CFA #7
Wave Properties

8.PS4.1 Develop and use models to represent the basic properties of waves including frequency, amplitude, wavelength and speed.

Remember to write two facts from each slide

OR

Answer the questions on the slide

Once you are finished, watch the video on Ms. Bullock webpage titled

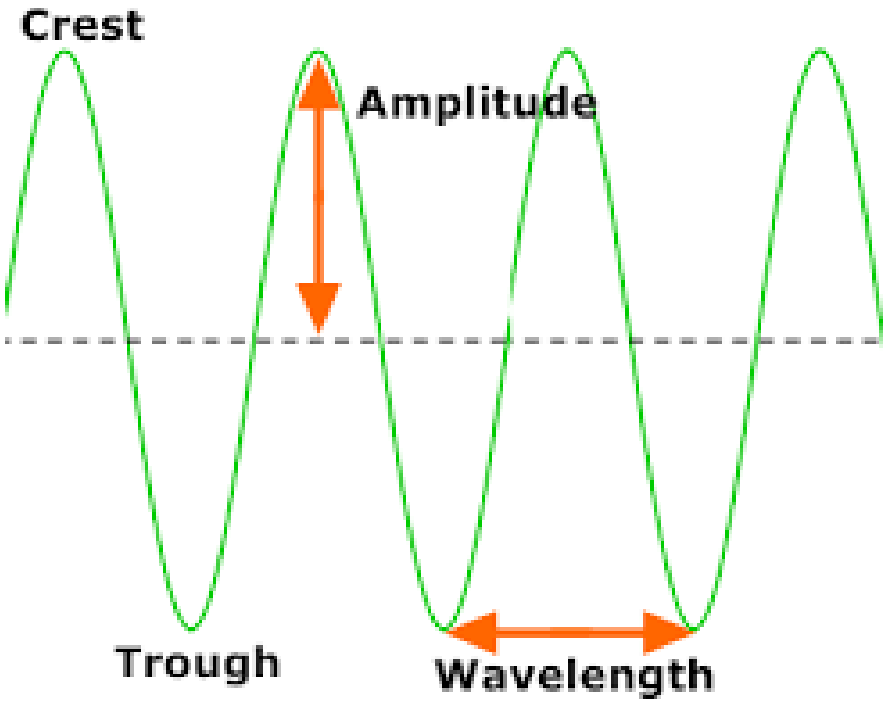
CFA #7 Wave Properties Video

Mechanical Waves

- Mechanical waves require a medium (matter) to travel
- Waves carry or transfer energy NOT matter
- There are two types of mechanical waves:
  - Transverse waves
  - Longitudinal waves

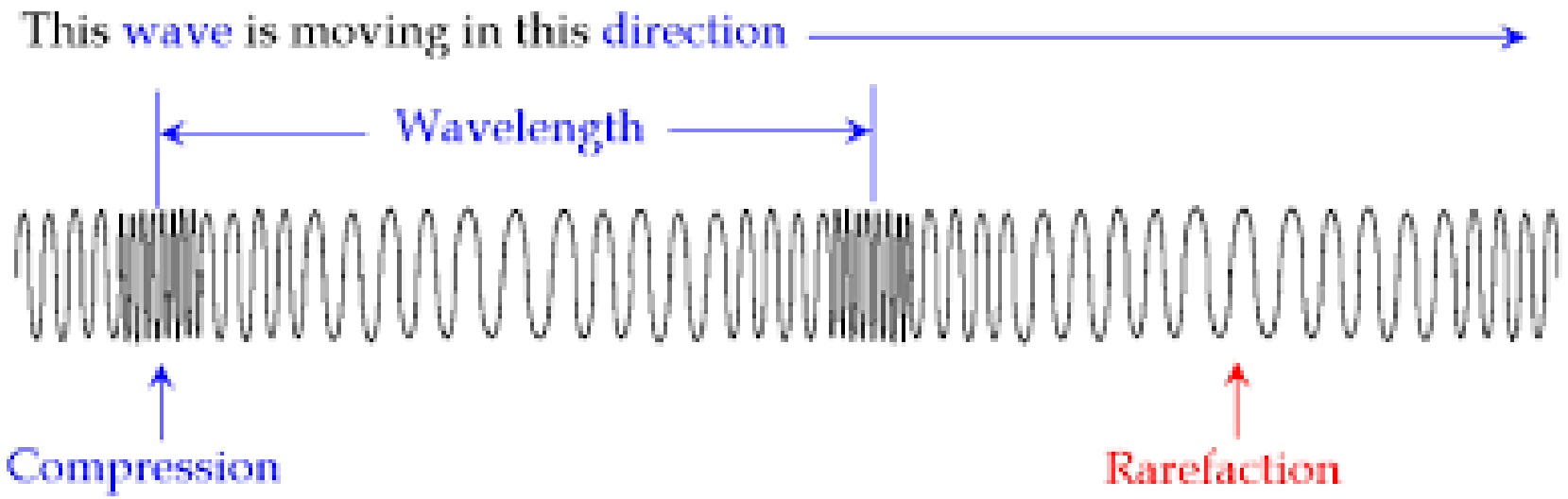
Transverse waves

- Transverse waves transfer energy by moving the particles of a medium up and down
- Transverse waves look much like ocean waves



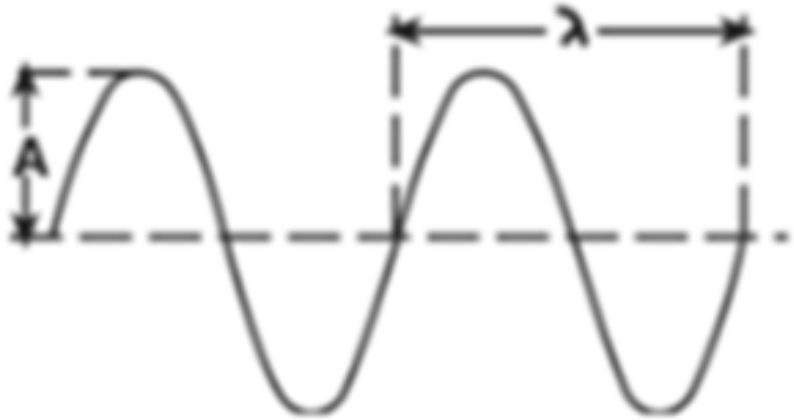
Longitudinal Waves

- Longitudinal waves carry energy by compressing and stretching particles
- Sound is a longitudinal wave



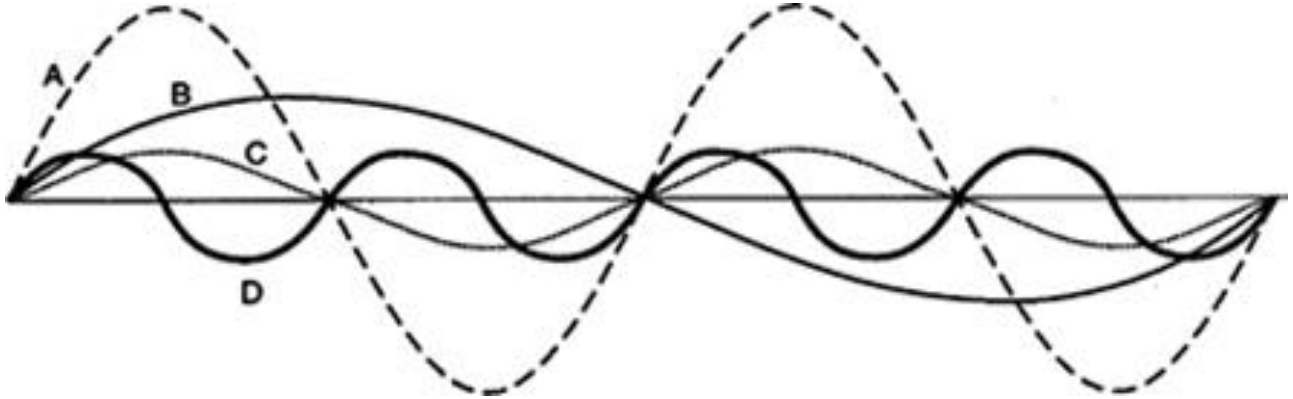
Basic properties

- Frequency is the amount of complete wavelengths in a period of time and measured in Hertz
- Wavelengths can be measured from crest to crest or compression to compression and represented with the symbol, λ
- Amplitude of a transverse wave can be measured from rest point to crest/trough



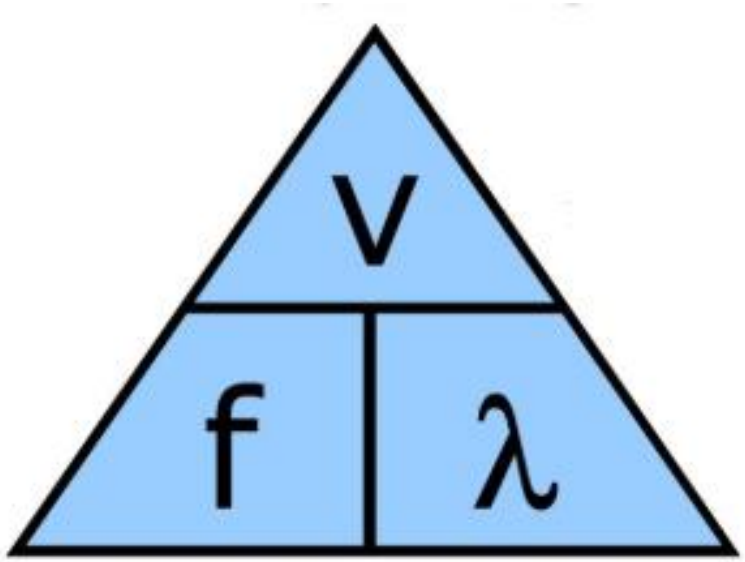
Energy

- The amount of energy the wave carries can affect the amplitude, wavelength, and frequency of a wave.
- A high energy wave is going to have a higher amplitude when compared to a low energy wave.
- A low energy wave will have a lower frequency and a high energy wave will have a higher frequency.
- For example Wave A has a higher amplitude than Wave C; Wave A must have more energy
- For example Wave D has a higher frequency than Wave B; wave D must have more energy



Wave Formula

- Frequency, wavelength, and wave speed can all be calculated using the following formula:



- V = velocity/speed
- F = frequency
- λ = wavelength

Practice

Question:

A wave has a velocity of 30 meters per second and a wavelength of 5.0 meters. What is the frequency of the wave?

Question:

A wave has a wavelength of 2 meters and a frequency of 25Hz. What is the speed of the wave?