

WAVE WEBQUEST

➤ **Basic Electromagnetic Wave Properties**

➤ <http://micro.magnet.fsu.edu/primer/java/wavebasics/index.html>

- What happens to the Energy and Wavelength when you increase Frequency?
- What happens to the Energy and Wavelength when you decrease Frequency?
- List 5 colors and their corresponding Frequency and Wavelength
- What happens to the wave and color of the wave when you increase or decrease the amplitude?

➤ **Changing Sounds**

➤ http://www.bbc.co.uk/schools/ks2bitesize/science/physical_processes/changing_sounds/play.shtml

- Load Full Screen and work through the examples of playing sounds and sorting sounds.

➤ **Talking about Sound and Music**

➤ <http://cnx.org/content/m13512/latest/>

- Read the web page. When you get to the section **Wave and Sound Interaction** follow the link that says Click here. Now for each of the tabs, do the following
- For starters, in the lower box on the right-hand side under "Audio Control", click on the box "Audio enabled".

- Within the "Audio Control" box, click on "Listener". This will allow you to hear the waves the person in the application is hearing.
 - Adjust the "Amplitude" bar. How does the wave look differently? How does it affect the sound?
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- Slide the "Frequency" bar. How does this affect how the waves appear as they travel to the listener. How does the pitch change to the listener?

Give short answers:

1. Can sound travel through empty space? Why or why not?

2. How are sound waves like water waves? How are they not like water waves?

➤ **Primary Colors of Light and Pigments**

➤ http://www.teachersdomain.org/asset/lsp07_int_lightpigment/

- What is a photon? Are all photons alike?

- When white light goes into a blue filter, blue light comes out. How did the blue get into the light?

- When red light passes through a green filter, no light gets through. What happens to it?

- When red light is projected onto a white surface, red light is reflected. Blue light will similarly be reflected as blue. When both are projected onto a white surface, we see neither red nor blue. Is the red light still there? Is the blue light still there? What happened?
- Explain why a sweater looks red. Start with sunlight or white light from a lamp striking the sweater.

➤ **Tour of the Electromagnetic Spectrum**

➤ <http://www.pbs.org/wgbh/nova/gamma/spectrum.html>

Take the Self-Guided Tour and answer the following questions:

- What are electromagnetic waves?
- What is a photon?
- Name one manufactured device or natural phenomenon that emits electromagnetic radiation in each of the following wavelengths: radio, microwave, infrared, visible light, ultraviolet, X-ray, and gamma ray.
- Which type(s) of electromagnetic radiation do human bodies emit? Which type(s) can our senses detect?

- List three ways that electromagnetic radiation is used to improve our everyday lives.