

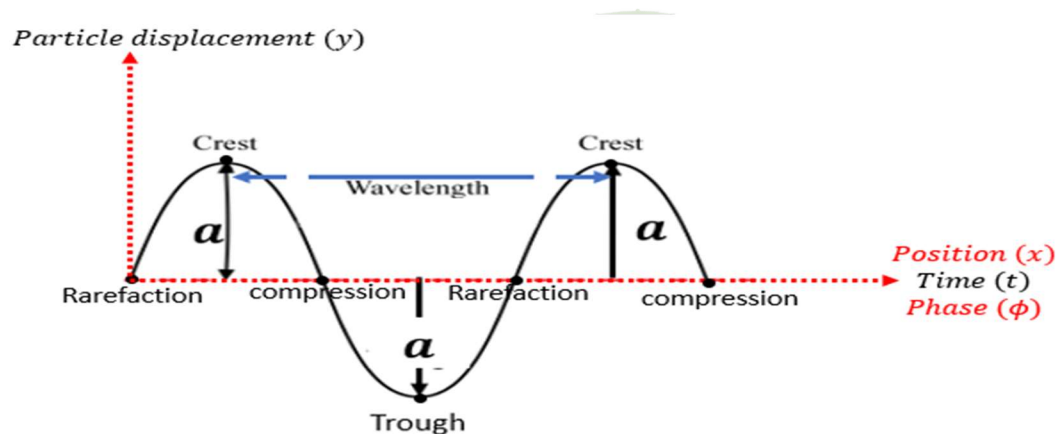
Note:

**For the propagation of mechanical wave, the medium should possess:**

1. Elasticity (elastic property):  
[Volume (Bulk) elasticity for longitudinal wave-compressive medium]  
[ Shear elasticity for transverse wave-rigid medium]
2. Inertia (inertial property)
3. Low damping

❖ Bells are made up of metals but not of wood, why?

### Representation of a wave:



### Basic terms:

1. Crest: The position of maximum displacement above the mean position (equilibrium line) is called as crest.
2. Trough: The position of maximum displacement below the mean position (equilibrium line) is called as trough.

***Crest and trough can be observed in transverse wave. In other words, transverse wave propagates in the form of crests and troughs.***

***[During the formation of crests and trough, there occurs change in shape of the medium. So, for the propagation of transverse wave, the medium should be rigid (should possess shear modulus of elasticity.***

***[The transverse wave is also called as Shear Wave]***

3. Compression: The region of greater density (and also larger pressure) in the medium during the propagation of longitudinal wave through the medium is called as compression.
4. Rarefaction: The region of smaller density (and also smaller pressure) in the medium during the propagation of longitudinal wave through the medium is called as rarefaction.

***Compressions and rarefactions can be observed in longitudinal waves. In other words, longitudinal wave propagates in the form of compressions and rarefactions.***

***[During the formation of compressions and rarefactions, there occurs change in pressure or density of the medium. So, for the propagation of longitudinal wave, the medium should be compressive (should possess Bulk modulus of elasticity).***

***[The Longitudinal wave is also called as pressure Wave]***

5. Wavelength ( $\lambda$ ): The distance travelled by a wave in one complete cycle is called as its wavelength.