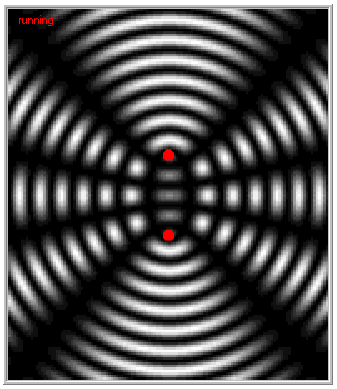
Worksheet for Exploration 37.2: Changing the Separation Between Sources



Two sources of light waves of equal frequency and amplitude are shown. The magnitude of the electric field is represented by the light and dark areas. The lighter the spot, the greater is the magnitude of the electric field at that spot **(position is given in nanometers)**.

Begin with the 0.5 wavelength separation animation. The sources are separated by one half the wavelength of the light.

a. Predict what pattern would be seen if the source separation was increased to one wavelength.

AFTER you have made your prediction and written down your reasoning, check to see if you were correct. If you were incorrect, reexamine your reasoning by looking at the one wavelength separation animation.

b. When you feel confident in your understanding, test it by predicting the pattern if the source separation is 1.5 wavelengths.

Check your prediction with the 1.5 wavelength separation animation.

c. As a final test, predict the pattern for separations of 2 and 2.5 wavelengths.

Check your prediction with the two wavelength separation and 2.5 wavelength separation animations.

d. If a screen is placed on the right hand side of the viewing window, how would the interference pattern change as the distance between the sources is increased?