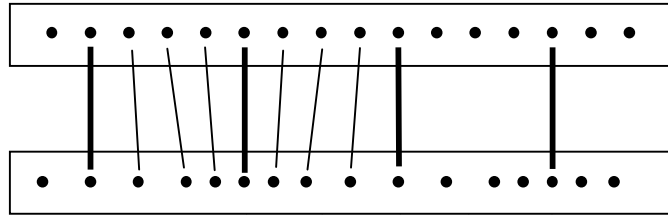


# Displacement and Pressure

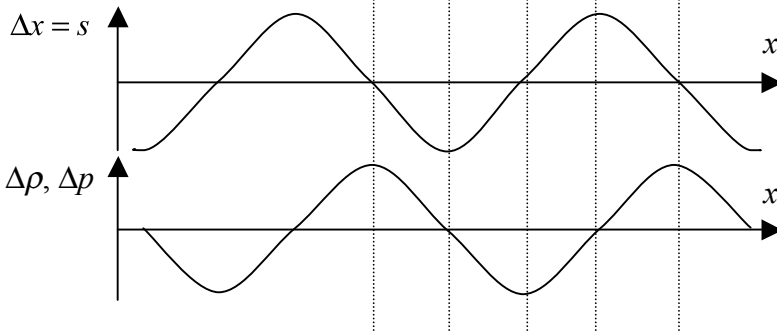
Here is the figure showing the relationship between **displacement** and **density (or pressure)** for a longitudinal/compression wave. Although density and pressure are not exactly the same, they are qualitatively similar, so they are represented by a single graph.

A tube of air with no sound. The equilibrium position of several air molecules is indicated.



The same tube with a sound traveling down it. Some air has been displaced.

A graph of the displacement



A graph of the density variation (or pressure variation).

Note that the average density and pressure are not zero! That is why the vertical axis is labeled with  $\Delta s$ .