Name _____

Riding the Wave: The Power of Amplitude in Wave Physics

Short Answer Key

1. Amplitude affects the intensity of a sound wave by determining its volume or loudness. For example, when you strike a drum with more force, the resulting sound waves have larger amplitudes and are perceived as louder.
2. The amplitude of light waves determines their brightness. Light sources with higher amplitudes, such as a bright lamp or the sun, appear brighter, while those with lower amplitudes, like a candle flame, appear dimmer.
3. In sound waves, we perceive larger amplitudes as louder sounds and smaller amplitudes as quieter sounds. In light waves, higher amplitudes are perceived as brighter light, while lower amplitudes are perceived as dimmer light.
4. Wave interference occurs when two or more waves meet and overlap. When waves are in phase (aligned), their amplitudes can combine to create a larger amplitude (constructive interference). When waves are out of phase (opposite), they can cancel each other out, resulting in a smaller or zero amplitude (destructive interference). For example, when two ripples on the surface of a pond meet crest to crest, they create a larger crest due to constructive interference. In contrast, if they meet crest to trough, they cancel each other out, resulting in a smaller or no wave due to destructive interference.
5. In the field of earthquake seismology, understanding amplitude is crucial. Seismologists use amplitude measurements of seismic waves to determine the magnitude of earthquakes. Larger amplitudes on seismograms correspond to more powerful earthquakes, allowing scientists to assess the impact and potential danger of seismic events.