You will watch a video clip about mechanical waves. Watch it closely and fill in the gaps in the following article. Select the missing words from the list at the end of the text.

<https://www.youtube.com/watch?v=JppViHtLNlc>

# Mechanical waves

A mechanical wave is a [wave](https://en.wikipedia.org/wiki/Wave) that is an oscillation of [matter](https://en.wikipedia.org/wiki/Matter) (solid, liquid, gas), and therefore transfers energy through a [medium](https://en.wikipedia.org/wiki/Transmission_medium). Mechanical waves need a (1)…………………. to move through, they cannot spread in a vacuum (We cannot hear the sound of an alarm clock in the vacuum pump). In contrast, (2)………………… waves (e. g. light) require no medium, they can move in a vacuum.

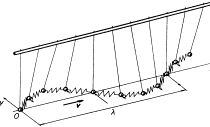
One particle of matter begins to oscillate and through the interraction between particles this motion is transferred to the other particles. We say that the waves are transmitted through the matter. It is important, that only oscillating agitation is transferred, not the particles themselves (the waves on the water surface cannot take away a floating object).

Some of the most common examples of mechanical waves are water waves, (3)………………. waves, and [seismic waves](https://en.wikipedia.org/wiki/Seismic_waves).

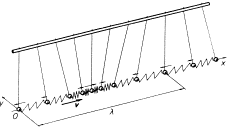
Therefore, the oscillating material does not move far from its initial equilibrium position. Mechanical (and also electromagnetic) waves transport (4)………………….. This (4)………………….. propagates in the same direction as the wave.

There are two types of mechanical waves.

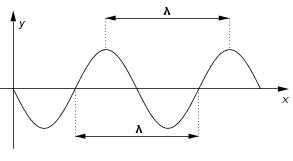
**Transverse waves**

It is the form of wave in which particles of medium vibrates about their mean position (5)………………………. to the direction of the motion of the wave. They can move only through the (6)………………….., because the elastic forces between particles are needed. Light also has the properties of a (7)………………….. wave, although it is an electromagnetic wave.

**Longitudinal waves**

Longitudinal waves cause the medium to vibrate (8)……………………….. to the direction of the wave. It can move through all types of medium. (9)…………………….. is considered a longitudinal wave.

**Wavelength**

****Wavelength of a [sine wave](https://en.wikipedia.org/wiki/Sine_wave), λ, can be measured between any two points with the same (10)[……………………...](https://en.wikipedia.org/wiki/Phase_(waves)), such as between crests (on top), or troughs (on bottom), or corresponding [zero crossings](https://en.wikipedia.org/wiki/Zero_crossing) as shown. A wave travels the wavelength during the period T (it is the period of oscillations of the particles).

**Phase velocity**

The phase velocity of a [wave](https://en.wikipedia.org/wiki/Wave) is the rate at which the [phase](https://en.wikipedia.org/wiki/Phase_(waves)) of the wave [propagates in space](https://en.wikipedia.org/wiki/Wave_propagation). This is the [velocity](https://en.wikipedia.org/wiki/Velocity) at which the phase of the wave (11)……………………. The phase velocity is given in terms of the [wavelength](https://en.wikipedia.org/wiki/Wavelength) *λ* and [time period](https://en.wikipedia.org/wiki/Wave_period) *T* as

****

The phase velocity (12)………………………. not only on the type of a medium, but also on the type of the wave.

***List of missing words***

*phase, depends, electromagnetic, parallel, medium, solids, transverse, perpendicular, travels, sound (2x), energy*

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A mechanical wave is a [wave](https://en.wikipedia.org/wiki/Wave) that is an oscillation of [matter](https://en.wikipedia.org/wiki/Matter) (solid, liquid, gas), and therefore transfers energy through a [medium](https://en.wikipedia.org/wiki/Transmission_medium). Mechanical waves need a medium to move through, they cannot spread in a vacuum (We cannot hear the sound of an alarm clock in the vacuum pump). In contrast, electromagnetic waves (e. g. light) require no medium, they can move in a vacuum.

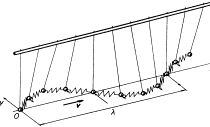
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Some of the most common examples of mechanical waves are water waves, sound waves, and [seismic waves](https://en.wikipedia.org/wiki/Seismic_waves).

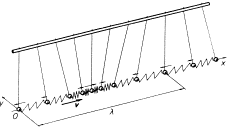
Therefore, the oscillating material does not move far from its initial equilibrium position. Mechanical waves transport energy. This energy propagates in the same direction as the wave. Any kind of wave (mechanical or electromagnetic) has a certain energy.

There are two types of mechanical waves.

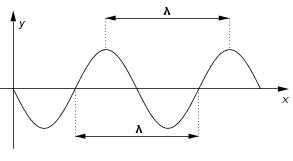
**Transverse waves**

It is the form of wave in which particles of medium vibrates about their mean position perpendicular to the direction of the motion of the wave. They can move only through the solids, because the elastic forces between particles are needed. Light also has the properties of a transverse wave, although it is an electromagnetic wave.

**Longitudinal waves**

Longitudinal waves cause the medium to vibrate parallel to the direction of the wave. It can move through all types of medium. Sound is considered a longitudinal wave.

**Wavelength**

****Wavelength of a [sine wave](https://en.wikipedia.org/wiki/Sine_wave), λ, can be measured between any two points with the same [phase](https://en.wikipedia.org/wiki/Phase_(waves)), such as between crests (on top), or troughs (on bottom), or corresponding [zero crossings](https://en.wikipedia.org/wiki/Zero_crossing) as shown. A wave travels the wavelength during the period T (it is the period of oscillations of the particles).

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****

The phase velocity depends not only on the type of a medium, but also on the type of the wave.

***List of missing words***

*phase, depends, electromagnetic, parallel, medium, solids, transverse, perpendicular, travels, sound (2x), energy*