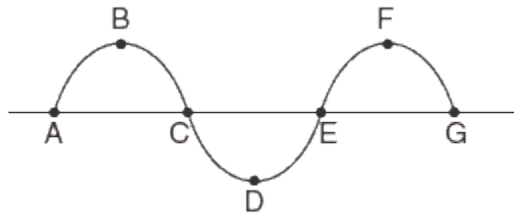


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1. Which is true about a light wave?

- (A) Light waves are longitudinal waves that do not require a material medium through which to travel
- (B) Light waves are longitudinal waves that require a material medium through which to travel
- (C) Light waves are transverse waves that require a material medium through which to travel
- (D) Light waves are transverse waves that do not require a material medium through which to travel

Questions 2-3: The diagram above represents a light wave.



2. The wavelength of a wave is equal to the distance between what two points?

- (A) A and C
- (B) C and D
- (C) B and F
- (D) D and F

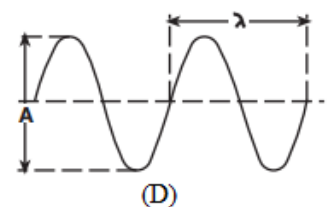
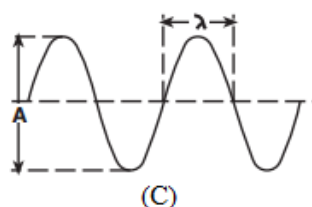
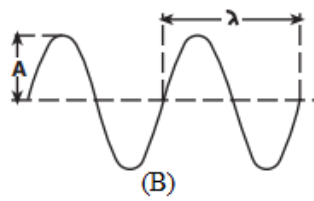
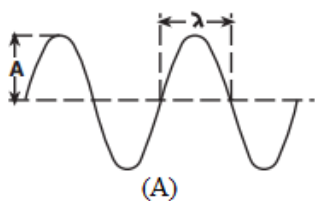
3. What two points in the wave diagram represent the amplitude?

- (A) A and B
- (B) B and D
- (C) C and E
- (D) C and G

4. If the frequency of light is increased and the speed of light is constant, what happens to the wavelength?

- (A) Increases
- (B) Decreases
- (C) Remains the same
- (D) Not able to be determined

5. Which wave diagram has both wavelength (λ) and amplitude (A) labeled correctly?

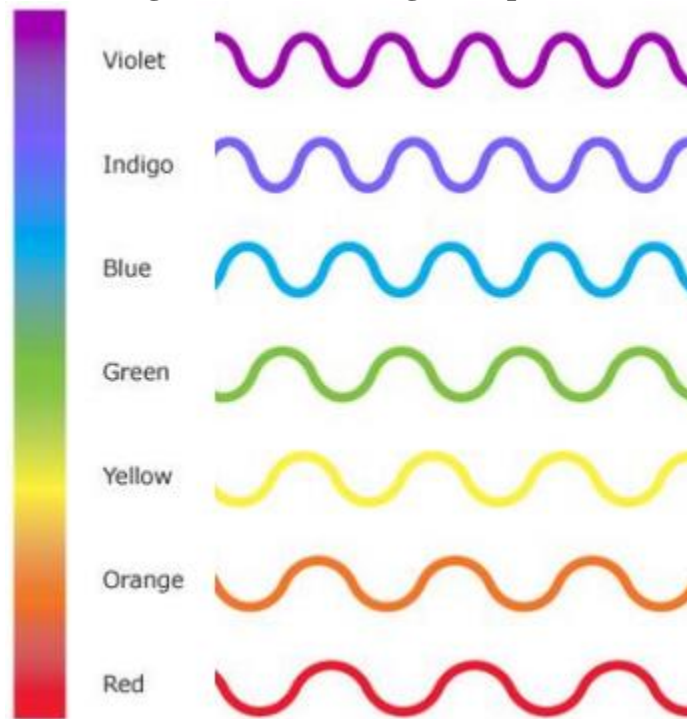


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6. Which radiation on the electromagnetic spectrum will have the highest frequency?
- (A) Radio waves
 - (B) Infrared radiation
 - (C) Visible light
 - (D) Ultraviolet radiation
7. A beam of light has a wavelength of 450×10^{-9} m in a vacuum. The frequency of this light is
($c = \text{wavelength} \times \text{frequency}$ with $c = 3 \times 10^8$ m/s)
- (A) 1.5×10^{-15} Hz
 - (B) 4.5×10^{-7} Hz
 - (C) 6.7×10^{14} Hz
 - (D) 1.4×10^2 Hz
8. Radar uses a technology called Doppler Radar, and radar instruments transmit electromagnetic energy in the form of microwaves. Some microwave wavelengths are between the wavelengths of
- (A) Gamma rays and x-rays
 - (B) Infrared and radio waves
 - (C) Ultraviolet and infrared
 - (D) X-rays and ultraviolet

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Questions 9-10 refer to the visible range of the electromagnetic spectrum shown below.



9. Which photon of light will have the longest wavelength?
(A) violet
(B) green
(C) orange
(D) red
10. Which photon of light will have the greatest amount of energy?
(A) violet
(B) green
(C) orange
(D) red