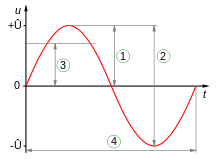
**18. Light Waves homework problems (Physical Science)**

Name and date submitted (3 pts):

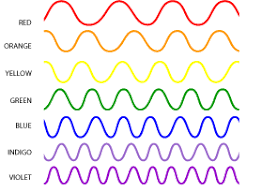
Instructions: Using this form as a template, create space in the document below and write or type your answers. Turn in your completed work by the due date.

(25 questions, 100 points possible).

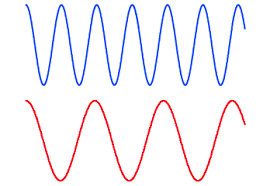
[](https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwi8oOCazanbAhW2CjQIHdS7CAsQjRx6BAgBEAU&url=https://da.wikipedia.org/wiki/Amplitude&psig=AOvVaw1f9MJeDtQCmyTEibWJxh-W&ust=1527637975701029)

1. The wavelength of the wave in Fig. 1 is indicated by which number?
2. The amplitude of the wave in Fig. 1 is indicated by which number?

**Figure 1**

[](https://www.google.com/imgres?imgurl=https://www.ducksters.com/science/roygbiv_waves.gif&imgrefurl=https://www.ducksters.com/science/light_spectrum.php&docid=twCEs2sCLj93jM&tbnid=Ufm8u0zjFW21zM:&vet=10ahUKEwi5p864zanbAhVhHjQIHb6rBUIQMwjCAigJMAk..i&w=279&h=205&bih=518&biw=1143&q=light%20wave&ved=0ahUKEwi5p864zanbAhVhHjQIHb6rBUIQMwjCAigJMAk&iact=mrc&uact=8)

1. Which color in Fig. 2 has the longest wavelength?
2. Which color in Fig. 2 has the highest frequency?

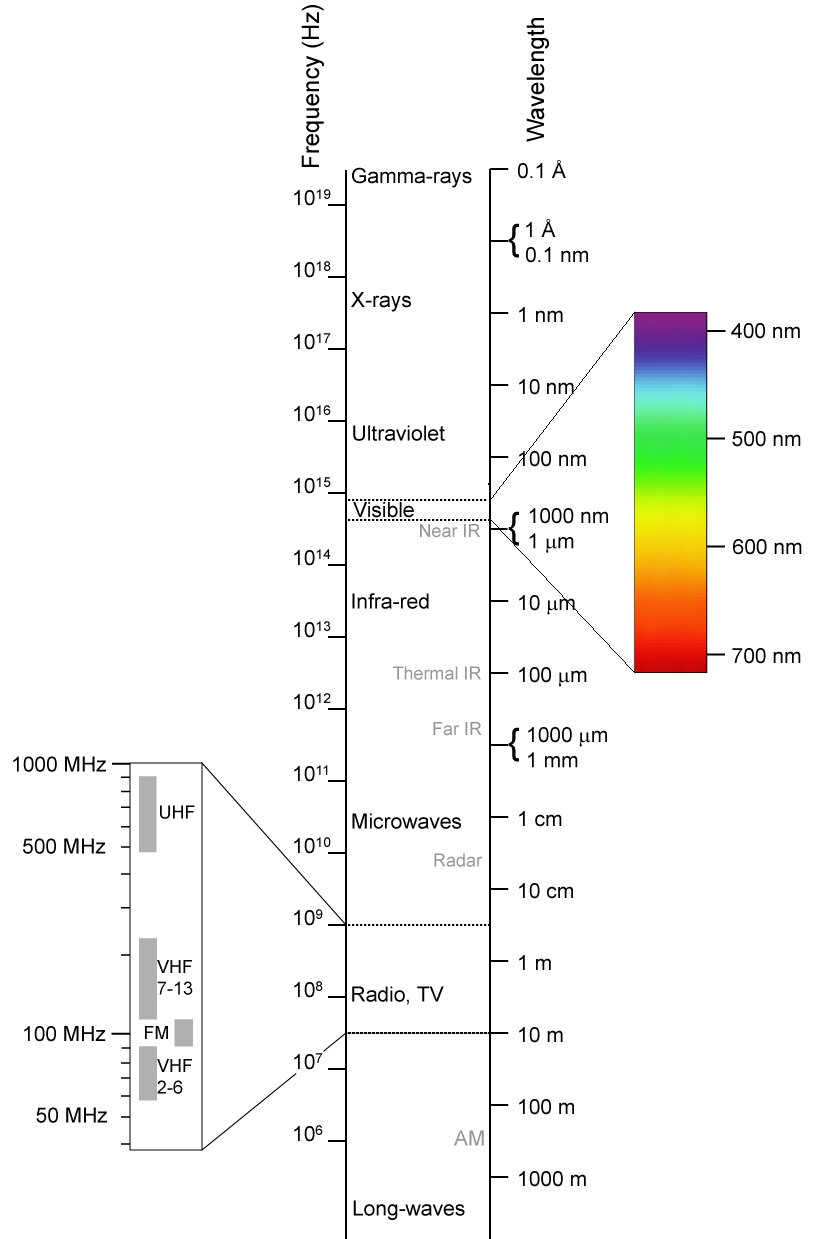
[](https://www.google.com/imgres?imgurl=https://s3.amazonaws.com/user-media.venngage.com/507116-35099d42c248fce6bf0447ea1a674089.jpg&imgrefurl=https://infograph.venngage.com/p/107402/sound-and-light&docid=QgD6__iKhV_EKM&tbnid=6JjiIpceCmKWxM:&vet=10ahUKEwi5p864zanbAhVhHjQIHb6rBUIQMwjDAigKMAo..i&w=348&h=240&bih=518&biw=1143&q=light%20wave&ved=0ahUKEwi5p864zanbAhVhHjQIHb6rBUIQMwjDAigKMAo&iact=mrc&uact=8)

**Figure 2**

1. T/F: Referring to Fig. 3, the blue light wave travels faster through a vacuum than the red light wave because its frequency is higher.

**Figure 3**

1. T/F: Electromagnetic waves travel at the speed of sound.
2. T/F: Electromagnetic waves have only an electrical nature.
3. T/F: Electromagnetic waves travel through a vacuum.
4. T/F: Sunlight consists of all colors.
5. T/F: Radio waves can pass through your body without your being aware of them.
6. T/F: Microwave ovens heat food by speeding up water molecules.
7. T/F: The paint on a red car absorbs light of all colors except red.
8. T/F: Violet light has the longest wavelength of visible light.

[](https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwiAk5KRzqnbAhURCTQIHTkbA6oQjRx6BAgBEAU&url=https://et.wikipedia.org/wiki/Elektromagnetspekter&psig=AOvVaw3ezfPdDaGvzL79MZjqg-eW&ust=1527638173213574)

The next 8 questions refer to Figure 4:

1. Which electromagnetic waves have the highest frequency? What is their wavelength?
2. Which electromagnetic waves have the highest energy?
3. Limiting our discussion to the visible-portion of the electromagnetic spectrum, what is the range of wavelengths contained in the visible spectrum?
4. Ultraviolet light has (higher frequency)/(lower frequency) than visible light.
5. Infrared light has (higher frequency)/(lower frequency) than visible light.
6. Radio and TV waves have a (longer)/(shorter) wavelength than visible light.
7. What is the wavelength of AM radio waves? (give a range)
8. What is the typical wavelength of FM radio waves?
9. What does monochromatic light contain?

**Figure 4**

1. A continuous spectrum
2. Several colors
3. One color
4. White light
5. The measure of the brightness of a light at a light source is its
6. Illumination
7. Intensity
8. Brilliance
9. Light output
10. In what way is light different from sound?
11. Human senses detect it.
12. It travels through a vacuum.
13. It is a wave.
14. It contains a variety of wavelengths.
15. Which of the following are the most energetic?
16. Gamma rays
17. Microwaves
18. Radio waves
19. Visible light waves