



# Light

## READING LESSON

### Featured Book

**Day Light, Night Light** by Franklyn M. Branley

ISBN: 0-06-445171-2

### Objective

The students will read about several different sources and uses of light throughout the book. The author describes how light reflecting off of surfaces enables us to see everything around us. Students will learn that the moon and planets do not create their own light but reflect that of the sun.

### Science Background

There are two types of light; visible and invisible. Visible light is everything you can see such as trees, people and buildings. Invisible light is the light you cannot see such as sound signals, microwaves and ultraviolet light. It would be impossible to live without either of these two types of light.

### Reading Standards (see appendix A)

Standard 1 - Students read and understand a variety of materials.

Standard 6 - Students read and recognize literature as a record of human experience.

### Key Points

- Day and night, light is all around us.
- Light bounces off of objects allowing us to see them.
- Light is created by heat.
- The light from the moon is actually light reflected from the sun.



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## READING LESSON - Question Review

Answer the questions below to help you review what was read in Day Light, Night Light, by Franklyn M. Branley.

1. Where does most of our light come from?
  - a. The moon
  - b. The sun
  - c. The stars
2. How do we get sunlight indoors?
  - a. Roof
  - b. Walls
  - c. Windows
3. Where does the sunlight go at night?
  - a. It turns off
  - b. To a different part of the earth because the earth spins and rotates around the sun.
  - c. Behind the moon
4. The moon doesn't have any light of its own. How does the moon get its light?
  - a. It reflects light from the sun
  - b. It reflects light from the stars
  - c. It reflects light from the ocean
5. Light usually comes from hot things. List at least three light sources besides the sun: \_\_\_\_\_



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## READING LESSON - Question Review (continued)

6. The little metal wires inside a light bulb are called filaments. How do the filaments create light?
  - a. They get so hot that they produce light
  - b. They reflect light from other light sources
  - c. They convert energy from the air to light
  
7. What happens when light bounces off an object such as a chair or a tree and is sent to us?
  - a. Nothing
  - b. It is reflected and we see the object
  - c. It turns upside down
  
8. Light travels very fast! How long would it take for light to go from the moon to the Earth and back?
  - a. 3 seconds
  - b. 1 minute
  - c. 40 seconds
  
9. A dark room seems pitch black at first but after awhile you can start to see things. Why?
  - a. Your pupils open wider to allow more light in
  - b. Your eyes use other light sources such as street lights
  - c. Both a & b
  
10. Do you think we could live without light?



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## READING LESSON - VOCABULARY

Below are several words that may be new to your vocabulary that you read in Day Light, Night Light, by Franklyn M. Branley. Make a line from the word to the correct definition.

<u>Word</u>	<u>Definition</u>
1. bulb	a) Brightness
2. cave	b) A portion of a minute
3. pupils	c) Send light back
4. reflect	d) Large underground hole in rock or the
5. seconds	e) Produces light when an electric current passes through it
6. shades	f) Holes in the central part of the eyes, through which light passes
7. shine	g) Blinds on a window



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## Featured Science Activity

Making a Kaleidoscope

### Objective

The students will make their very own kaleidoscope and create hundreds of beautiful patterns of colors with the reflection of light.

### Science Background

A Scottish scientist named Sir David Brewster invented the kaleidoscope in 1816. Kaleidoscope means "the beautiful form watcher". The name comes from the greek words, kalos (beautiful), eidos (form), and scopos (watcher). Brewster's kaleidoscope was a tube containing loose pieces of colored glass and other pretty objects. Light reflected off of the mirrors or glass lenses and created patterns when viewed through the end of the tube.

### Science Standards (see appendix A for detailed overview)

Standard 2.2 - Students know that energy appears in different forms, and can move (be transferred) and change (be transformed).

### Materials

- ❑ 2 black film canisters (one with a small hole at the bottom and the other with the whole bottom cut out)
- ❑ Black electrical tape
- ❑ Transparent tape
- ❑ 3 Microscope slides
- ❑ 1 Tic-tac box (empty and without the label)
- ❑ 1 teaspoon transparent colored beads or sequins
- ❑ Hot glue gun and glue sticks



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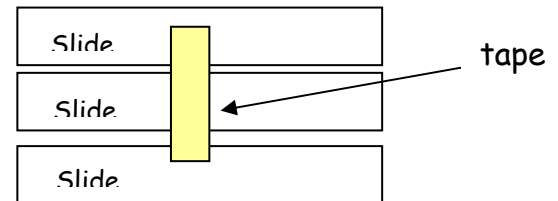
## ACTIVITY LESSON (continued)

### Safety Tip

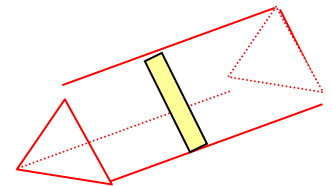
Only the tutors or designated adult will be using the glue guns. They are hot and we do not want anyone to get burned.

### Procedure

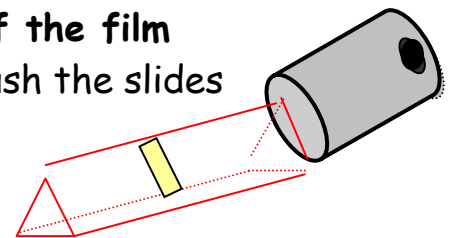
1. Lay the 3 microscope slides side by side and place a small piece of **transparent tape** down the center across all three slides. Have the tape loosely fit across the slides or have a tiny gap between the slides when taping.



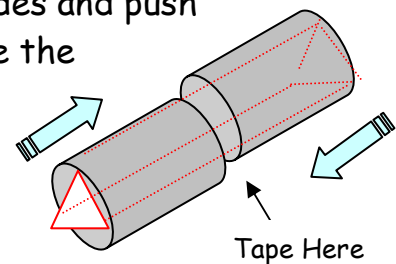
2. Carefully fold the slides into an equilateral triangle (all sides equal).



3. Slide the triangle of glass into the **open end of the film canister** with the small hole at the bottom. Push the slides as far as they will go. (You may need to gently squeeze the canister.)



4. Place the other film canister over the exposed slides and push the two canisters together so the slides are inside the canisters. We want the smooth edges of each canister to be touching each other when we tape them. This is your kaleidoscope. Use the electrical tape to seal the two film canisters and to prevent light from entering your kaleidoscope.

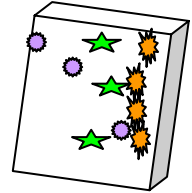




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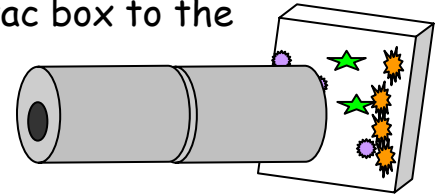
## ACTIVITY LESSON (continued)

5. Look through the small hole on one end at objects around the room and describe what you see.



6. Fill the Tic-tac box  $\frac{1}{2}$  full of beads and/or sequins and close the lid.

7. Ask your tutor or an adult to hot glue the Tic-tac box to the open end of the kaleidoscope.



8. Look through the small hole of the kaleidoscope and slowly rotate. Light reflects off of the sides of the glass slides and bounces several times from one end of your kaleidoscope to the other causing you to see many transformations in color and shapes.

9. Describe what you see to your tutor and let your tutor take a look through the wonderful colors seen through your kaleidoscope.

10. Feel free to add different beads and/or sequins to the Tic-tac box to experience different transformations of colors and shapes.



