Warm Up

1. What is the force needed to displace a spring 85.0 cm if the spring constant is 948 N/m?
2. What is the position of a ball thrown into the air with a velocity of 28.0 m/s after 6.80 sec?
3. What is the initial velocity of a car if it accelerated at 3.30 m/s^2 for a time of 16.0 sec to achieve a final velocity of 93.0 m/s?
4. What is the period for a wave that had a velocity of 50.0 m/s and a wavelength of 71.0 m?
5. What is the velocity of a 662 kg vehicle with 4,560 J of energy?

Target

- I can identify the properties of electromagnetic waves.

Electromagnetic Waves

- Light travels in a straight line called a ray.
- A ray represents the path of light. This is used to describe the different ways light behaves.

- The model that light is like a ray comes from the dual nature of light.
- Light was shown to behave like a wave when Thomas Young shined light through slits.
- The result were places of constructive and destructive interference of waves.

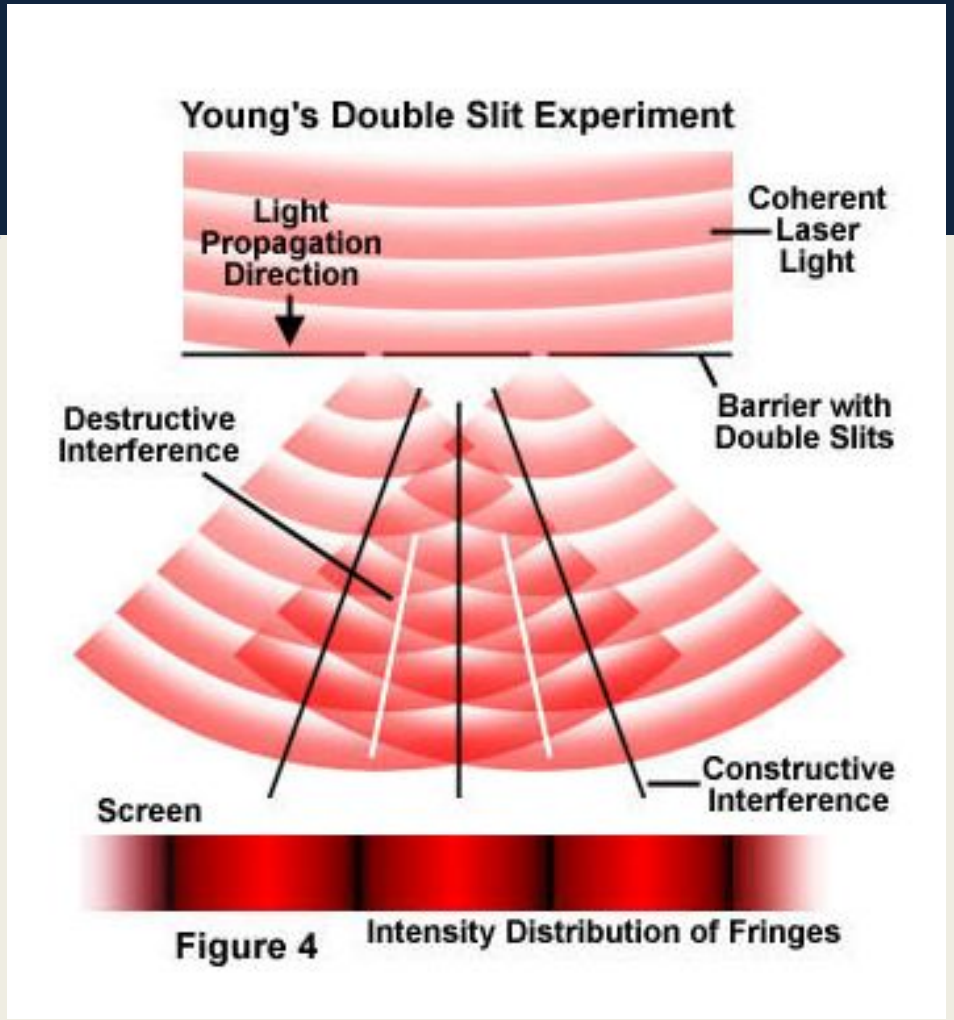
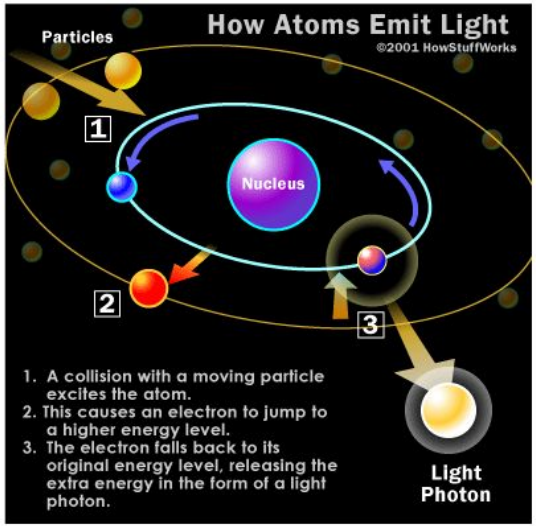


Figure 4

http://www.olympusmicro.com/primer/lightandcolor/interfer?ence.html

- Light, however, also behaves like a particle. Newton and Einstein both predicted that light is like a stream of tiny particles called photons.



http://home.howstuffworks.com/fluorescent-lamp1.htm

- The speed of light in a vacuum is 3.0×10^8 m/s.
- This is known as the symbol c and is a universal value.
- At this speed, light travels 9.46×10^{15} km in a year. This amount of distance is called a light year.

- Rays of light come from sources of the light. There are two sources of light.
- Luminous sources are objects that emit their own light.
  - Example is the sun.
- Illuminated sources are objects that become visible as light reflects off of it.
  - Example is the moon.

- The transmission of light determines how much light passes through an object.
- Transparent materials are those that allow most or all light to pass through them.
- Translucent materials are those that allow some light to pass through them.
- Opaque materials are those that do not allow light to pass through them.