**FPS – Sound and Light notes**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_

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| I can… |
| *Distinguish between various regions of the electromagnetic spectrum.* |

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| ***Sound and Light - Notes*** |
| 1. ***Doppler Effect***  * Change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a wave due to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_. The <b>Doppler</b> <b>Effect</b> - some examples - GEOSET |
| 1. ***Doppler Effect for Light Waves***   A light wave change in frequency is noticed as a change in “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”.  The Doppler Effect will cause shifts in frequency causing color shifts as:  Object coming toward = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Shift  Object moving away = \_\_\_\_\_\_\_\_\_\_\_\_\_ Shift |
| 1. ***Electromagnetic Spectrum***  * The electromagnetic spectrum spreads from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rays to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rays, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves and even longer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves which can measure longer than a mountain range. * Electromagnetic waves are similar to ocean waves in that both are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves. They transmit energy. * EM waves have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ properties. * Unlike ocean waves, EM waves travel through the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of space at the constant speed of light. * Many EM waves are tiny and measured in billionths of a meter, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * Adding energy increases the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the wave. * Our eyes are tuned to a specific region of the EM spectrum and can detect energy with wavelengths of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_ nanometers, the visible light region of the spectrum.   (0:17-3:57) |
| 1. Fill in the electromagnetic spectrum:     List examples of each: |
| 1. Speed of Light  * speed of light = wavelength x frequency * c = 300,000,000 m/s   A radio station broadcasts a radio wave with a wavelength of 3.0 meters. What is the **frequency** of the wave?  Given: Rearrange: Plug & Solve: |
| 1. Practice Questions  * A radio station is emitting radio waves at a frequency of 4,291,845 Hz. What is the wavelength of the radio wave? * The lunchroom microwaves have a wavelength of about 0.68 m. What is the frequency of the emissions? * An infrared lamp emits rays at a frequency of 1,188,000,000 Hz. What is the wavelength? |