

Chapter 11 HW

Review Questions: 9, 11, 16, 22, 24

Exercises: 6, 15, 16, 24, 44

Problems: 2, 4

Additional:

1. When you shine a light on this page, the paper is white and the ink is black. What is happening when the white light is incident on the white paper? What is happening when the white light is incident on the black ink?
2. While standing in air at the beach, you see a seashell in the water. How should you adjust your aim if you want to retrieve the seashell from the water? Why?
3. List radio waves, microwaves, infrared rays, yellow light, red light, green light, ultraviolet, blue light, and x-rays according to:
 - a) Increasing wavelength
 - b) Increasing frequency
4. If all of the waves in question 3 are traveling in a vacuum, how will their speeds compare?
5. Determine the color of each of the following waves. You will need to have a wavelength in nanometers to determine the color.
 - a. 7.5×10^{14} Hz
 - b. 580 nm
 - c. 0.45 micrometers
6. What is the temperature in Kelvin for each of the waves in question #5?
7. Calculate the wavelength of the radio waves. Radio waves are broadcast in Megahertz.
 - a. 93.1 FM
 - b. 1220 AM
8. What is the speed of light?
 - a. In glass ($n = 1.52$)
 - b. In water ($n = 1.33$)
 - c. In air ($n = 1.0003$)