

Unit: 4. WAVES

VOCABULARY

amplitude	the maximum displacement of particles (positive or negative) during wave motion
angle of incidence	the angle between the normal and the incident ray
angle of reflection	the angle between the normal and the reflected ray
angle of refraction	the angle between the normal and the refracted ray
auditory range	the range of frequencies humans can hear
beats	a series of alternating reinforcements and cancellations produced by the interference of the waves of different frequencies
boundary	the border where two different media come into contact
center of curvature	the center of an imaginary circle of which the mirror or lens is an arc
circular wave	a wave in which wave energy causes both transverse and longitudinal motion, causing an overall circular pattern of particle movement
compression	a space in which particles have been pushed together
concave lens	a diverging lens, thinner in the middle than at the edges, which causes refracted rays to diverge, producing a virtual image
concave mirror	a converging, or parabolic, mirror on which reflected rays converge at the focal point
consonance	a harmonious sound created by the interference of waves
constructive interference	the addition of the crests of two different waves
converging lens	a convex lens
converging mirror	another name for a concave mirror

convex lens	a converging lens, thicker in the middle than at the edges, which causes refracted rays to converge at the focal point
convex mirror	a diverging mirror that always produces a virtual image.
crest	the high point of a wave
decibel	a unit for measuring the perception of sound loudness
destructive interference	the addition of a crest and a trough of two different waves
diffraction	a phenomenon displayed by a wave when it bends around an obstacle or passes through an opening and spreads out
diffuse reflection	a reflection produced by uneven opaque surfaces and not resulting in the formation of an image
dissonance	a discordant sound created by the interference of waves
disturbance	the displacement of an object from its equilibrium position by the input of energy
diverging lens	a concave lens
diverging mirror	another name for a convex mirror
Doppler effect	the apparent change in frequency perceived when the source of a sound and an observer are approaching or moving away from each other
electromagnetic spectrum	the visible and invisible radiations emitted by objects
electromagnetic waves	waves in which electric and magnetic fields oscillate
equilibrium	the natural or rest position of a particle
frequency	the number of oscillations that occur in a given time period
focal point	the point at which rays of light converge
harmonics	multiples of the fundamental frequency that are produced by a musical instrument

hertz (Hz)	the unit for the frequency of a wave; the number of waves per second
illuminated objects	objects that reflect light
image	a visual reproduction of an actual object
infrasound	frequencies below the human auditory range
interference	the addition of the disturbances caused by two or more waves
longitudinal wave	wave in which the oscillations are in the same direction as the wave motion; sometimes called a compression wave
loudness	a perception of sound that relates to the amplitude of the sound wave
luminous objects	objects that produce their own light
Mach number	the speed of an object divided by the speed of sound at that location
mechanical waves	waves in which particles of a medium oscillate
medium	any substance with a defined set of physical properties that can transmit energy
mirage	the image produced as light travels through air of different temperatures and is refracted
normal	a line that is perpendicular to the boundary and drawn at a point where the incident ray intersects with the boundary
opaque	not allowing light to pass through
oscillate	to bob back and forth in a regular way about a resting position
parallel ray	a ray that is parallel to the optic axis and whose reflected ray passes through the focal point
period	the time required for one wavelength to pass
periodic energy	an oscillating source of energy that repeats itself in a regular way
pitch	the highness or lowness of a sound, measured in hertz

polarization	a process that uses filters to select for just one plane (or orientation) of light oscillation
principal axis	a ray that follows the path of the radius of a spherical mirror
principle of superposition	the rule that disturbances caused by two waves at the same location are equal to the sum of the disturbances caused by each wave alone
propagate	to transmit from one place to another in succession
pulse	a non-recurrent wave
radiation	any energy in the form of electromagnetic waves or particles
rarefaction	a space in which particles have been spread apart
ray	an arrow that is perpendicular to the wavefronts and indicates the direction of the wave motion
real image	an image that can be projected on a screen; an image formed by converging rays
reflection	the change in the direction of a wave as it bounces off the boundary between two media
refraction	the change in the direction of a wave as it enters a new medium
resonance	the tendency of an object to vibrate at a maximum amplitude at specific frequencies
resonance frequency	an object's natural frequency of vibration determined by the physical qualities and dimensions of the object
sonic boom	the sound created when a fast moving object pushes through its own bow wave (shockwave)
specular reflection	a reflection produced by reflective mirror-like surfaces resulting in the formation of an image

stiffness	degree to which a medium resists being compressed
subsonic	slower than the speed of sound
supersonic	faster than the speed of sound
translucent	partially allowing light to pass through
transparent	allowing light to pass through
transverse waves	waves in which the oscillations are at right angles to the direction of the wave movement
timbre	the characteristics by which the ear distinguishes between sounds with the same frequency and amplitude
trough	the low point of a wave
ultrasound	frequencies above the human auditory range
vertex	the point where the optic axis intersects the mirror's surface
virtual image	an image that cannot be projected on a screen because it is formed by rays that do not converge
visible light	electromagnetic waves that activate cells in the retina of the human eye
wave	a disturbance that propagates through an area and transmits energy from one place to another
wavelength	the distance from a point on one wave to a similar point on another wave