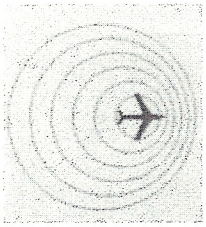
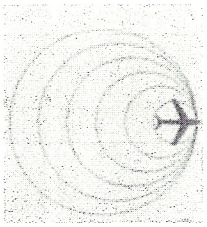
Physics: Sound
Class Examples

Going Faster Than Sound

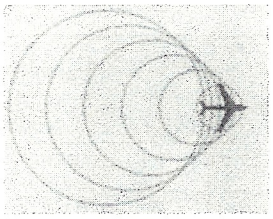
Moving Source



Moving at the Speed of Sound

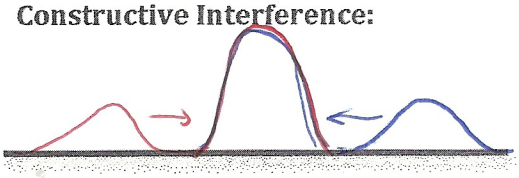


Moving Faster than Sound

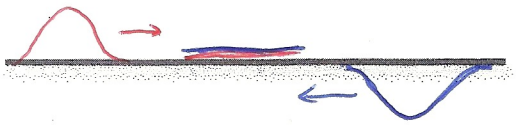


Wave Interference and Beats

Constructive Interference:



Destructive Interference:



Example 6

You are setting up a surround-sound system at your home. You have two speakers, each with an output of 214 Hz initially. You would like to place your favorite chair in a place where it can receive the loudest sound from these two speakers. You set up the speakers and chair in the configuration shown below. Is this a good place for the chair?

$v = \lambda \cdot f$

$343 = \lambda\,(214)$

$\lambda = 1.60\text{m}$

We want constructive interference, so we want the waves separated by at least one whole wave length

So the first speaker takes 1.5 λ to get to you, the second takes 2.5 λ, so yes, they are separated by one wavelength

$\frac{2.40}{1.60} = 1.5\lambda$