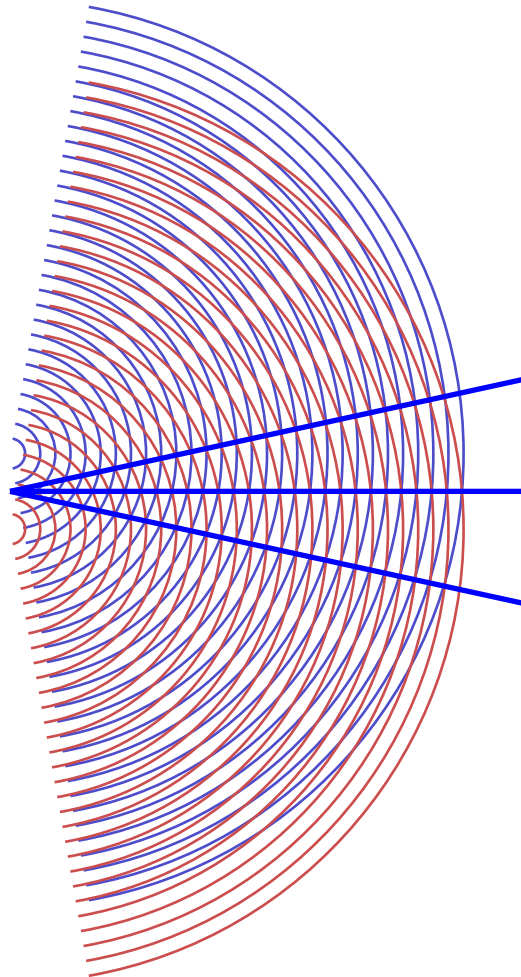


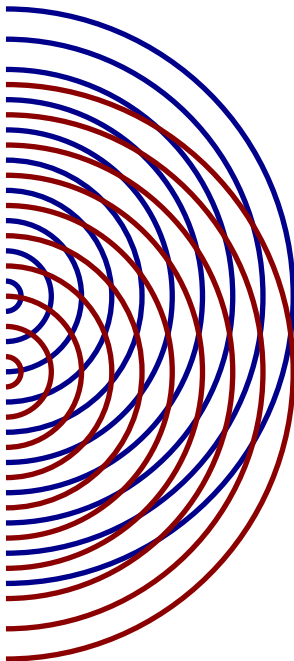
Overlapping Water Waves



Straight lines indicate points along which constructive interference occurs.

Question 1

Two water waves overlap. The crests of the waves are as illustrated.

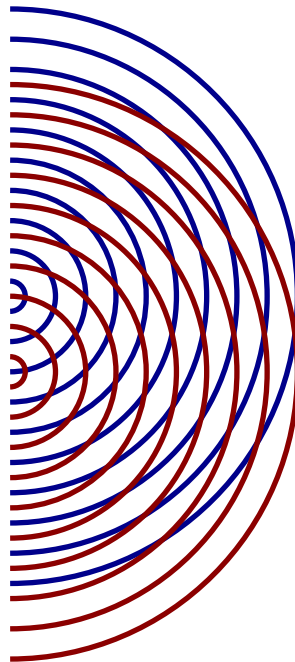


The wavelength of the water waves is doubled. Which of the following is true of the number of lines along which constructive interference occurs, after this has happened?

1. The number of lines increases.
2. The number of lines decreases.
3. The number of lines stays the same.

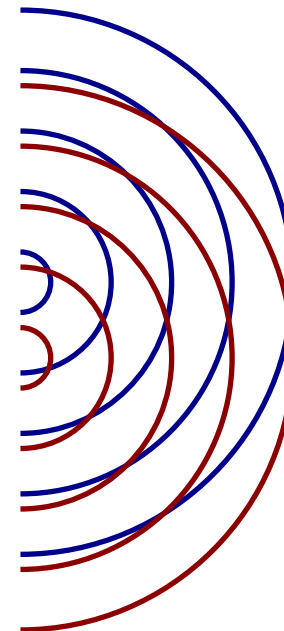
Wavelength Effects in Interference

Original wavelength



More constructive regions

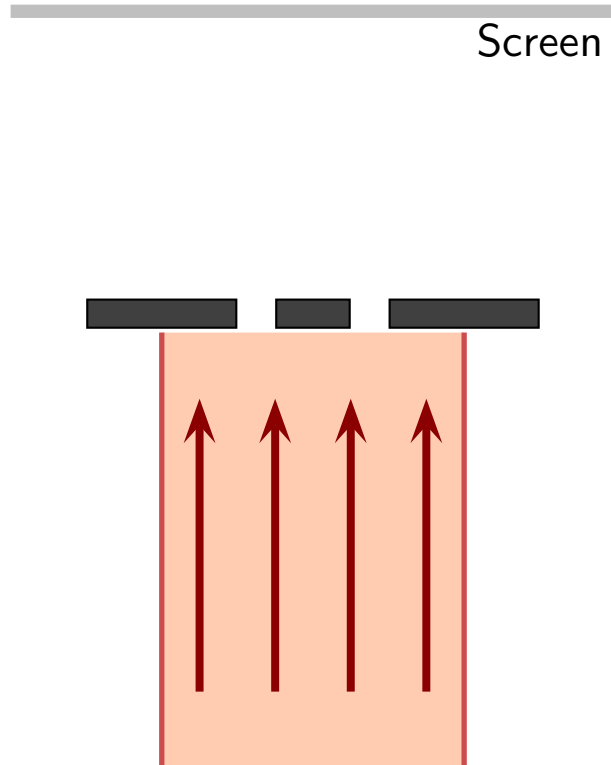
Double wavelength



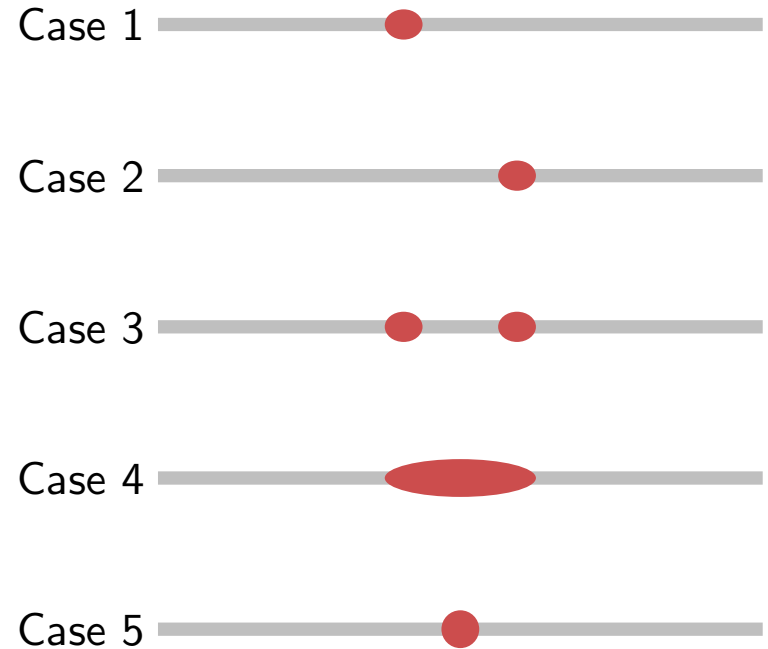
Fewer constructive regions

Question 2

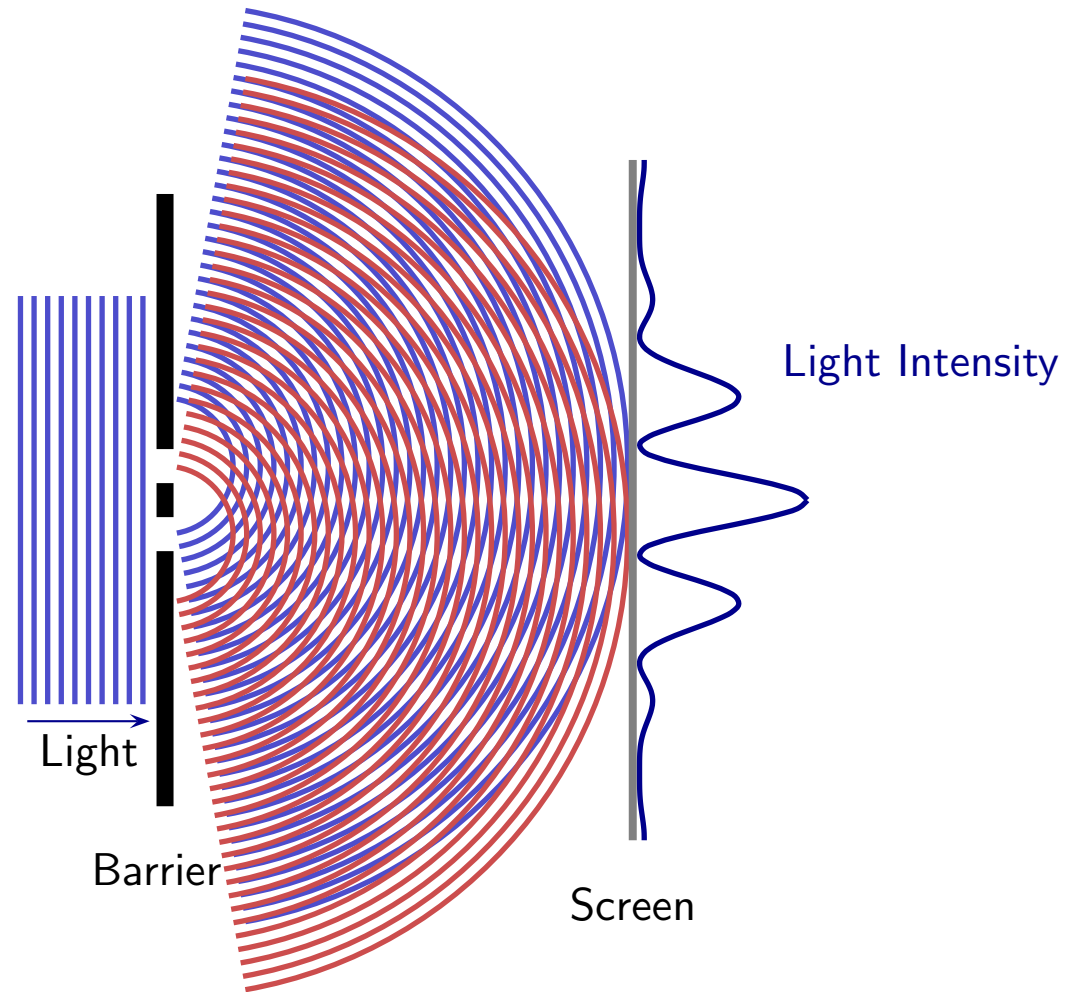
Light travels directly toward a barrier with two slits.



Assuming that light consists of particles and that all of these travel directly toward the barrier and slits, which of the following best represents the pattern observed on the screen?



Overlapping Waves from a Double Slit



Question 3

Consider light that is incident upon two narrowly spaced slits. The particle model and the wave model of light could be used to predict the patterns produced on a screen beyond the slits.

Which of the following is true?

1. Both models predict that there will be no pattern on the screen.
2. Both models predict that there will be identical patterns on the screen.
3. Both models predict that the patterns on the screen will have the same form but different intensities.
4. The wave model predicts that the pattern on the screen will have a different form to that predicted by the particle model.