Sound/Acoustics

- A medium is a substance which is able to carry or convey something. So blood is a medium for conveyance of oxygen, water is a medium for conveyance of nutrients to fish, and air is a medium for conveyance of airplanes and "sound."

- Air is elastic: as you go up (and down) an elevator, the air "pressure" lessens (and increases), causing your ears to "pop."

- Air can be "shocked," as by fireworks or canons or bombs. Such a shock wave conveys energy. The wave travels outward at "the speed of sound," but the specific air particles/molecules do not. Each particle/molecule moves only enough to bang into nearby particles/molecules (and thereby to pass along its energy to them) and then to move back.

- You can feel the effects of a high-energy shock wave -- it's like being punched. When air is shocked repeatedly, from about 20 times per second up to about 20,000 times per second, those shock waves are recognized by our hearing apparatus -- as sound.

- If there's no medium, then the shock wave can't travel. That means, no air -- no sound. Denser media (such as metal or water) enable shock waves to travel faster, while slower media cause shock waves to travel slower.

- Low-frequency shock/sound waves travel outward in all directions. High-frequency shock/sound waves travel more in a straight line. High-frequency shock/sound waves bounce off hard surfaces.

- Energy from shock/sound waves is absorbed by soft surfaces.

- The number of shock waves per second is called frequency, expressed as Hz. If sound (a shock wave) travels at 1100 feet per second, then a sound wave of 110 HZ would involve points of high pressure (and points of low pressure) every 10 feet or so along the path of radiation. A sound wave of 1100 Hz would involve points of high pressure (and points of low pressure) every foot or so along that path. And a sound wave of 11,000 Hz would involve points of high pressure every inch or so along the path of radiation.

- As frequency gets higher (110 to 1100 to 11000, for example), wave length (the distance along the path of radiation between two points of high pressure) gets shorter.