

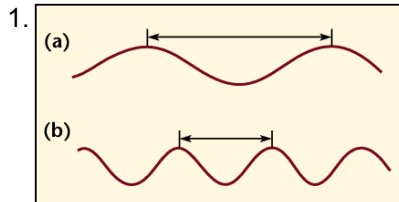
Light and Optical Systems - Section 3.0 - Quiz

Light is part of the electromagnetic spectrum and travels in waves. (This is EXTENSION material)

Student Name _____

Class _____

3.1 The Wave Model of Light



The arrows a) and b) -identified in the illustration- indicate the ...

- A. crest
- B. rest position
- C. amplitude
- D. wavelength

2. As frequency increases, this will happen to the wavelength ...

- A. they get longer and less frequent
- B. they get longer and more frequent
- C. they get shorter and less frequent
- D. they get shorter and more frequent

3. White light is refracted through a device that breaks it up into all the visible colors that make up white light. The device that does this is called a ...

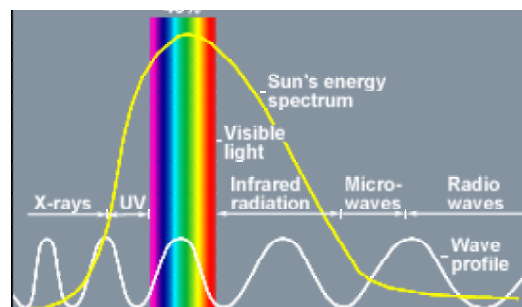
- A. refractor dish
- B. refractor lens
- C. prism
- D. light source

4.

All the colors **ROYGBIV** of the visible spectrum have different wavelengths.

The color with the shortest wavelength is ...

- A. violet
- B. blue
- C. yellow
- D. red



(R to L)
red
orange
yellow
green
blue
indigo
violet

5. Rainbows are formed because of the refraction of white light in the sky. The two things necessary for a rainbow to form are ...

- A. Clouds and raindrops
- B. Sunlight and raindrops
- C. Clouds and sunlight
- D. Sunlight and low temperatures

3.2 The Electromagnetic Spectrum

6. The invisible spectrum has wavelengths that cover a very large range of electromagnetic radiation. This type of electromagnetic energy can burn your skin, even though most of it is absorbed by ozone in the Earth's atmosphere ...
- A. infrared
 - B. microwave
 - C. ultraviolet
 - D. x-ray
7. The only type of radiation which can penetrate solid material and concrete walls is ...
- A. microwaves
 - B. x-rays
 - C. infrared waves
 - D. gamma rays
8. **Radar** is an acronym for *radio detection and ranging*. These devices send out waves, which bounce off objects and return (obeying the law of reflection). Older radar devices used radio waves, whereas modern radar devices use ...
- A. microwaves
 - B. ultraviolet waves
 - C. infrared waves
 - D. gamma rays
9. Ultraviolet light can kill living cells in humans. If babies are born with a liver condition, which makes their skin yellow, they are placed under ultraviolet light to treat it. The skin condition is known as ...
- A. scurvy
 - B. eczema
 - C. jaundice
 - D. atrophy
10. Doctors use **MRI** (magnetic resonance imaging) machines to create pictures of the tissues inside the human body. The MRI machine uses these types of electromagnetic waves to produce images ...
- A. microwaves
 - B. radio waves
 - C. infrared waves
 - D. X-rays

3.3 Producing Visible Light

11. Thomas Edison was the first to design light bulbs in the late 1800's. They didn't last very long because he used this as the filament ...
- A. bamboo
 - B. tungsten
 - C. paper clip
 - D. human hair
12. A fluorescent light bulb is a glass tube that is filled with a small amount of gas, such as mercury vapour. The inside of the tube is coated with a white powder called ...
- A. fluorophor
 - B. phosphor
 - C. mercuricor
 - D. incandescent

13. Phosphorescence is slightly different from fluorescence. In phosphorescence, the energy that is used to produce the light is absorbed by the material and then given off later. These types of materials ...
- A. glow in the dark
 - B. become natural light
 - C. last longer than fluorescent light
 - D. produce light and give off lots of heat
14. Incandescent light bulbs produce 95% heat and only 5% visible light. Fluorescent light bulbs are much more efficient, because they produce 80% heat and ...
- A. 2 times as much light
 - B. 3 times as much light
 - C. 4 times as much light
 - D. 5 times as much light
15. When living organisms produce their own light it is called bioluminescence. The fire fly produces its own light by using a light-producing organ on the under side of its body, called a ...
- A. phosphortube
 - B. phosphorescent
 - C. phototube
 - D. photophore

3.4 The Colors of Light

16. The **primary** colors of light are:
- A. red, yellow and blue
 - B. red, green and yellow
 - C. red, yellow and green
 - D. red, green and blue
17. The **secondary** colors of light are:
- A. cyan, green and yellow
 - B. cyan, magenta and orange
 - C. magenta, yellow and cyan
 - D. magenta, green and yellow
18. A television set puts the theory of color addition to practice. If you look closely at the screen, you will see that it is actually made up of rows of ...
- A. red, blue and yellow dots
 - B. blue, green and red dots
 - C. red, blue and yellow squares
 - D. blue, green and red squares