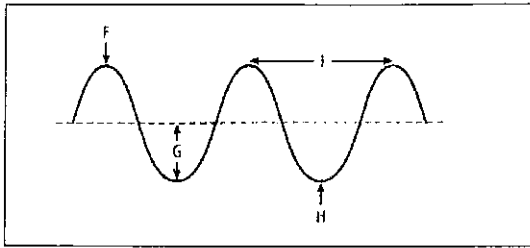


Waves - Bill Nye

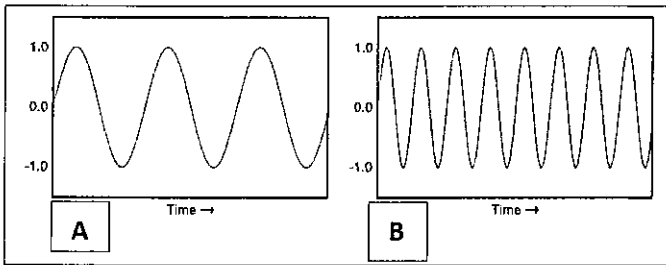
Directions: Watch the video. Collaborate with your group after the video to answer the following questions. For additional help on waves, use the following website: <http://www.ducksters.com/science/physics/waves.php>

- ENERGY travels in waves.
- Light and Sound are forms of ENERGY that travel in WAVES.
- Below is a diagram of a transverse wave. Label the diagram and explain each term.



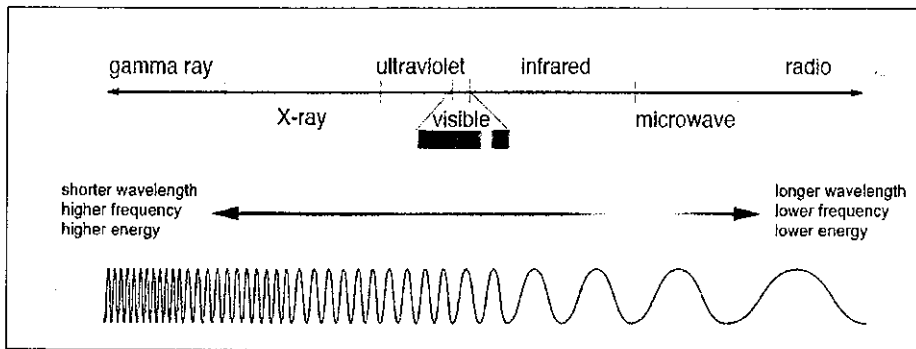
Letter	What is the letter called?	Give a definition for this scientific term
F	CREST	The highest point of the wave
G	AMPLITUDE	Distance from midpoint to crest or trough
H	Trough	The lowest point on wave
J	WAVE LENGTH	distance from crest to crest or trough to trough or any point to next similar point on next wave.

➤ Below is a diagram that show waves with two different frequencies.



- Which diagram represents a high frequency wave? B
- Which diagram represents a low frequency wave? A
- What is the definition of wave frequency?
The number of waves per second.
Hertz (Hz)

➤ Below is a diagram of the electromagnetic spectrum. (Red book -page 337)



8. Explain how color and wavelength are directly related to one another.

Certain colors are defined by their wavelength. Red has longest λ ; violet has shortest λ .

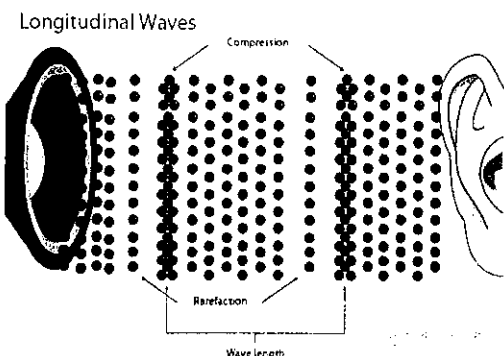
9. Name 7 different forms of electromagnetic radiation and explain at least two ways the 7 forms differ from one another.

<http://imagine.gsfc.nasa.gov/science/toolbox/emspectrum1.html>

- Radio waves
- Microwaves
- infrared waves
- Visible light
- X-rays
- ultraviolet light
- gamma rays

① The different forms of EM radiation vary in λ (wavelength).
② They also vary in energy level. The shorter the λ , the more energy!

➤ Below is a diagram of a sound wave which is also called a longitudinal wave or compression wave.



10. Explain how sound waves work using the terms compression and rarefaction. (Red book -pages 644-645)

A vibration travels through the air by compressing and expanding air molecules. Energy gets transferred through.

11. Explain how echolocation and sonar work. Refer to pages 669-670 in Red textbook.

Sound waves get REFLECTED! vibrating molecules!