

Sound

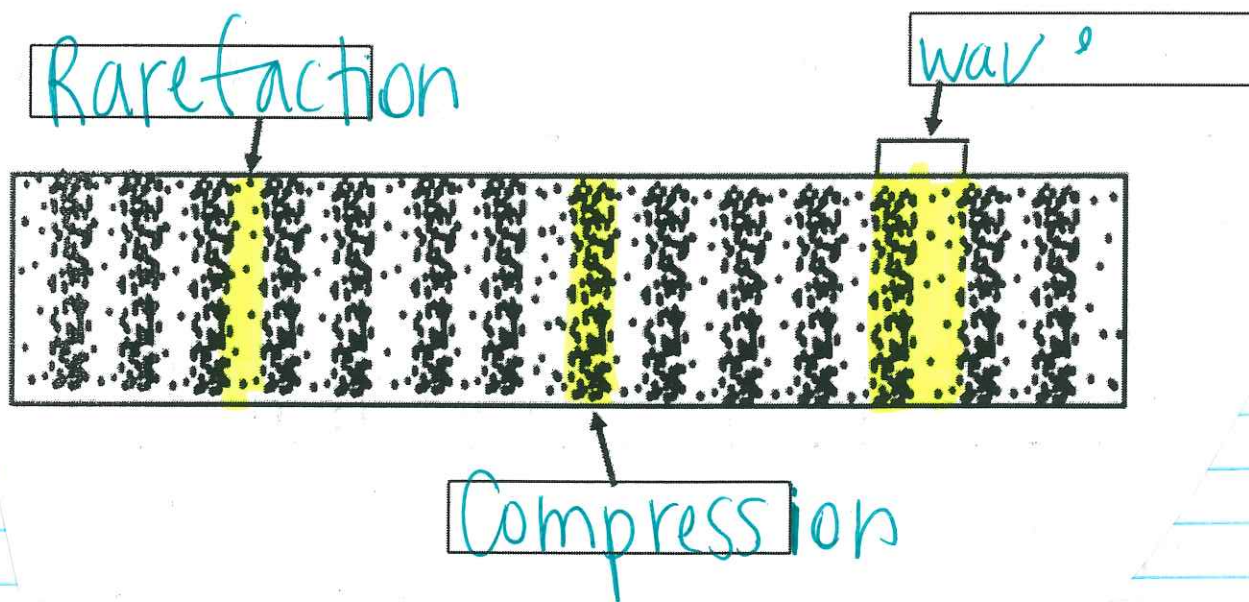
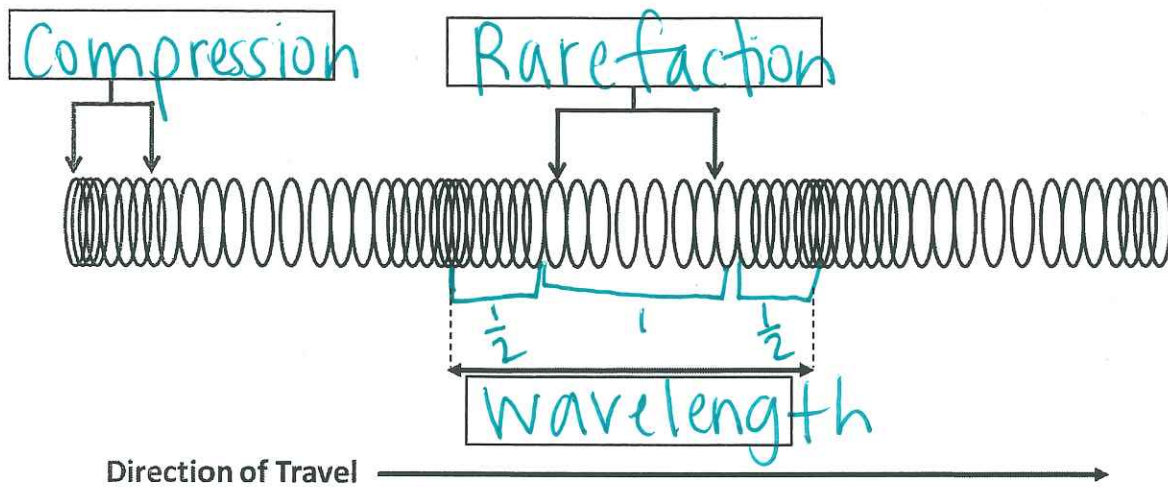
- ★ Sound is energy.
- ★ Sound needs matter to travel. (solid, liquid, gas)
- ★ Sound travels in waves called compression waves.

Parts of A Sound Wave

- ① Compression - where molecules are pressed together
- ② Rarefaction - where molecules are spread apart.
- ③ Wavelength - one complete compression and rarefaction

hww02

Compression (Longitudinal) Wave



29/1

6

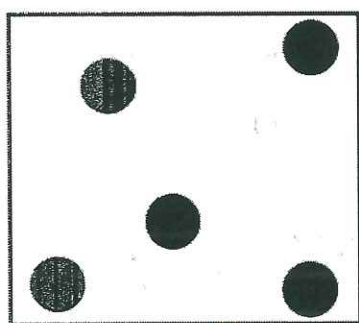
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★ Sound travels fastest through solids.

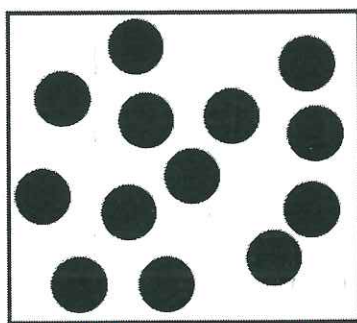
★ It travels "in the middle" through liquid.

★ It travels slowest through gas.

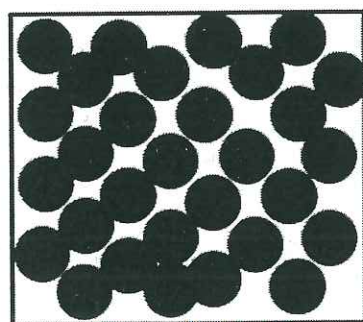
Which set of molecules do you think sound could move the quickest through?



gas



liquid



solid.

★ Solid's molecules are very close together.

Pitch - the high
or low of a sound.

high pitch

- Edward's Squeal
- sirens
- Female Opera Singer
- small dog
- squeaky brakes
- nails on the chalkboard
- mouse
- whistle

low pitch

- cow moo
- Shag
- Daniell's growl
- big dog
- drum
- tuba
- bass
- left side piano

★ Frequency - how many waves occur in a given time.
(usually 1 second)

★ high pitched noises have a high frequency
(fast vibration)

★ low pitched noises have a low frequency.
(slow vibrations)

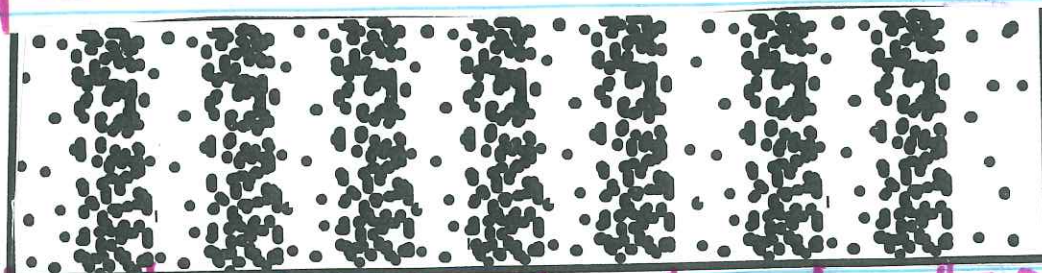
★ Frequency is measured in Hertz (Hz)

↓
the guy who invented it

Frequencies

1 second

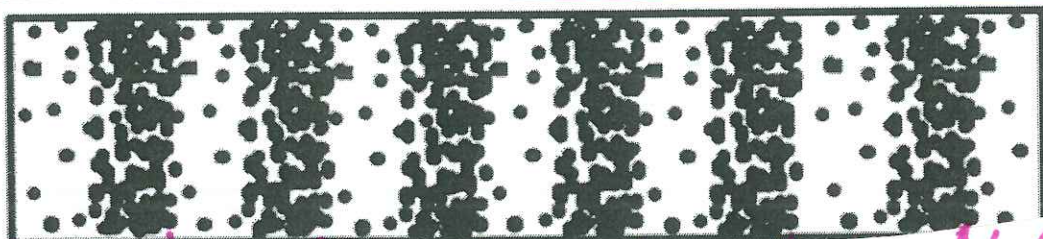
high Pitch
high freq.



7.5
wave
lengths



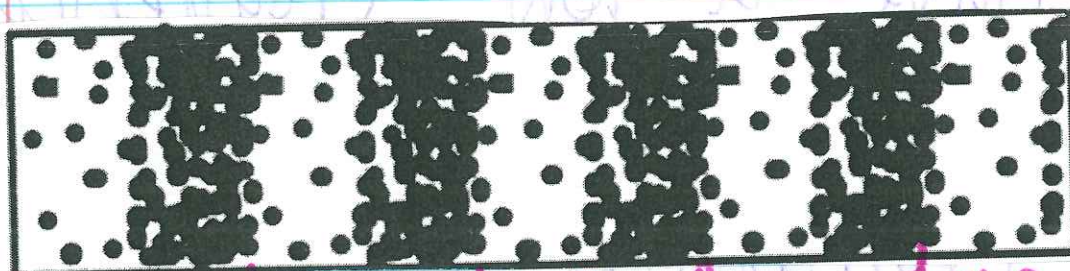
2



6.5
wave
length



3



4.5
wave
lengths



low Pitch
low frequency

Echos!

Echo... Echo...

Echo - sound that is reflected back.

Echolocation - echos that some animals use to locate food and navigate their direction.

ex. Some whales, bats, dolphins.

S.O.N.A.R. → Sound Navigation And Ranging
Used to map the ocean floor as well as other bodies of water.

Amplitude

★ How loud or soft
a sound is.

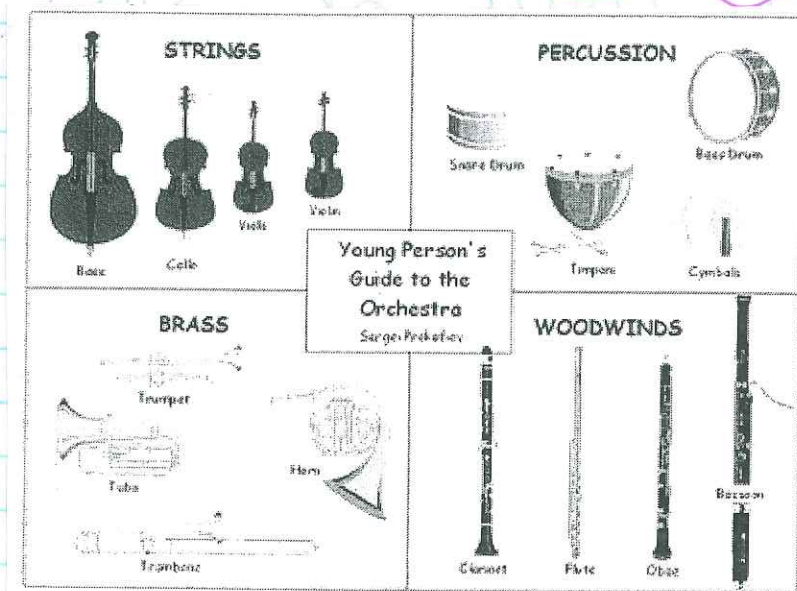
(We sometimes use
the word Volume.)

Amplitude is measured
in decibels (db)

Decibels	Source of noise
30	Whisper
60	Normal conversation
70	Washing machine
90	Heavy city traffic
100	Power tools
110	Rock concert
120	Ambulance siren
140	Jet engine taking off
160	12-gauge shotgun

www.healthyhearing.com

Musical Instruments



★ All sound starts with a VIBRATION.

How do instruments make sound?

Strings → vibrate string

Percussion → hit it to vibrate

Brass - vibrate lips

Woodwind - vibrate reed

all vibrate air