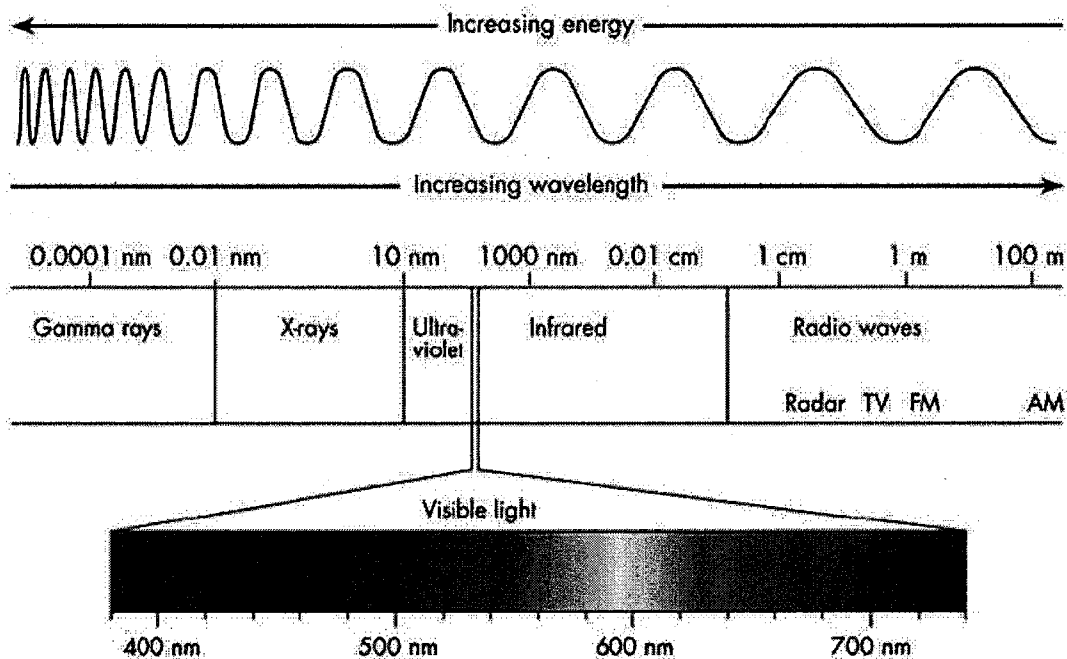


Electromagnetic Spectrum

Electromagnetic waves can travel through the vacuum of space and are capable of transporting _____ through that vacuum. These waves exist with an enormous range of frequencies. This continuous range of frequencies is known as the _____.

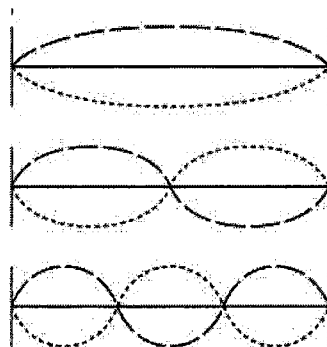
Light is the range of frequencies of electromagnetic waves that stimulate the eye's retina. The _____ (what we can see) is only a small portion of the electromagnetic spectrum. (Table 12 – 1 on p.330)



Standing Waves

When a medium is vibrated at the right frequency, the interference of the incident wave and the reflected wave occur in such a way that there are specific points along the medium that appear to stand still.

As you increase the frequency (and shorten the wavelength), additional nodes/antinodes are produced.



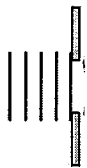
Diffraction

Diffraction is defined as the _____ of a wave around a boundary/obstacle or through a hole/opening. This phenomenon is what allows for the creation of rainbows and Earth's blue sky.

As the wave encounters a barrier, any part of the wave that is able to pass the obstacle will "**bend**" to fill the space left by the rest of the wave.

The amount of diffraction will depend on the _____, as well as the _____ of the wave.

Wide Gap



Narrow Gap



Sound Waves

Sound waves come from vibrations. The vibrations create sound waves which move through a medium like air or water and are detected by our ears.

Sound waves cannot travel in a _____. The speed of sound (in air) depends on the air temperature. The average speed of sound is

_____.

The Doppler Effect

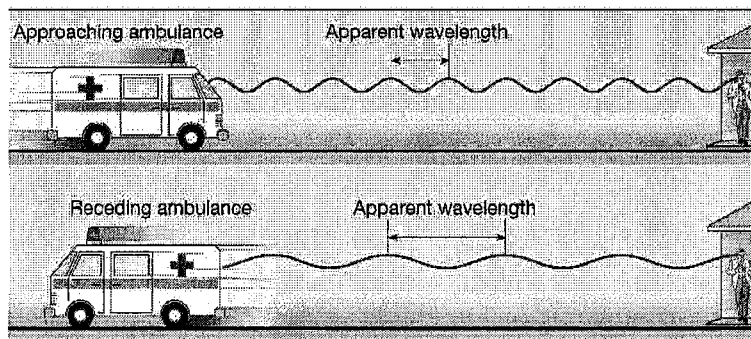
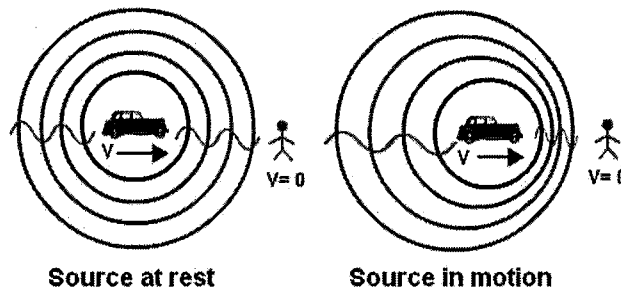
The Doppler Effect was first explained by Christian Johann Doppler in 1842. It is described as the _____ change in the frequency of sound as a result the relative _____ between the source and the observer.

For sources moving **towards** you (the observer):

- the **wavelength** _____
- the **frequency** _____
- For **sound**, this is heard as a _____
- For a **light wave**, we see this as a shift in the visible light spectrum towards the blue end known as _____

For sources moving **away from** you (the observer):

- the **wavelength** _____
- the **frequency** _____
- For **sound**, this is heard as a _____
- For a **light wave**, we see this as a shift in the visible light spectrum towards the red end known as _____



Homework: Read: p.298 – 301 and p.308 – 312

Questions: p.309 #1 – 3 and p.312 #1.2

