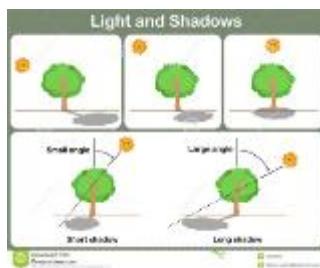


Unit 4: Light and Shadows



Overview

Students learn about light by studying the effects of light of things within their environment. They learn about light sources, about materials that light can pass through and about what happens when a material blocks or changes the path of light. By observing shadows and their motions relative to a light source, students discover that light and shadows fall along a predictable path. They discover that mirrors, prisms and a variety of other materials can affect that path by reflecting and refracting light and by splitting light into colours.

Students will be able to:

- Recognize that eyes can be damaged by bright lights and that one should not look at the Sun—either directly or with binoculars or telescopes.
- Identify a wide range of sources of light, including the Sun, various forms of electric lights, flames, and materials that glow (luminescent materials).

- Distinguish objects that emit their own light from those that require an external source of light in order to be seen.
- Demonstrate that light travels outward from a source and continues unless blocked by an opaque material.
- Describe changes in the size and location of Sun shadows during the day—early morning, to midday, to late afternoon
- Recognize that opaque materials cast shadows, and predict changes in the size and location of shadows resulting from the movement of a light source or from the movement of a shade-casting object.
- Distinguish transparent materials from opaque materials by determining if light passes through them and by examining their shadows.
- Classify materials as transparent, partly transparent (translucent) or opaque.
- Recognize that light can be reflected and that shiny surfaces, such as polished metals and mirrors, are good reflectors.
- Recognize that light can be bent (refracted) and that such objects as aquaria, prisms and lenses can be used to show that light beams can be bent.
- Recognize that light can be broken into colours and that different colours of light can be combined to form a new colour.

- Demonstrate the ability to use a variety of optical devices, describe how they are used, and describe their general structure. Suggested examples include: hand lens, telescope, microscope, pinhole camera, light-sensitive paper, camera, kaleidoscope.

Vocabulary for the Unit:

Colour, concave lens, convex lens, dispersion, emit, kaleidoscope, light, light meter, luminescent, magnify, opaque, prism, rainbow, reflect, refraction, shadow, translucent, transparent, visible spectrum, white light