

Refraction



Definition

Refraction is *transmission with a bend*. Refraction is a change in direction as sound transmits from one medium to another.

Requires:

Occurs when two conditions are met ψ :

1. **oblique incidence** and
2. **different propagation speeds ψ .**

Cannot occur with normal incidence or with identical propagation speeds.

Sine

Each and every angle has a *sine* associated with it. See page 2 for a chart of typical angles and their respective sines.

Snell's Law

The physics of refraction are described by Snell's Law. ψ

Equation

$$\frac{\text{sine (transmission angle)}}{\text{sine (incident angle)}} = \frac{\text{propagation speed 2}}{\text{propagation speed 1}}$$

Examples

If propagation speed 2 is *less* than propagation speed 1, then the transmission angle is *less* than the incident angle. ψ

If propagation speed 2 is *greater* than propagation speed 1, the transmission angle is *greater* than the incident angle. ψ

