

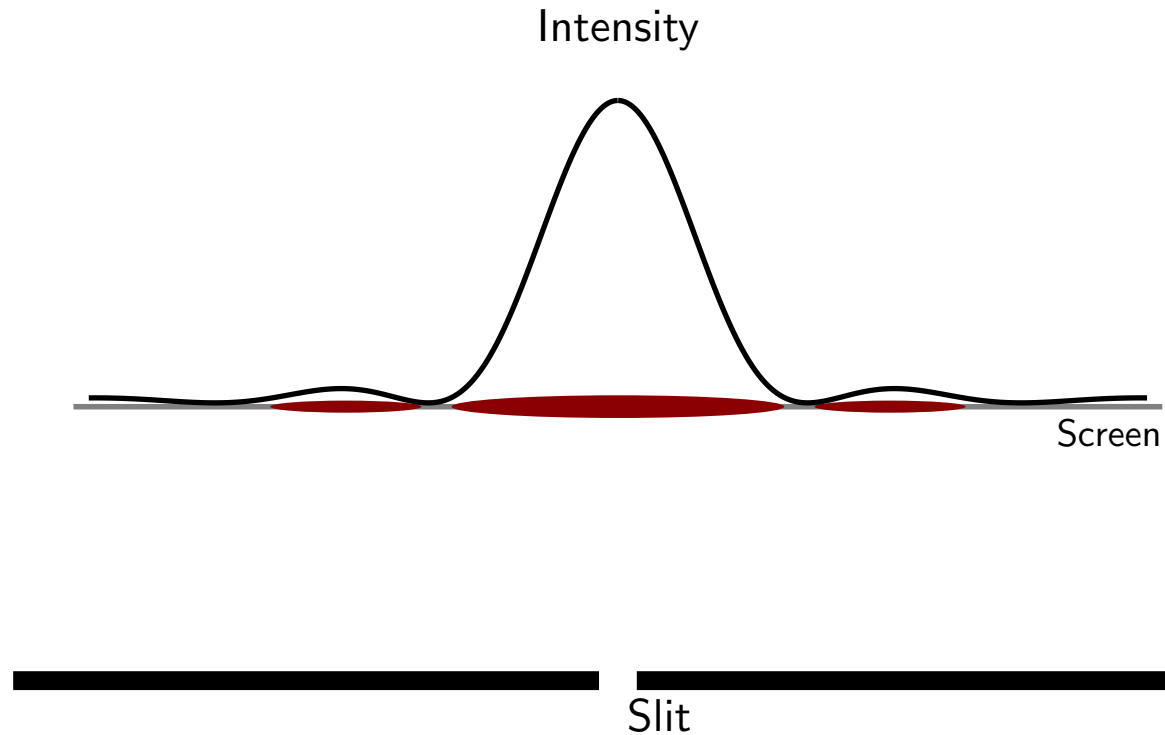
Question 1

Red light has a wavelength of about $650 \text{ nm} = 6.5 \times 10^{-7} \text{ m}$ while violet light has a wavelength of about $450 \text{ nm} = 4.5 \times 10^{-7} \text{ m}$. Both colors travel at the same speed in air.

Which of the following is true?

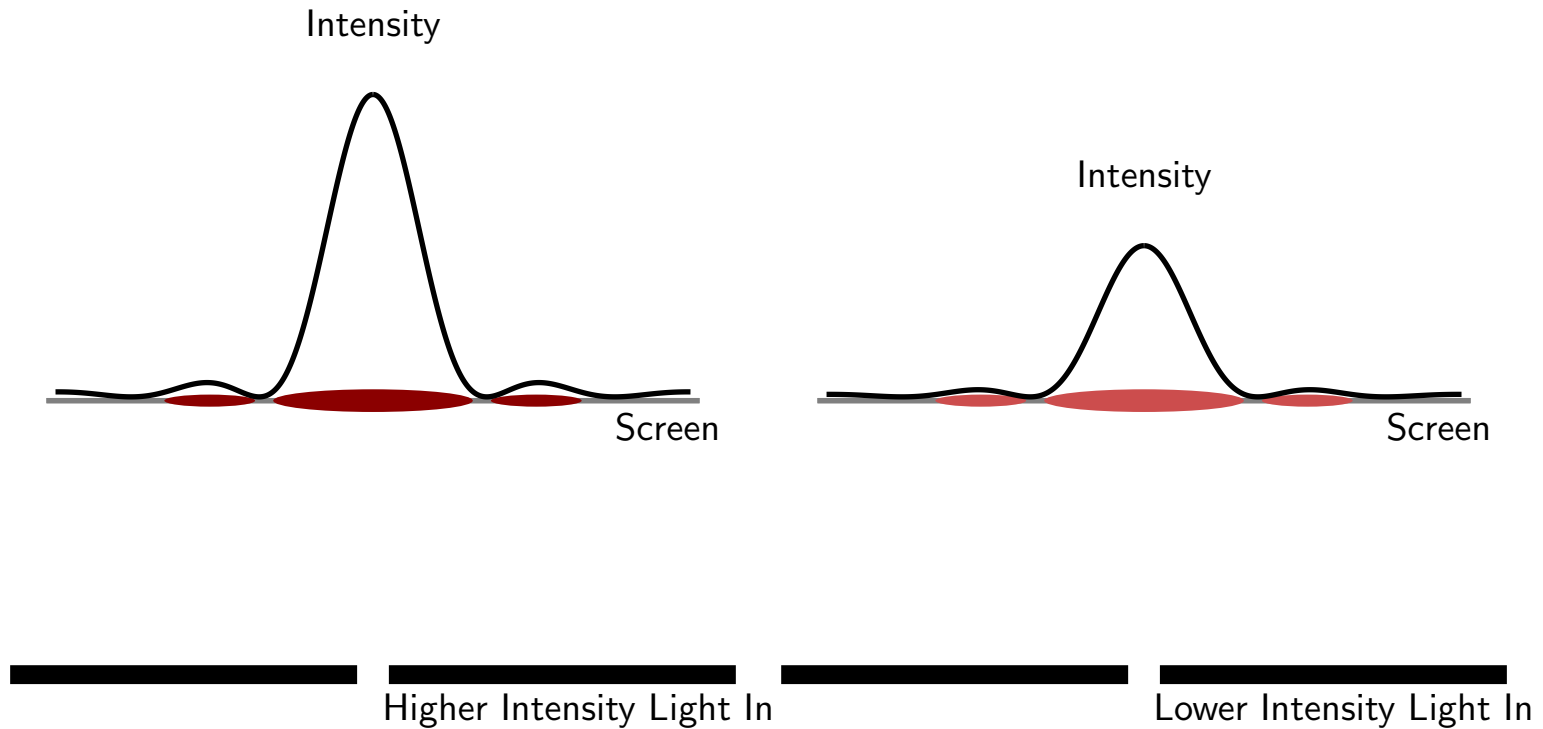
1. Red light has a higher frequency than blue light.
2. Red light has a lower frequency than blue light.
3. Red light has the same frequency as blue light.
4. The frequency depends on the brightness of the light.

Single Slit Pattern



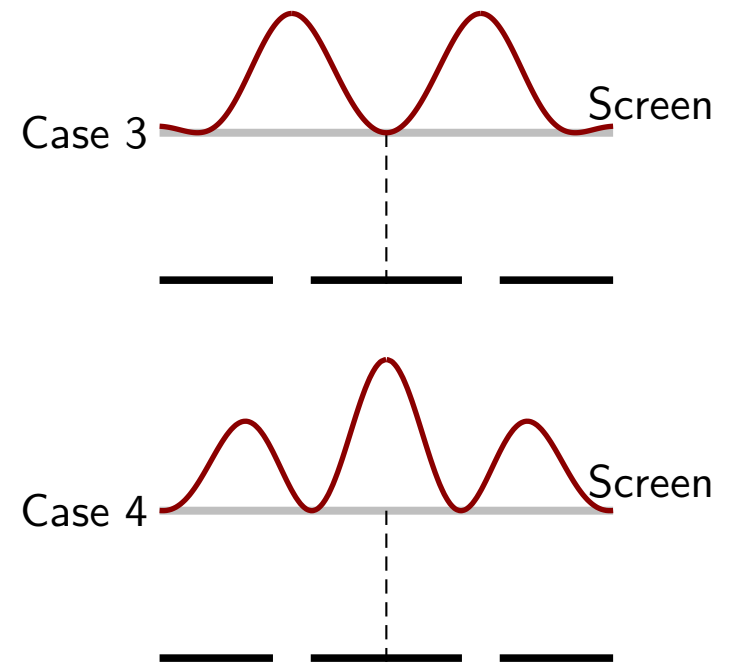
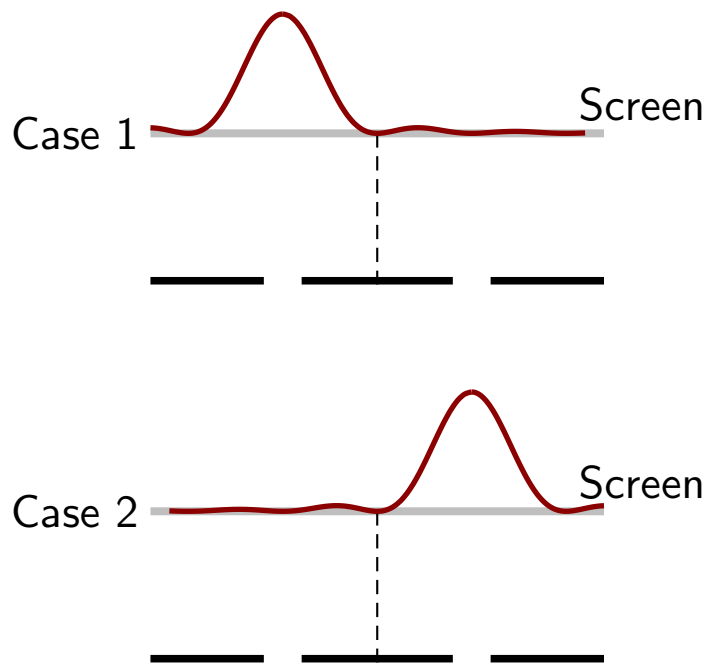
At any location on the screen, the height of the intensity curve indicates the intensity at that location.

Single Slit Pattern: Reduced Intensity



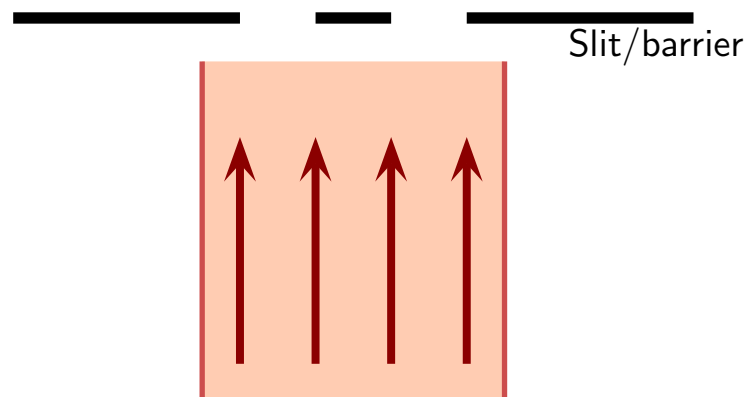
Question 2

Light with a single wavelength passes through a double slit barrier. Which of the following best represents the intensity profile of the light on a screen placed beyond the barrier?



Question 3

Very low intensity light travels toward a double slit arrangement. The beam of light is wide enough to cover both slits. One detector is placed just beyond each slit.



Which of the following is true of a *particular single photon* passing toward the barrier and slits?

1. The photon could be detected by the left and also the right detector.
2. The photon could be detected by just one of the detectors.
3. The photon will definitely be not detected by either detector.