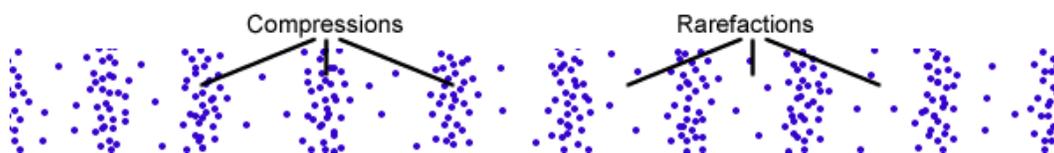


## Vocabulary: Longitudinal Waves



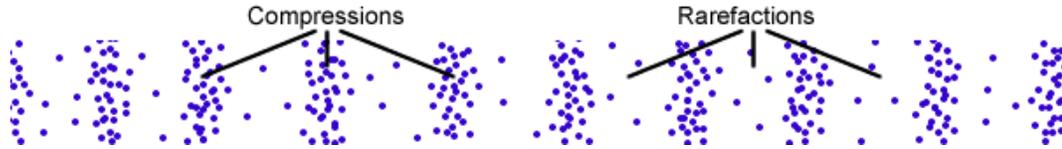
### Vocabulary

- Antinode – a point on a *standing wave* where the *displacement* is maximized.
- Compression – a region within a *longitudinal wave* where the density of the *medium* is relatively high.
  - For a sound wave passing through air, compressions are regions where air particles are pushed together. (*Rarefactions* are areas where particles are spread apart, as shown below.)



- Displacement – the difference between an object's current position and its original position.
  - If an object has moved to the right, its displacement is positive. If it has moved to the left, its displacement is negative.
- Frequency – the number of times something occurs in a given period of time.
  - The frequency of a sound wave is equal to the number of waves that pass a point each second.
  - The unit of frequency is the hertz (Hz). One hertz is one event per second.
  - The shorter the wavelength of a wave is, the greater its frequency. Longer wavelengths correspond to lower frequencies.
- Interference – the superposition of two or more waves which results in a new pattern.
- Longitudinal wave – a wave in which the back-and-forth motion of the medium is aligned with the motion of the wave.
- Medium – a substance through which waves can travel.
  - For example, sound waves can pass through a gas such as air, a liquid such as water, or a solid such as glass.
  - Unlike light waves, sound waves require a medium. Light can travel through the vacuum of space, but sound waves cannot.
- Node – a point on a standing wave where the displacement is zero.

- Rarefaction – a region within a longitudinal wave where the density of the medium is relatively low.
  - For a sound wave passing through air, rarefactions are regions where air particles are spread apart.



- Standing wave – a wave that does not appear to travel (propagate) in any direction.
  - Standing waves are often produced by interference between advancing waves and reflected waves.