

LIGHT UNIT ORGANIZER

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STANDARDS FOR ACHIEVEMENT AND PERFORMANCE:

1. Explain how the electromagnetic spectrum is arranged.
2. Describe how wavelength, frequency and energy are distributed in the electromagnetic spectrum.
3. Explain reflection and refraction of light waves.
4. Calculate the speed of light in glass.
5. Use lenses to refract light.
6. Use mirrors to reflect light.
7. List the colors of light that make up white light.
8. Explain the two theories of what light is made of.
9. Use polarized filters to find polarized light.
10. Be aware of how your eyes work and how optical illusions occur.
11. Explain how optical instruments and lasers work.

ASSESSMENT:

1. Electromagnetic waves worksheet.
2. Mirror lab.
3. Speed of light (refraction) lab.
4. Lenses and refraction lab.
5. Refraction worksheet.
6. "Bubble" lab.
7. Eye versus camera worksheet.
8. Blind spot lab.
9. Spectrometer lab.
10. Light test.

CORE KNOWLEDGE SEQUENCE:

1. Waves and electromagnetic radiation.
2. The electromagnetic spectrum: display of all electromagnetic energy using wavelength and frequency.
3. Refraction and reflection of light waves.

COLORADO STATE STANDARDS:

1. Classify waves as mechanical or electromagnetic.
2. Draw an electromagnetic spectrum and identify the forms of radiant energy in the visible part of the spectrum and the use of the non-visible part of the spectrum.
3. Know that white light is a mixture of many wavelengths and that retinal cells react differently with different wavelengths.
4. Know that light interacts with matter by transmission, absorption, or scattering.
5. Know that the angle of reflection of a light beam is equal to the angle of incidence.