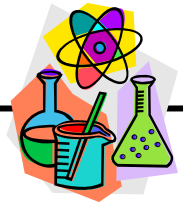
Grade 8 Unit C: Light and Optical Systems



Light Sources

Did You Know? Centuries ago, many scientists believed that human beings produced the light in the world and that it came out of our eyes.

Light source: Something that gives off light.

Light: Visible radiant energy.

Natural light source: Something in nature that gives off light.

Transmission: Light moves from one place to another without any change to the light, e.g., light moving through air.

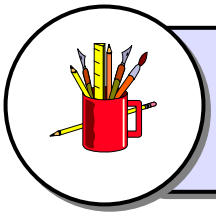
Artificial light source: Something humans have made that gives off light.

1. With a group, discuss and investigate what light is and how it travels (for example, from the sun to the earth, from a light bulb to a far corner of the room). Summarize your group's findings.

2. Examine one or more of the following natural light sources and answer the questions below:
   - sun
   - stars
   - fire
   - phosphorescence
   - bioluminescence.

   - How is the light produced? Is there a name for the process?
   - How much energy is there in the light that is produced? A lot or a little? How do you know?
   - What is interesting or unusual about this natural light source?

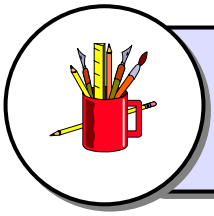
3. With a partner, create a Venn diagram to compare two different light sources you examined. Share your findings with the class.



Use Tool Venn Diagram.

4. Find information from various sources, e.g., your teacher, textbooks, to respond to the following question. Discuss it with classmates.

    - How have human beings harnessed the power of natural light and used it to their advantage?



Use Tools Discussion Notes and Finding Information I.

Did You Know? The invention of the microscope led to the creation of a new kind of science—microbiology!

Optical device: Any technology that uses light to enhance vision. Examples:

- binoculars
- cameras
- telescopes (reflecting or refracting)
- microscopes.

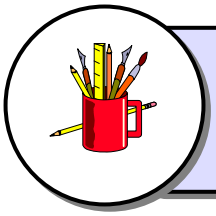
5. Obtain a variety of lenses, and examine how light and images are affected by the shape of the lenses.

6. Choose an optical device and complete the following activities.

   - Access at least one sample of the device and learn how to use it.
   - Draw and label a diagram of the device. Review Processing and Displaying Data for help.
   - Write a set of instructions for using the device and/or describe its use to classmates.

   - Present information explaining how the device has affected scientific development, or how it is used today.

7. Search the Internet and/or other information sources for plans or instructions for building a pinhole camera, kaleidoscope, magnifying glass, periscope or other simple optical device. Build your own optical device and share it with classmates.



Use Tools Preparing for an Internet Search and Finding Sources.