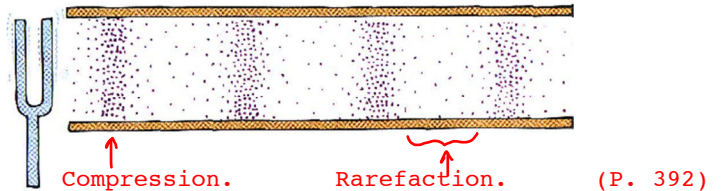
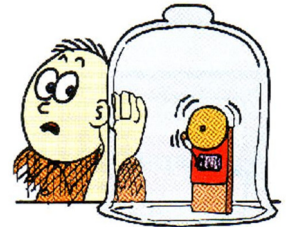


- All sounds are produced by Vibrations of Material objects. (P. 390)
- The subjective impression of frequency is referred to as Pitch. (P. 391)
- What is the range of normal frequencies a human can hear? 20 Hz - 20,000 Hz. (P.391)
- Frequencies humans cannot here below 20 Hz are called Infrasonic and frequencies above (p. 391) 20,000 Hz that humans cannot hear are called Ultrasonic (p. 391)
- Sound waves can be broken into two parts: Compression -pulse of compressed air and Rarefaction. area lower pressure. (P. 391-2)
- The picture below shows sound waves generated by a tuning fork and traveling through a hollow tube. Label a compression and rarefaction.



- Most sounds are transmitted through Air, but it can actually sometimes travel (faster/slower) through some solids and liquids. (Pg. 392)
- Can sound travel through empty space (a vacuum) if there is no media to carry the sound waves? (See Picture→) (yes, no)
Sound can not travel in a vacuum. (P. 392)
- What is the speed of sound in air at room temperature? ~340 m/s
- What are 3 things that the speed of sound depends on?

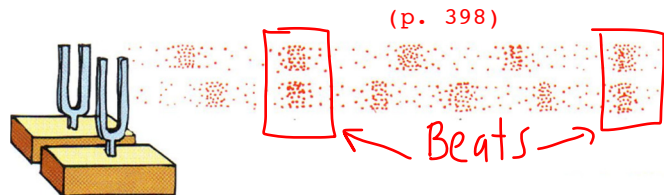


A microphone records the sound wave which can be displayed on an oscilloscope. Sound loudness or intensity is measured in decibels (dB). (P. 393-4)

- 1) The material's elasticity. 2) temperature of the material. 3) the state of matter on the medium. (P. 393)

- What type of instrument measures the intensity, or relative loudness, of sound? _____
- What is the unit for intensity of sound? Decibels (dB). (P. 394)
- What is the threshold of hearing for a normal human ear? 0 dB. (P. 394)
- The decibel scale is a logarithmic scale meaning it increases by 10.X each time. (p. 394)
- Sounding boards are important parts of musical instruments and they create Forced vibrations. (p. 394)
- Every elastic object has its own special set of frequencies. This is called its Natural frequency. (Pg. 395)
- Only e Elastic objects can resonate (for example putty and handkerchiefs wont!) (p. 395)
- When a forced vibration matches an objects natural frequency, the amplitude increases dramatically. What is the name of this phenomenon? Resonance (p. 395)
- A trained singer who can match a glass's natural frequency and make it shatter does this by r Resonance (p. 395)
- Just like all other kinds of waves, sound waves can create iInterference (p. 397) when waves overlap. This will affect the perceived loudness of a sound.

- Look at the two tuning forks on the right. Circle the two locations where the two tuning forks (through interference) would create beats with constructive interference.



- Destructive (p. 399) interference can even create "dead spots" and create beats.