

Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas, and big questions.

Objective(s):

- *Understand how electromagnetic waves are created and how to identify the wave and particle properties of these waves.*
- *Recognize the various types of electromagnetic waves and how they differ in frequency and wavelength.*

Notes:

During the video segment, use words, phrases, or drawings to take notes.

Summary:

After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"

Answer the following.

1. What two fields form electromagnetic waves?

2. How do mechanical waves differ from electromagnetic waves?

3. Define a photon in your own words.

4. What happens when electrons are excited to a higher energy level then fall back down to a lower, more stable energy level?

5. What is the name of Albert Einstein's hypothesis that provides evidence for the particle nature of light?

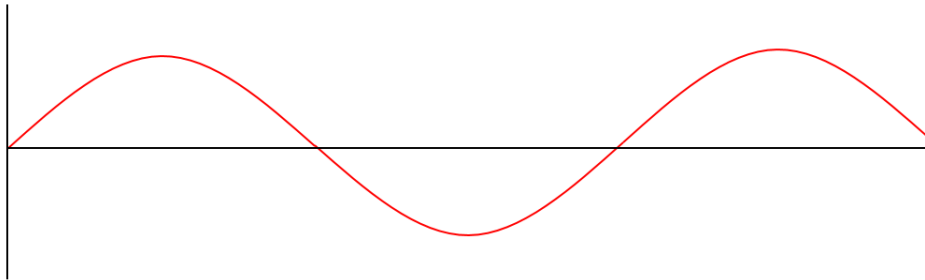
6. Complete the following table:

Phenomenon	Can be explained by wave nature	Can be explained by particle nature
Reflection		
Refraction		
Interference		
Diffraction		
Photoelectric Effect		

Answer the following.

7. What type of wave is an electromagnetic wave?

8. Label a crest, trough, and wavelength on the diagram below:



9. Knowing that light travels at a constant speed, if the frequency of light increases, what happens to the wavelength of light?

10. Write the wave speed equation for light:

11. What is the rounded speed in meters per second of light in a vacuum?

Answer the following.

12. Name a use or property for each type of electromagnetic wave listed below from lowest to highest frequency:

Radio Waves: _____

Microwaves: _____

Infrared: _____

Visible Light: _____

Ultraviolet Light: _____

X-rays: _____

Gamma Rays: _____

13. Which color of visible light has the lowest frequency?

14. Which color of visible light has the highest frequency?
