

STUDENT SHEET 3.1

How does light interact with matter?

Studying a subject is sometimes easier when you keep it simple. To see more easily how light behaves when it travels along a straight path and then encounters various materials, you will work with a single beam of light.

MATERIALS

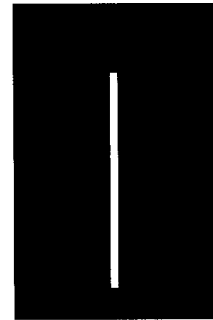
For each group of four

- 1 light station
- 1 view screen (stands not needed)
- 1 single-slot mask
- 1 set of 11 "beam materials":
 - 1 each of 7 rectangles: black paper, white paper, red paper, green paper, waxed paper, clear plastic, aluminum foil
 - 1 filament viewer (frosted plastic)
 - 1 mirror
 - 1 wooden block
 - 1 transparent plastic bottle, filled with water

WHAT TO DO

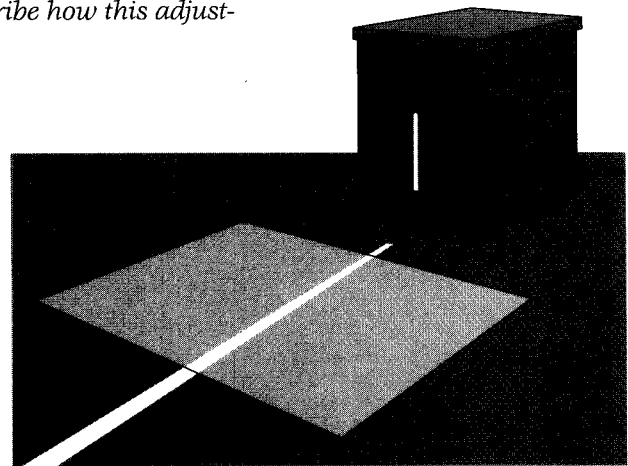
Set up your light station.

1. Lay the view screen flat on the table and close to the light station. Slide the single-slot mask over the light station opening to make a beam across the screen (see drawing). Turn the wheel through its full range of motion. (It rotates about 180° .) Describe how this adjustment affects the light beam.

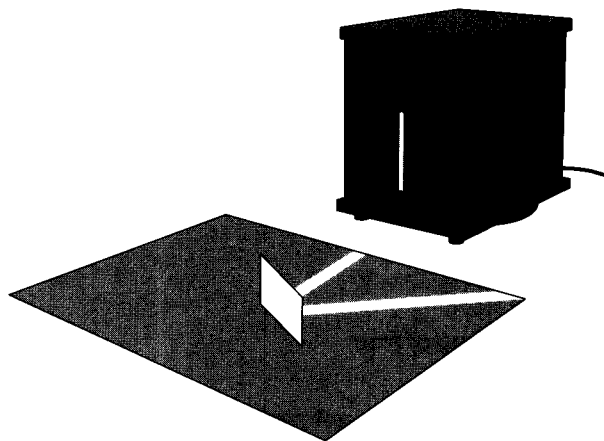
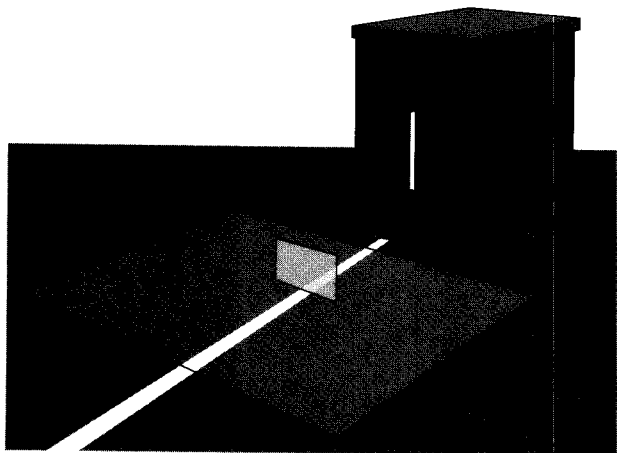


SAFETY

Improper use of the light station can result in burns from the hot bulb or electric shock from the wiring. Follow your teacher's instructions at all times.



2. Adjust the wheel to make a narrow, sharp beam on the flat screen. One at a time, stand each of the 11 beam materials upright in the light beam (see diagrams). Notice whether the light beam passes through the material, stops, or does something else. *Describe three observations that you make while putting different materials in the light beam.*



3. Test each material as you did for Question 2. *Complete the table by listing each material in the category that best describes how it affects light.*

Table 3.1 How different materials affect light

Materials that transmit light (allow light to pass through)	Materials that block light	Materials that do both— transmit some light and block some light