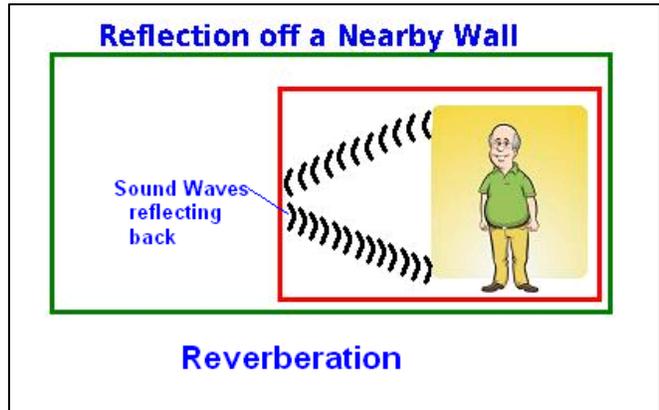
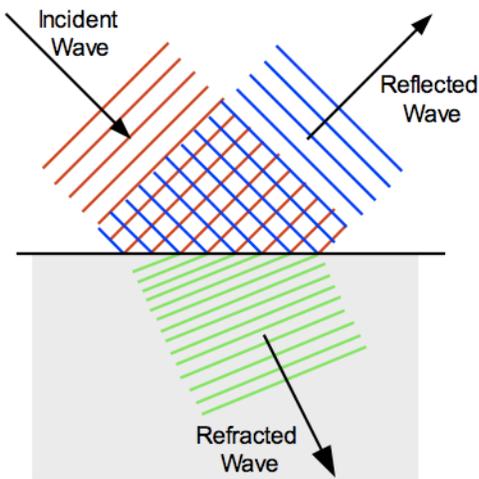


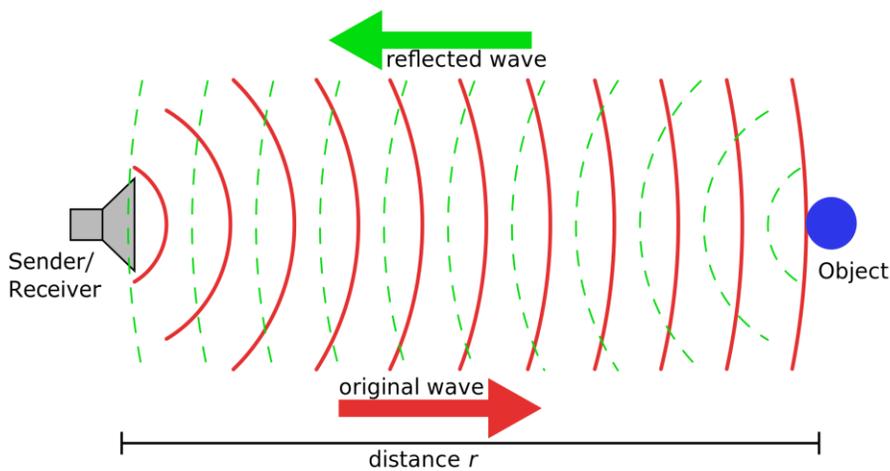
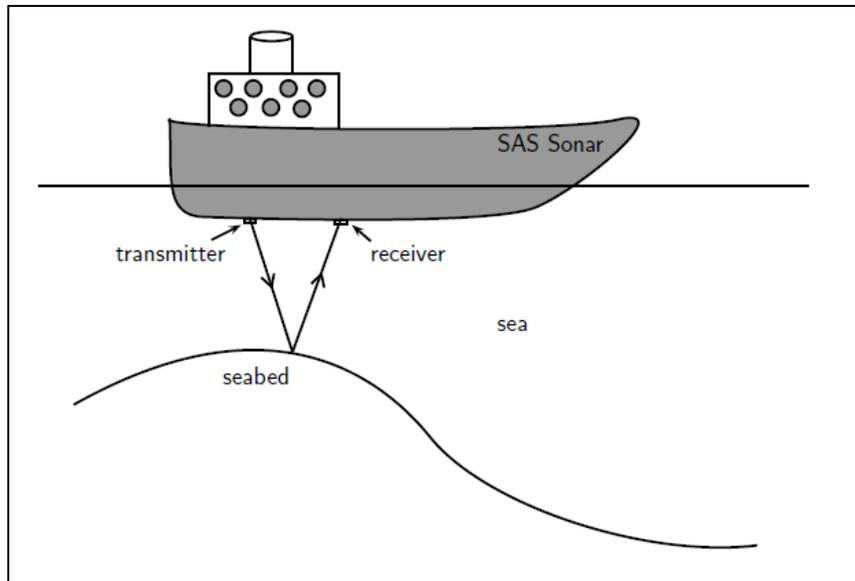
Answers - Wave Interactions & Interference (6.3 CK-12 online book)

1. Define Reflection:

Reflection is when a wave bounces back from a barrier they cannot pass through.



2. Draw a picture which shows a wave being reflected:



3. Name 4 different types of waves that can be reflected:

Ocean waves can bounce off of seawalls and rocky shores, sound waves reflect off of hard surfaces like tile (echoes), light waves can reflect off of mirrors, wavelengths of color reflect off of objects (why we see color), slinky waves reflect (as demonstrated by Mrs. Earls in class)

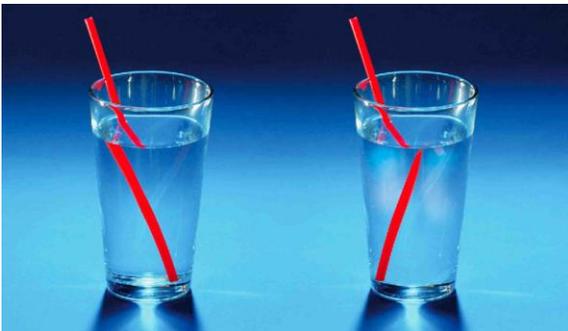
4. What is a reflected sound wave called?

It is called an echo

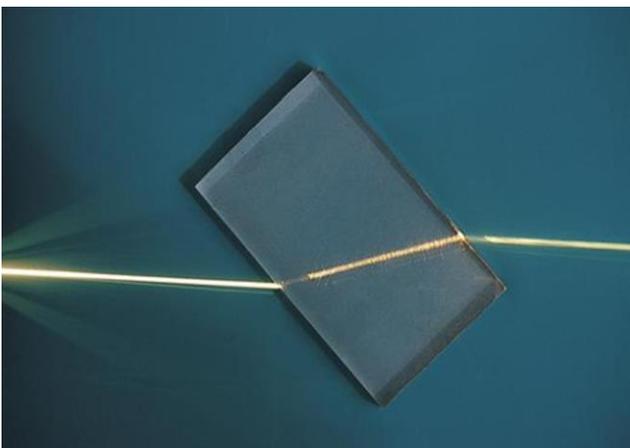
5. Define refraction:

Refraction is the bending of a wave when it enters a new medium *at an angle*. When the wave enters a new medium with a different density, it will either speed up or slow down. If the wave is a light wave and travels from a less dense medium like air to a denser medium like liquids and solids, the wave will slow down and bend as it slows.

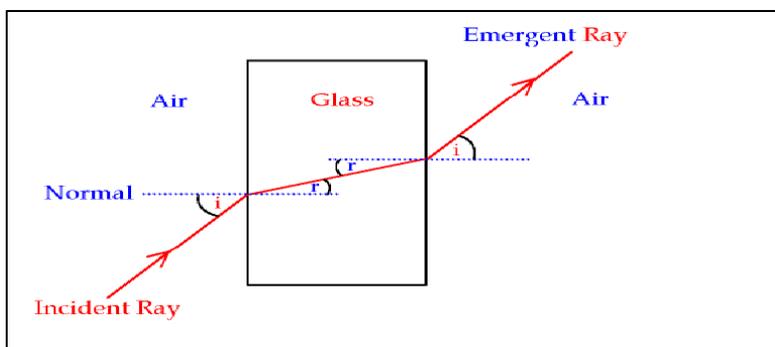
6. Draw a REFRACTED wave.



Each color of white light bends according to its wavelength.



As the laser beam travels from air to glass it slows and bends and as it leaves the glass and enters air again it speeds up and bends again.



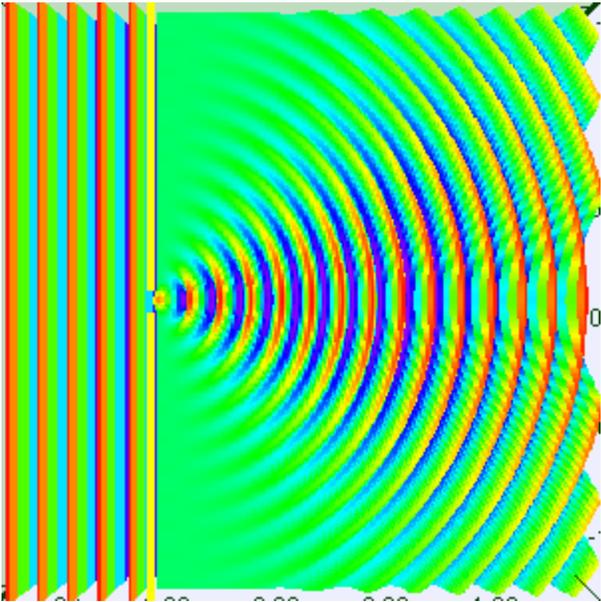
7. Give two reasons why a wave will bend when it enters a new medium.

(Waves only bend when they enter a new medium *at an angle*. If they enter a new medium straight or directly perpendicular to the surface of the medium, there will be no bending.) There are two reasons the waves bend when they enter a new medium at an angle. First, they bend because they are entering a new medium with a different density. Second, they bend because the speed at which the wave is travelling changes when they enter a new medium with a different density.

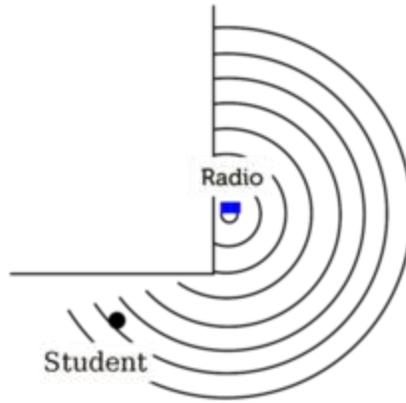
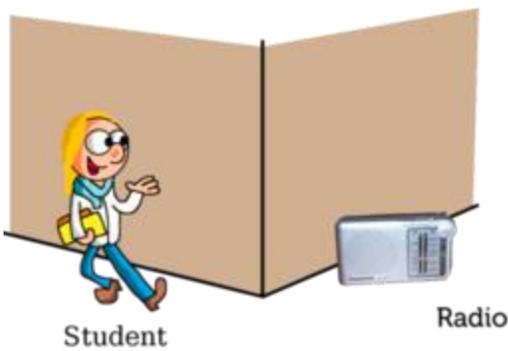
8. Define diffraction:

Diffraction is when waves spread out and travel around barriers or when waves move through an opening and spread

9. Draw a picture which illustrates diffraction.



Diffraction of Sound Waves

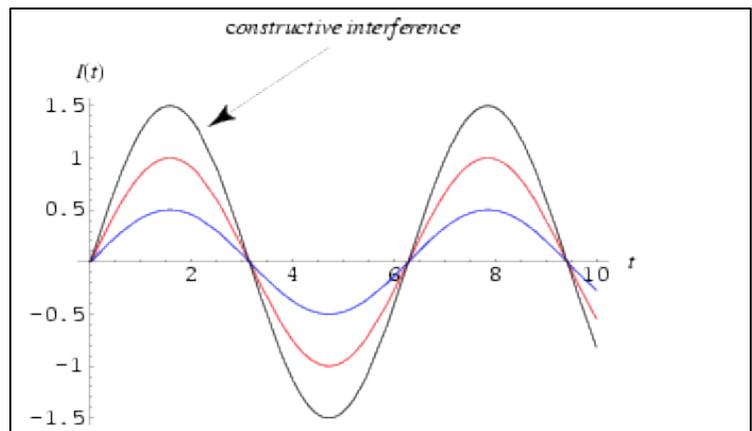
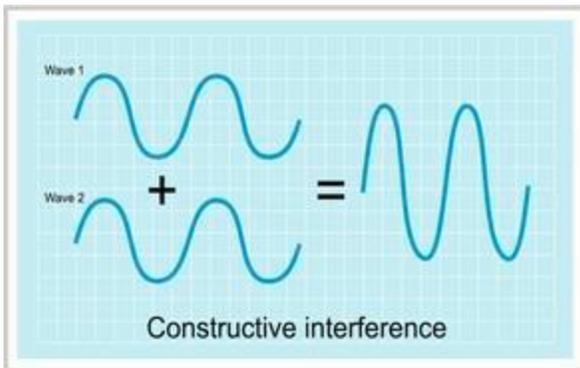


10. What is wave interference?

Wave interference is the interaction between waves that meet. If there are two waves travel at the opposite direction, they have to pass through each other. There are two types of wave interference; constructive and destructive.

11. When waves interfere with each other, what would cause the sound to sound louder?

Constructive Interference would cause sound to get louder. When two waves combine and are in sync with each other their amplitudes combine to make a higher amplitude with a louder sound.



12. What would cause the sound to get softer?

Destructive Interference would cause the sound to get softer. When two waves combine and are 180 degrees out of sync, they cancel each other out decreasing the amplitude to zero (no sound).

