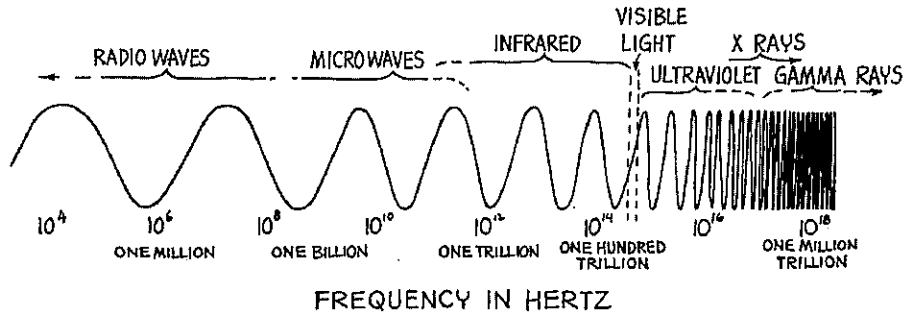


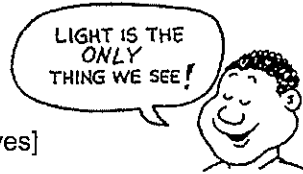
CONCEPTUAL *Physics* PRACTICE PAGE

Chapter 26 Properties of Light Speed, Wavelength, and Frequency

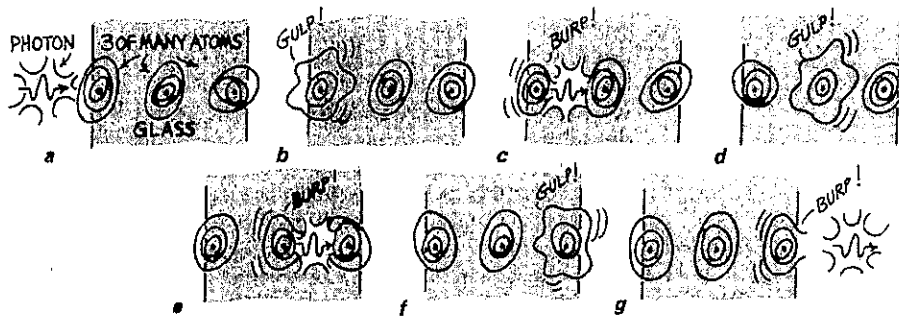
1. Figure 26.3 in your textbook is repeated here. Study the figure and answer the following:



- Which has the longer *wavelengths*? [Radio waves] [Light waves]
- Which has the longer *wavelengths*? [Light waves] [Gamma waves]
- Which has the higher *frequencies*? [Ultraviolet waves] [Infrared waves]
- Which has the higher *frequencies*? [Ultraviolet waves] [Gamma rays]



2. The energy of light cascades from atom to atom in the transparent piece of glass shown here. A particle of light, a photon, enters the left end and is absorbed by an atom, which in turn is set into vibration and emits an identical photon. This occurs until a photon pops out the right side.

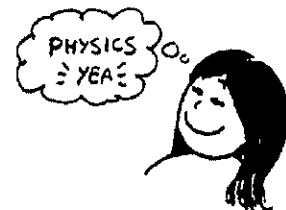


- Exactly what do vibrating electrons emit?

- When ultraviolet light shines on glass what does it do to electrons in the glass structure?

- When energetic electrons in the glass structure vibrate against neighboring atoms what happens to the energy of vibration?

- What happens to the energy of a vibrating electron that does not collide with neighboring atoms?



Hewitt
Drewitt!

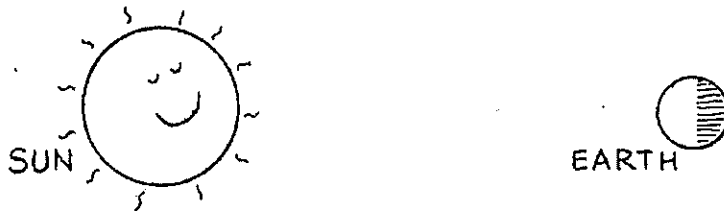
Chapter 26 Properties of Light
Speed, Wavelength, and Frequency—continued

- e. Light in which range of frequencies is absorbed in glass? [Visible] [Ultraviolet]
- f. Light in which range of frequencies is transmitted through glass? [Visible] [Ultraviolet]
- g. How is the speed of light in glass affected by the succession of time delays that accompany the absorption and re-emission of light from atom to atom in the glass?

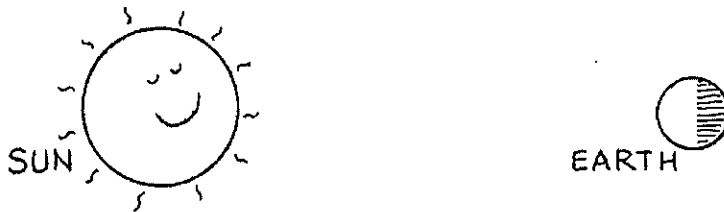
- h. How does the speed of light compare in water, glass, and diamond?

4. The Sun normally shines on both the Earth and Moon. Both cast shadows. Sometimes the Moon's shadow falls on Earth, and at other times, Earth's shadow falls on the Moon.

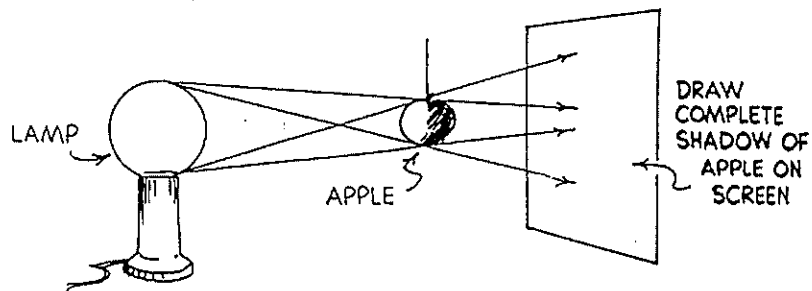
a. The sketch shows the Sun and Earth. Draw the Moon at a position for a solar eclipse.



b. This sketch also shows the Sun and Earth. Draw the Moon at a position for a lunar eclipse.



5. The diagram shows the limits of light rays when a large lamp makes a shadow of a small object on a screen. Make a sketch of the shadow on the screen, shading the umbra darker than the penumbra. In what part of the shadow could an ant on the screen see part of the lamp?



Hewitt
Draw it!