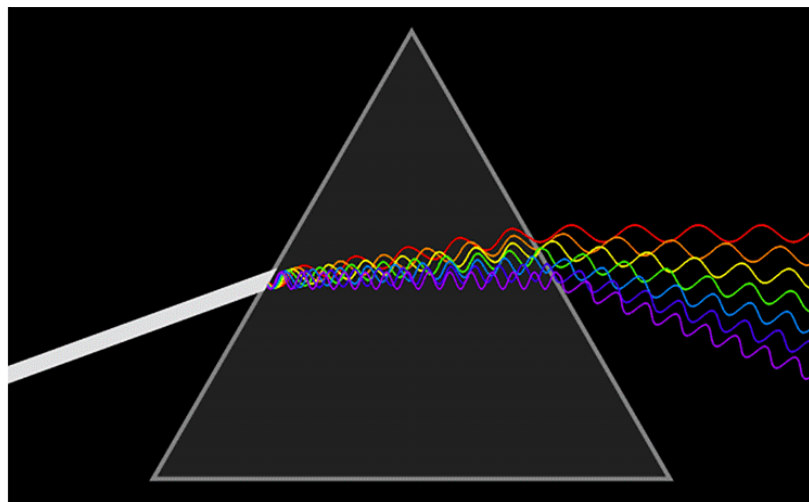


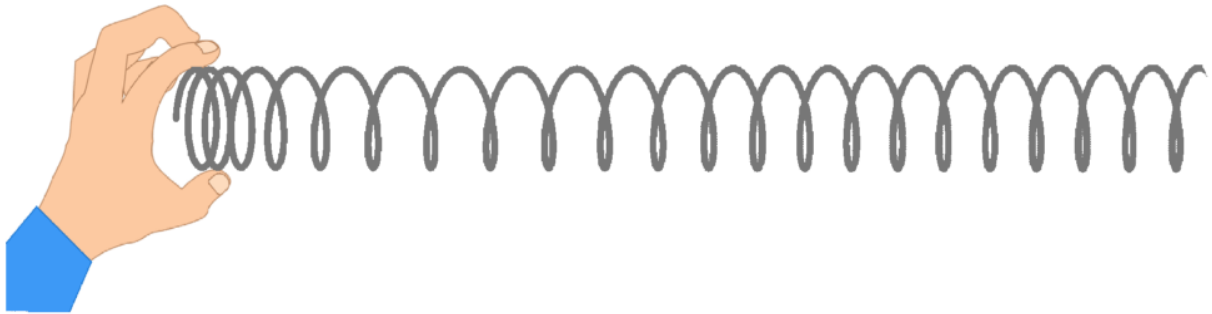
# Wave Properties



*Longitudinal Wave:*

Particle motion is in the same/opposite direction to wave motion

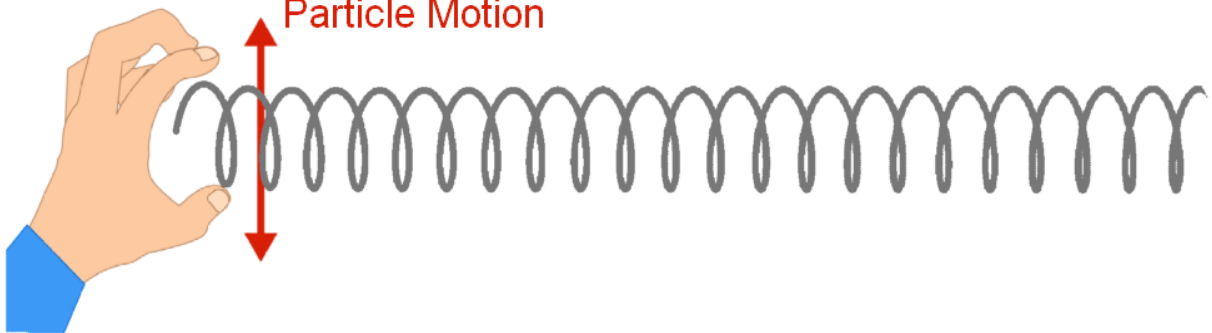
Particle Motion



*Transverse Wave:*

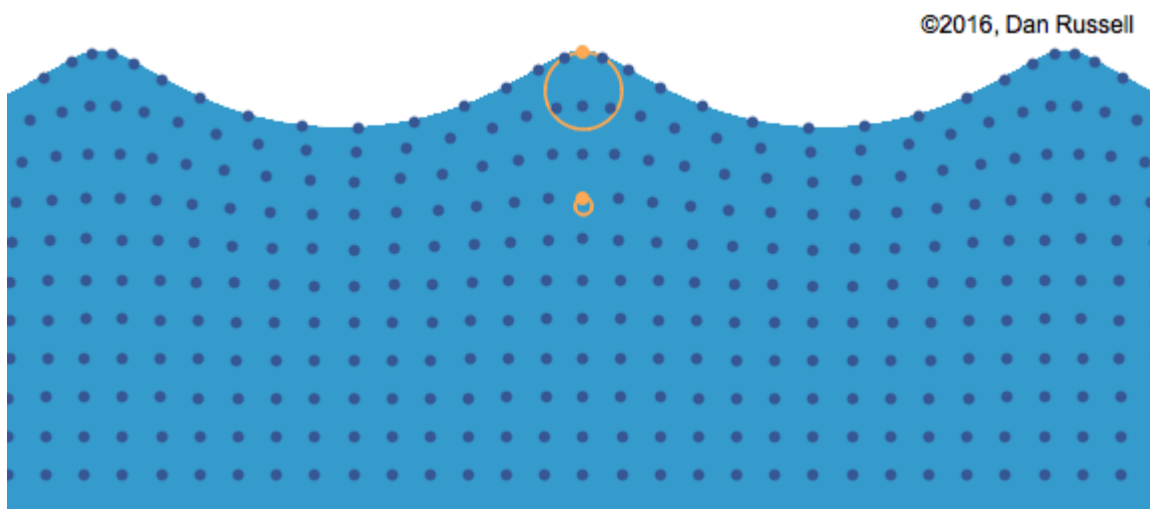
Particle motion is perpendicular to wave motion

Particle Motion



*Surface Wave:*

Particles travel in a circular path (combination of longitudinal & transverse)



## Terminology

Medium -

Crest -

Trough -

Amplitude -

Wavelength -

Pulse:

Repeating:

Frequency: number of cycles (repetitions) in a given amount of time

$$f = \frac{1}{T}$$

Period - The amount of time for a single cycle

$$T =$$

# The Wave eq<sup>n</sup>!

Follow with me, remember kinematics?

$$v = \frac{d}{t}$$

For a wave, our distance is  $\lambda$  and our time is our period (T).

$$v = \frac{\lambda}{T}$$

This is the same as:

$$v = \lambda \left(\frac{1}{T}\right)$$

$$v = \lambda f$$

This is the Wave eq<sup>n</sup>

If the distance between a crest and an adjacent trough is 4 m, and a crest passes by every 12 s, what is the wave speed?

A water wave travels in deep water at 6 m/s with a  $\lambda$  of 2 m. It enters shallow water where its velocity decreases to 4 m/s. What is the new  $\lambda$ ?