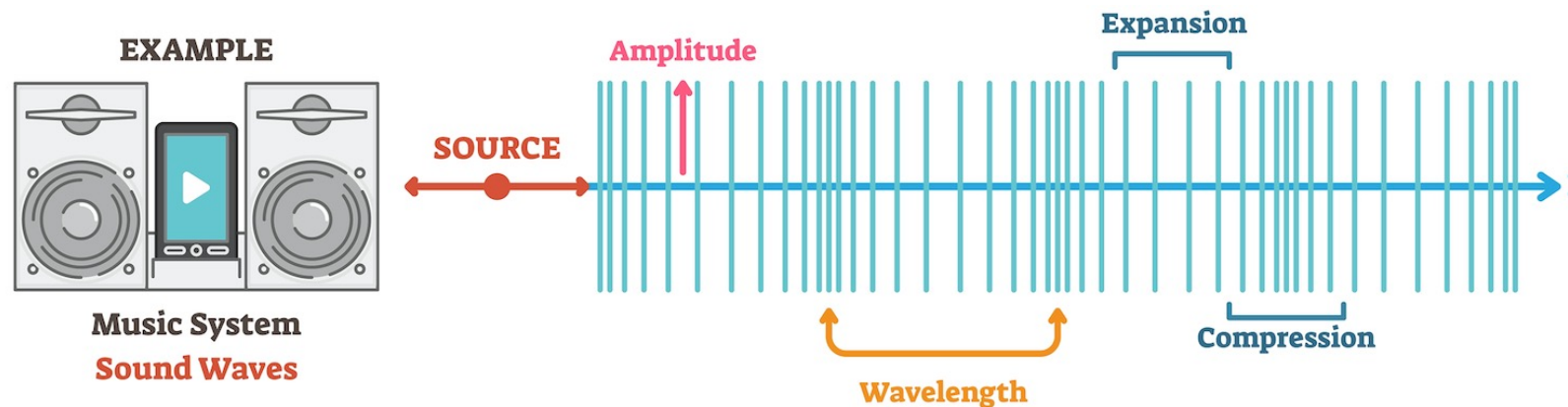
- Hearing: Humans can generally hear sound waves with frequencies between 20 Hz and 20,000 Hz (20 kHz)

- _____



Creating Sound

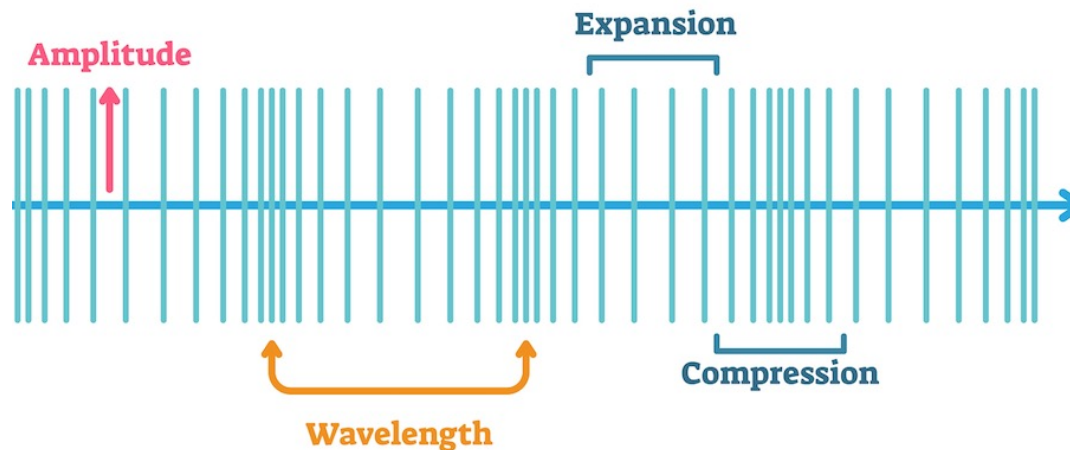
- A sound is created by a source which creates expansions (sometimes called rarefactions) and compressions of air molecules
- _____
- i.e. The air molecules you produce while speaking don't travel across the room into the ear of your



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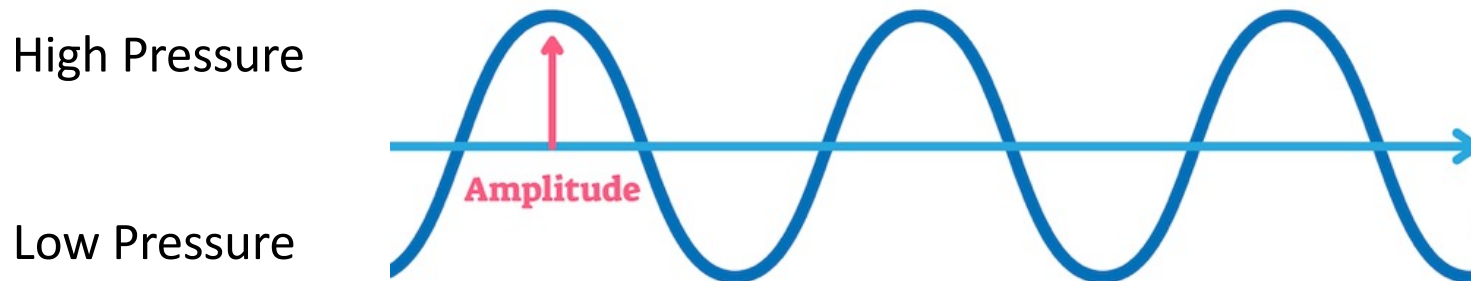
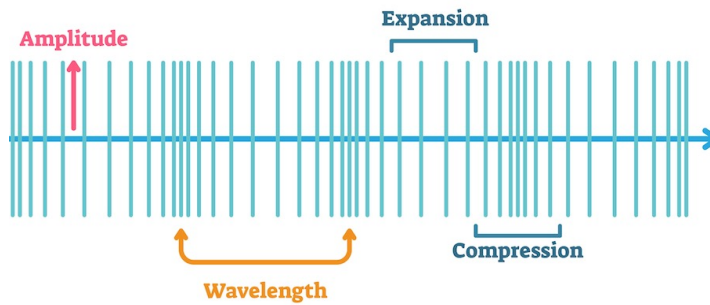
Moving Sound

- 1 wavelength is the distance between successful compressions
- The “harder” the particles are moved away from the source, the greater the air pressure change (amplitude)
- _____



Moving Sound

The vibration of particles can be better represented with a graph which shows changes in air pressure (transverse waves).



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The Speed of Sound

- Sound travels faster in
 - solids than in liquids
 - liquids compared to gases
 - denser mediums
- Why would sound travel faster in steel than in air? Your answer should be scientific and specific.

Medium	Sound Wave Speed
Air (20°C)	343 m/s
Water (20°C)	1,482 m/s
Steel (20°C)	5,960 m/s

Speed of Sound in Air

- The speed of sound in air depends on the temperature of the air it is passing through
- _____
- The specific speed can be accurately determined using the following equation:

$$v = 332 \text{ m/s} + \left(0.59 \frac{\text{m/s}}{^{\circ}\text{C}} \right) t$$

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Check Your Understanding

A string is vibrating at a frequency of 440 Hz. How many vibrations does it make when the sound produced travels 664 m through air at temperature 0°C?

$$v = f\lambda$$

$$v = d/t$$

$$v = 332 \text{ m/s} + \left(0.59 \frac{\text{m/s}}{^\circ\text{C}} \right) t$$

Check Your Understanding

A 200-m dash along a straight track was timed at 21.1 s by a timer located at the finish line who used the flash from the starter's pistol to start the stopwatch. If the air temperature was

$$v = f\lambda$$

$$v = d/t$$

$$v = 332 \text{ m/s} + \left(0.59 \frac{\text{m/s}}{^{\circ}\text{C}} \right) t$$