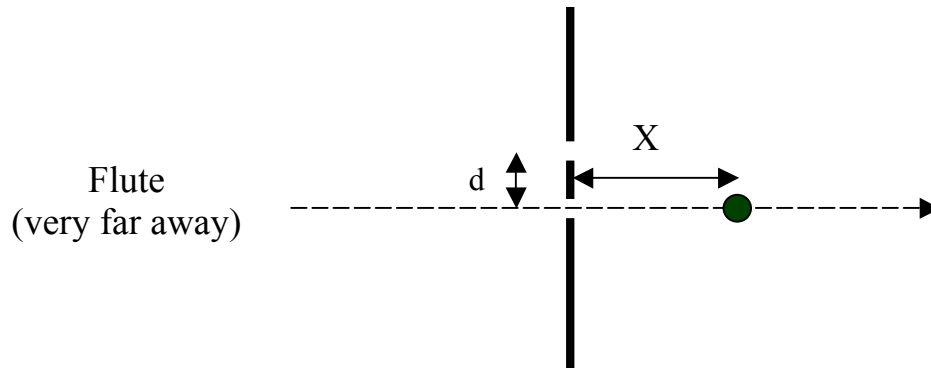


You are standing on the black dot in the figure below, a distance X to the right of a high wall, in which there are two narrow slits separated by a distance $d = 0.6$ m. The dot is on a line perpendicular to the wall that passes through the center of one of the slits. On the other side of the wall far away along the same line, someone plays a steady note on a flute. The frequency is $f = 1200$ Hz. Recall that the speed of sound in air is approximately $v = 340$ m/s. You may ignore any sound reflected from the ground, *etc.*



- What is the wavelength of the sound, λ ?
- Write an equation for the distance, X , at which completely constructive interference can occur. Be careful to define any quantities that you put into your equation. Also be careful to consider the possibility that there may be more than one interference maximum on the dotted line.
- Obtain a numerical value for the position, X , **closest to the wall** where there is completely constructive interference.
- Suppose that you walk to the right until you are very far away from the wall. Will the interference between the sound passing through the two slits be:
(A) constructive,
(B) destructive, or
(C) can't tell from the information given?