Warm Up

1. If the period of a wave is 0.0240 sec, what is the velocity of a wave if it has a wavelength of 2.90 m?
2. What is the distance covered if a 16.0 kg mass is accelerated at 4.00 m/s^2 to produce 948 J of work?
3. How long was 31.0 N of force applied over by a 71.0 kg person traveling at 4.90 m/s?
4. What is the centripetal acceleration of a cylinder with a radius of 42.0 cm rotating with a velocity of 8.00 km/hr?
5. What is the distance (in meters) that a car traveled if it had a velocity of 83.7 km/hr for 7.00 hrs?

Target

- I can explain how sound behaves, its characteristics, and how it affects everyday life.

Sound

- Sound is a longitudinal wave – compressions and rarefactions.
- Sound travels the fastest in solids, then liquids, and is the slowest in gases.
- This happens because the medium is much closer together than in gases.

- Intensity is how much wave energy flows through an area.
- This is measured in decibels (dB)
- Loudness is a physical response to the intensity of sound.
- Whisper is 15-20 dB
- Normal conversation is 40-50 dB
- Threshold of pain is 120 dB

Table 2 Conversion of Intensity to Decibel Level

Intensity (W/m^2)	Decibel level (dB)	Examples
1.0×10^{-12}	0	threshold of hearing
1.0×10^{-11}	10	rustling leaves
1.0×10^{-10}	20	quiet whisper
1.0×10^{-9}	30	whisper
1.0×10^{-8}	40	mosquito buzzing
1.0×10^{-7}	50	normal conversation
1.0×10^{-6}	60	air conditioning at 6 m
1.0×10^{-5}	70	vacuum cleaner
1.0×10^{-4}	80	busy traffic, alarm clock
1.0×10^{-3}	90	lawn mower
1.0×10^{-2}	100	subway, power motor
1.0×10^{-1}	110	auto horn at 1 m
1.0×10^{0}	120	threshold of pain
1.0×10^{1}	130	thunderclap, machine gun
1.0×10^{3}	150	nearby jet airplane

- Pitch is the frequency of a sound as you perceive it.
- In musical instruments, the larger the instrument the lower the pitch.
- https://www.youtube.com/watch?NR=1&v=CKgHrz_Wv6o&feature=fvwp

- Dissonance is an unpleasant set of pitches.
- Consonance is a pleasant set of pitches.
- https://www.youtube.com/watch?v=b1Ph0sa0Gc0

Ultrasound

- Most people hear between 20 Hz and 20,000 Hz.
- Ultrasound is a frequency higher than most people can hear.
- It is used in sonar and imaging.

Doppler Effect

- The Doppler Effect is a change in sound frequency caused by motion of the sound source.
- As the source approaches, an observer hears a higher frequency.
- When the sound source moves away, the observer hears a lower frequency.