Reflection, Diffraction, and Refraction

When a wave passes from one medium to another it is partially transmitted and partially reflected.

Waves reflect at a "Free" boundary.

At a "Fixed" boundary, waves reflect and turn upside down (inverted).

Diffraction is the bending of a wave around an edge, or when it strikes an obstacle.

When a wave bends around an obstacle, or as it passes through an opening:


Suppose you bought a concert ticket without looking at the seating chart and wound up sitting behind a large post. You would be able to hear the concert quite well because the wavelengths of sound are long enough to bend around the post.

Figure 22.7: Diffraction of waves through a slit.
Waves can also bend by refraction

When a wave strikes a boundary at an angle and its speed changes in the new medium it will refract.

**Refraction**: "When a wave strikes a boundary between two mediums at an angle it is bent as it passes into the new medium"
Interference

Waves in the same place combine to produce a single wave

Principle of Superposition

"When two waves exist at the same time in the same space in a medium."

The result of the interaction is called:

Constructive Interference- two waves push in the same direction

Destructive Interference- two waves push in opposite direction
beats