Longitudinal VS Transverse wave:

Longitudinal wave	Transverse Wave
1) **Particle of the medium vibrate parallel to the direction of propagation of wave.**	1) **Particle of the medium vibrate perpendicular to the direction of propagation of wave.**
2) The wave transmits energy and momentum in the direction of propagation of wave	2) The wave transmit energy in the direction of propagation of wave (***but not*** *the momentum*)
3) This wave causes the change in density of the medium	3) This wave does not cause the change in density of the medium
4) This wave propagates in all medium (solid, liquid, gases)	4) This wave propagates only in solid and on the surface of liquid
5) Wave propagates in the form of compressions and rarefactions. There occurs periodic change in pressure in the medium. Hence called as pressure wave.	5) Wave propagates in the form of crests and troughs. There occurs periodic change in shape in the medium. Hence called as shear wave.
6) For the propagation of longitudinal wave, the medium should possess Bulk modulus of elasticity.	6) For the propagation of transverse wave, the medium should possess shear modulus of elasticity.

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:

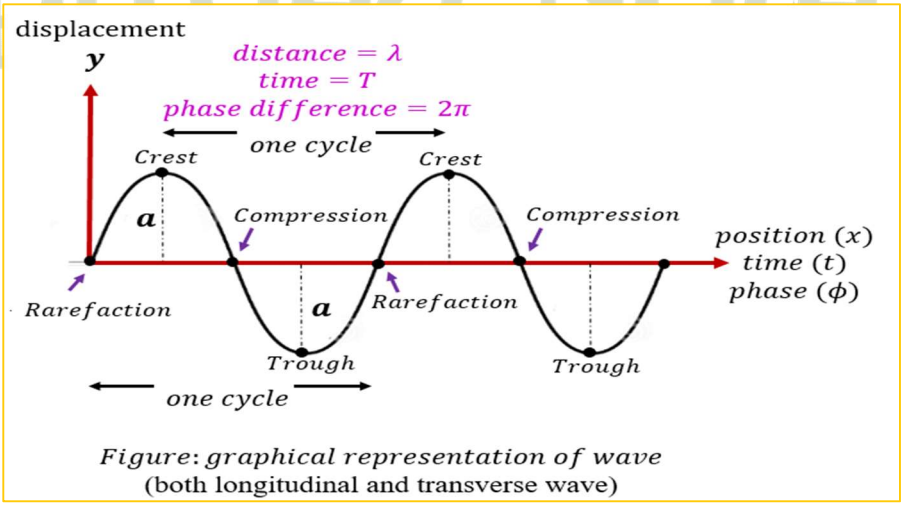

Figure: graphical representation of wave
(both longitudinal and transverse wave)