

Name _____

Waving Hello to Wavelength: How it Shapes a Wave's World

Short Answer Key

1. In transverse waves, wavelength is the distance between two consecutive crests or troughs. For example, in ocean waves, it's the distance between two wave crests. In longitudinal waves, it's the distance between two consecutive compressions or rarefactions. An example is the distance between two consecutive compressions in a sound wave.
2. The wave with the shorter wavelength will likely have a higher speed in the same medium. This is because, in many mediums, waves with shorter wavelengths tend to travel faster due to less interference between particles.
3. Shorter wavelengths of sound waves create higher-pitched sounds, while longer wavelengths create lower-pitched sounds. For example, a high-pitched sound can be produced by plucking a short string on a guitar, while a low-pitched sound can be produced by plucking a long string.
4. Shorter wavelengths of visible light, such as blue and violet, carry more energy than longer wavelengths, such as red and orange. This is why blue and violet light appear more intense and have the potential to cause more chemical reactions than red or orange light.
5. In medical imaging, understanding the concept of wavelength is crucial in technologies like MRI (Magnetic Resonance Imaging). MRI machines use radio waves to create detailed images of the inside of the body. The choice of specific wavelengths and their interaction with body tissues helps produce clear and informative images for medical diagnosis.

