

**Grade 6**  
**Physical Science**  
**South Carolina Educational Standards**

Inquiry and Process Skills Standard:

1. Make inferences and predictions based on prior knowledge and observable patterns, and discriminate among observations, inferences, and predictions

Physical Science Standard:

1. Investigate light and explore the transfer of energy

**Background for teachers:**

Light travels in straight lines, which bounce off surfaces. This “bounce” is called reflection and varies depending on the surface. Smooth surfaces make a regular reflection, like a mirror. Irregular surfaces result in a scattered reflection, called a diffuse reflection. Mirrors, which are smooth by definition, can be subdivided into three categories: planar, concave, and convex. Light will reflect differently from these three types of mirrors. Concave shapes cause reflections to narrow and convex shapes stretch reflections over their surface, which is bent outward. Like mirrors, lenses, which allow light to pass through, come in planar, concave, and convex shapes. These alter the path of light that is passing through, either narrowing the beam or widening it with concave and convex shapes, respectively.

The light that reaches the eye is what allows vision. Any time something is seen, it is because light was reflected off the object and that light approached the eye. Luminous objects (those which project their own light, such as flashlights and fireflies) are an easy example of how light comes from an object to the eye. However, this principle is always true. Non-luminous objects must reflect light from a source outside of themselves to be seen, however.

Key terms:

Reflection  
Concave  
Convex  
Luminous  
Non-luminous

### **Student misconceptions about light:**

Light surrounds luminous objects but not non-luminous objects

Light only travels from luminous objects to the eye

Light has no directionality

Light has no color

Sources of student's misconceptions:

The "feel" of vision is that it is an output process rather than an input process

The color spectra of light cannot be seen directly