|  |  |  |
| --- | --- | --- |
| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Date: \_\_\_\_\_\_\_\_\_ | Period: \_\_\_\_\_\_\_ |

Waves,sound,and light

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1E |  |  |  |  |  |  |  | 2R |  | 3N |  A |  T |  U |  R |  A |  L |  F |  R |  E |  Q |  U |  E |  N |  C |  Y |  |  |  |  |
|  L |  |  |  | 4R |  |  |  |  E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  E |  |  |  |  E |  |  |  |  S |  |  |  |  |  |  |  |  |  |  |  |  | 5F |  |  |  |  |  |  |  |  |
|  C |  |  | 6O |  V |  E |  R |  T |  O |  N |  E |  S |  |  |  |  |  | 7F |  R |  E |  Q |  U |  E |  N |  C |  Y |  |  |  |  |
|  T |  |  |  |  E |  |  |  |  N |  |  |  |  |  |  | 8E |  |  |  |  |  |  N |  |  |  |  |  | 9W |  | 10V |
|  R |  | 11U |  |  R |  |  |  |  A |  |  |  |  |  |  |  L |  |  |  |  |  |  D |  |  |  |  |  |  A |  |  I |
|  O |  |  L |  |  B | 12M |  | 13I |  N |  T |  E |  R |  F |  E |  R |  E |  N |  C |  E |  | 14R |  A |  D |  I |  O |  W |  A |  V |  E |  S |
|  M |  |  T |  |  E |  E |  |  |  C |  |  |  |  |  |  |  C |  |  |  |  |  |  M |  |  |  |  |  |  E |  |  I |
|  A |  |  R |  |  R |  C |  |  |  E |  |  |  |  |  |  |  T |  |  |  |  |  |  E |  |  |  |  |  |  L |  |  B |
|  G |  |  A |  |  A |  H |  |  |  |  |  | 15D |  I |  F |  F |  R |  A |  C |  T |  I |  O |  N |  | 16R | 17D |  |  |  E |  |  L |
|  N |  |  V |  |  T |  A |  |  |  |  |  |  |  |  |  |  O |  |  |  |  |  |  T |  |  A |  O |  |  |  N |  |  E |
|  E |  |  I |  |  I |  N |  |  | 18O |  |  |  |  |  |  |  M |  |  |  | 19T |  |  A |  |  D |  P |  |  |  G |  |  L |
|  T |  |  O |  |  O |  I |  |  |  V |  | 20E |  |  | 21X |  R |  A |  Y |  S |  |  R |  |  L |  |  I |  P |  |  |  T |  |  I |
|  I |  |  L |  |  N |  C |  |  |  E |  |  C |  |  |  |  |  G |  |  |  |  A |  |  F |  |  A |  L |  |  |  H |  |  G |
|  C |  |  E |  |  |  A |  |  |  R |  |  H |  |  |  |  |  N |  |  |  |  N |  |  R |  |  N |  E |  |  |  |  |  H |
|  W |  |  T |  | 22E |  L | 23E |  C |  T |  R |  O |  M |  A |  G |  N |  E |  T |  I |  C |  S |  P |  E |  C |  T |  R |  U |  M |  |  |  T |
|  A |  |  R |  |  |  W |  A |  |  O |  |  |  |  |  |  |  T |  |  |  |  V |  |  Q |  |  E |  E |  |  |  |  |  |
|  V |  |  A |  |  |  A |  R |  |  N |  |  | 24A |  M |  P |  L |  I |  T |  U |  D |  E |  |  U |  |  N |  F |  |  |  |  |  |
|  E |  |  D |  |  |  V |  D |  |  E |  |  |  |  |  |  |  C |  |  |  |  R |  |  E |  |  E |  F |  |  | 25C |  | 26C |
|  S |  |  I |  |  |  E |  R |  |  | 27L |  O |  U |  D |  N |  E |  S |  S |  |  |  S |  |  N |  |  R |  E |  |  |  A |  |  O |
|  |  |  A |  |  |  |  U |  |  |  |  |  |  |  |  |  P |  |  |  |  E |  |  C |  |  G |  C |  |  |  R |  |  N |
| 28P |  I |  T |  C |  H |  | 29M |  U |  S |  I |  C |  | 30W |  A |  V |  E |  S |  |  |  W |  |  Y |  |  Y |  T |  |  |  R |  |  C |
|  |  |  I |  |  |  |  |  |  |  |  |  |  |  |  |  C |  |  |  |  A |  |  |  |  |  |  |  |  I |  |  A |
|  |  |  O |  |  |  |  |  |  |  |  |  |  |  |  |  T |  |  |  |  V |  |  |  |  |  |  |  |  E |  |  V |
|  | 31I |  N |  F |  R |  A |  R |  E |  D |  W |  A |  V |  E |  S |  | 32R |  E |  F |  L |  E |  C |  T |  I |  O |  N |  |  |  R |  |  E |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  U |  |  |  |  |  |  |  |  |  |  |  |  W |  |  L |
|  |  |  | 33G |  A |  M |  M |  A |  R |  A |  Y |  S |  | 34C |  O |  M |  P |  R |  E |  S |  S |  I |  O |  N |  A |  L |  W |  A |  V |  E |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  V |  |  N |
|  |  |  |  |  |  |  |  |  |  |  | 35E |  L |  E |  C |  T |  R |  O |  M |  A |  G |  N |  E |  T |  W |  A |  V |  E |  |  S |
|  |  |  | 36G |  L |  O |  B |  A |  L |  P |  O |  S |  I |  T |  I |  O |  N |  I |  N |  G |  S |  Y |  S |  T |  E |  M |  |  S |  |  |

|  |  |
| --- | --- |
| **Across****3.** which a system oscillates when not subjected to a continuous or repeated external force.**6.** series above a fundamental note and may be heard with it.**7.** common unit of frequency is the hertz (Hz), corresponding to one crest per second.**13.** he process in which two or more light, sound, or electromagnetic waves of the same frequency combine to reinforce or cancel each other**14.** an electromagnetic wave of a frequency between about 104 and 1011 or 1012 Hz, as used for long-distance communication**15.** typically accompanied by interference between the wave forms produced.**21.** stream of such photons used for their penetrating power in radiography, radiology, radiotherapy, and scientific research.**22.** he range of wavelengths or frequencies over which electromagnetic radiation extends.**24.** the maximum extent of a vibration or oscillation, measured from the position of equilibrium.**27.** is the characteristic of a sound that is primarily a psycho-physiological correlate of physical strength (amplitude).**28.** a sound is determined by the rate of vibration, or frequency, of the sound wave.**29.** a typical example: "the science or art of ordering tones or sounds in succession, in combination, and in temporal relationships**30.**  involve the transport of energy without the transport of matte**31.**  light rays which are longer than light but shorter than radio waves. Electromagnetic radiation with a wavelength between **32.** The change in direction of a wave, such as a light or sound wave, away from a boundary the wave encounters.**33.** penetrating electromagnetic radiation of a kind arising from the radioactive decay of atomic nuclei. **34.**  is a region in a longitudinal wave where the particles are closest together. **35.** one of the waves that are propagated by simultaneous periodic variations of electric and magnetic field intensity **36.** system of satellites, computers, and receivers that is able to determine the latitude and longitude of a receiver on Earth by calculating the time difference for signals from different satellites to reach the receiver. | **Down****1.** hat are propagated by simultaneous periodic variations of electric and magnetic field intensity **2.** ncrease in amplitude of oscillation of an electric**4.** prolongaprolongation of a sound; resonance.**5.** ncrease in amplitude of oscillation of an electric**8.** the range of wavelengths **9.** distance between one peak or crest of a wave and the next peak or crest. **10.** a form of electromagnetic (EM) radiation, as are radio waves, infrared radiation, ultraviolet radiation, X-rays and microwaves.**11.** in the part of the electromagnetic spectrum where wavelengths are just shorter than those of ordinary, visible violet light but longer than those of x-rays.**12.** s a wave that is an oscillation of matter, and therefore transfers energy through a medium.**16.** energy that travels by waves or particles, particularly electromagnetic radiation such as heat or x-rays.**17.** an increase (or decrease) in the frequency of sound, light, or other waves as the source and observer move toward (or away from) each other**18.** that is a part of the harmonic series above a fundamental note and may be heard with it.**19.** oscillates perpendicular to the axis along which the wave travels**20.** a sound or series of sounds caused by the reflection of sound waves from a surface back to the listener.**23.** vibrates in response to sound waves; the tympanic membrane.**25.** a high-frequency electromagnetic wave modulated in amplitude or frequency to convey a signal.**26.** is a lens that possesses at least one surface that curves inwards |