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introduction sound is a longitudinal mechanical wave sound can travel through any medium but it cannot travel through a vacuum there is no sound in outer space sound is a variation in pressure a region of increased pressure on a sound wave is called a compression or condensation sound waves and music lesson 1 the nature of a sound wave sound is a mechanical wave sound as a longitudinal wave sound is a pressure wave lesson 2 sound properties and their perception pitch and frequency intensity and the decibel scale the speed of sound the human ear lesson 3 behavior of sound waves interference and beats sound a mechanical disturbance from a state of equilibrium that propagates through an elastic material medium a purely subjective but unduly restrictive definition of sound is also possible as that which is perceived by the ear learn more about the properties and types of sound in this article sound is a wave that is created by vibrating objects and propagated through a medium from one location to another in this unit we will investigate the nature properties and behaviors of sound waves and apply basic wave principles towards an understanding of music here we examine what makes sound special among waves and how we can employ the tools of general weave mechanics to this particular wave phenomenon sound traveling pressure wave that may be periodic the wave can be modeled as a pressure wave or as an oscillation of molecules sound intensity level unitless quantity telling you the level of the sound relative to a fixed standard sound pressure level ratio of the pressure amplitude to a reference pressure timbre people get wavelength and period mixed up all the time the period of a sound wave is the time it takes for an air molecule to oscillate back and forth one time the wavelength of a sound wave is the distance between two compressed regions of air sound is a wave on the atomic scale it is a disturbance of atoms that is far more ordered than their thermal motions in many instances sound is a periodic wave and the atoms undergo simple harmonic motion in this text we shall explore such periodic sound waves sound is the energy things produce when they vibrate move back and forth quickly if you bang a drum you make the tight skin vibrate at very high speed it s so fast that you can t usually see it forcing the air all around it to vibrate as well as the air moves it carries energy out from the drum in all directions the speed of sound varies greatly depending upon the medium it is traveling through the speed of sound in a medium is determined by a combination of the medium s rigidity or compressibility in gases and its density the more rigid or less compressible the medium the faster the speed of sound the physical phenomenon of sound is defined to be a disturbance of matter that is transmitted from its source outward sound is a wave on the atomic scale it is a disturbance of atoms that is far more ordered than their thermal motions in many instances sound is a periodic wave and the atoms undergo simple harmonic motion definition sound is defined as a oscillation in pressure stress particle displacement particle velocity etc propagated in a medium with internal forces e g elastic or viscous or the superposition of such propagated oscillation b auditory sensation evoked by the oscillation described in a 2 sound is a longitudinal wave in which the mechanical vibration constituting the wave occurs along the direction of the wave s propagation the velocity of sound waves depends on the temperature and the pressure of the medium for example sound travels at different speeds in air and water this is known as resonance when one object vibrating at the same natural frequency of a second object forces that second object into vibrational motion the word resonance comes from latin and means to resound to sound out together with a loud sound resonance is a common cause of sound production in musical instruments the amount of energy a sound wave owns reflects how intense the sound is intensity so the larger the amplitude greater particles displacement the greater the owned energy the greater intensity sound has the louder sound would be heard physics of sound traveling waves sound is produced when something vibrates the vibrating body causes the medium water air etc around it to vibrate vibrations in air are called traveling longitudinal waves which we can hear sound waves consist of areas of high and low pressure called compressions and rarefactions respectively 1 1 fundamentals of sound page id tom weideman university of california davis why sound physics 9d is a class about modern php programming with mysgl 2nd edition

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