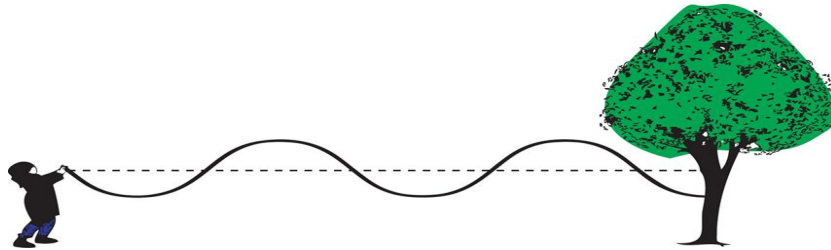


Wavelength and Amplitude

Reflect

Waves start at a source when a force causes vibrations. Vibrations are back-and-forth motions. Vibrations in the medium cause wavelike disturbances that spread away from the source. This means that every wave starts somewhere.

Where is the source of the wave below? Can you explain why the rope is creating a wave form?



Waves can be compared by the way they behave. Waves have a repeating pattern, which gives it a shape and length. These characteristics allow us to describe wave behavior and group waves by their characteristics.



Waves change their behavior as they travel through different mediums. We must understand each wave's characteristics. Do you see any characteristics in the waving rope above that might help us describe a wave?

wavelength – the distance between the peaks of a wave

Wave behavior can be described in two ways:

- The distance between peaks is the **wavelength**.
- The height of the peaks and valleys is the **amplitude**.

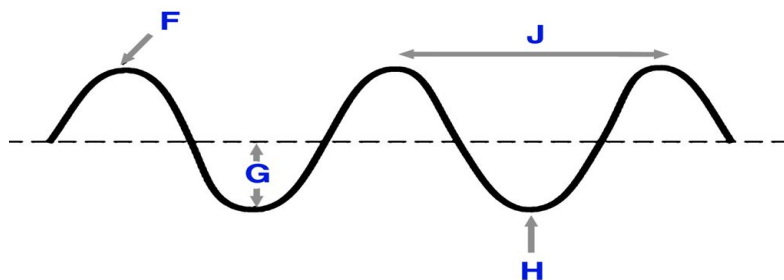
amplitude – the size of the peak of a wave

Look Out!

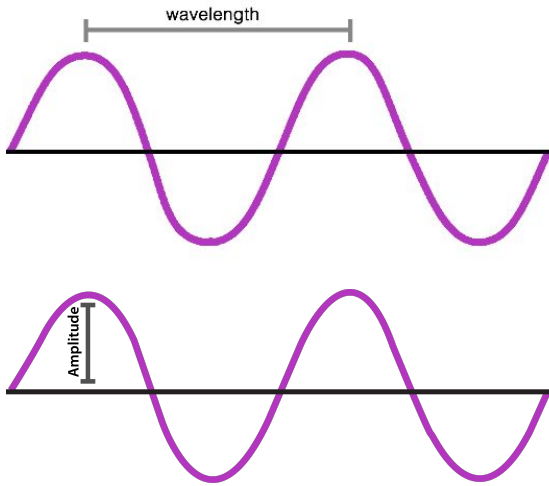
Below is a list of characteristics scientists use to describe and compare waves. Looking at the figure of a wave, match the term and its definition with the letter that shows its location on the wave.

Label each letter in the picture:

- amplitude** – the height of a wave
- wavelength** – the distance between two peaks
- trough** – the lowest point of a wave
- crest** – the highest point of a wave



Reflect



Wave Characteristics

Waves transfer energy through materials when they move.

The **wavelength** is the horizontal distance between two repeating waves.

The **amplitude** is the height of a wave from the center line to the crest or trough. The highest point of the wave is called the *crest*. The lowest point of the wave is called the *trough*. A wave's amplitude is a measure of how much energy that wave is carrying.

Wave Behavior

The medium, or material that carries the wave, affects how that wave travels. A medium can be a solid, liquid, or gas.

Try Now

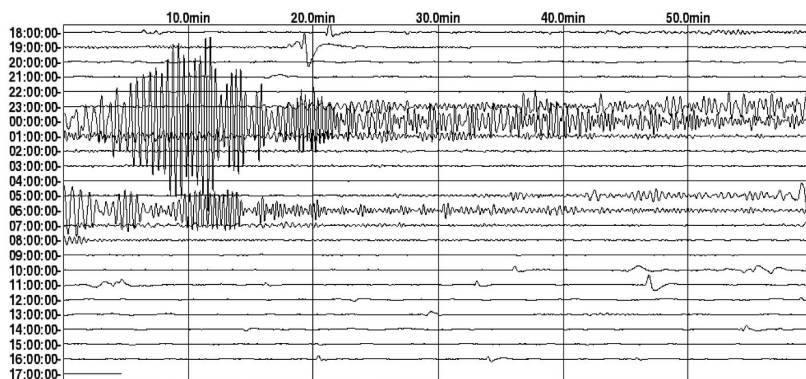
Waves move energy.

How can we know which waves have more energy? We can look at the wave's amplitude to determine how much energy is being moved by the wave. Look at the two waves below. Which one is moving more energy? How do you know?

Look at the picture. The seismogram shows the amplitude of seismic waves from an earthquake. Circle where the waves carried the most energy.

Discuss with a partner. How do you know your answer?

Seismogram



Here is an example of two earthquakes that happened in the same location at different times.