



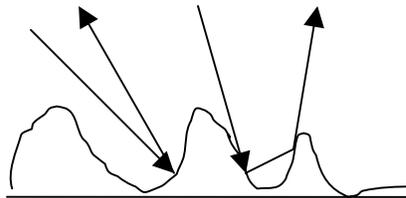
Reflectivity and Its Importance

Introduction

As illustrated in the Law of Reflection activity, light reflects off surfaces in a very predictable manner. We see that when light is reflected off a smooth plane surface, we get an almost mirror-like reflection. This indicates that almost all of the energy is directed away from its surface and in a single direction. Generally this type of reflection is referred to as "specular" reflection.

Only smooth surfaces produce specular reflection. Surfaces that are nearly smooth produce "quasi-specular" reflection over a range of angles near the specular direction. If a surface is rough, the direction of the reflected beam of light will vary from point to point and a more complex reflection will be produced. In a reflecting surface that is rough, the reflected light goes in all directions. This is called "diffuse" reflection.

For each type of reflection, specular or diffuse, each individual ray follows the law of reflection, but the incident ray strikes different regions that are inclined at different angles to each other. Therefore, the outgoing rays are reflected at many different angles and the image is disrupted. Observe the following illustration.



Diffuse Reflection

Objective: To illustrate how light is reflected off various surfaces.

Materials

Pen flashlight

Plane mirror

White paper

Glossy page of magazine

Glass

Sandpaper

Different colored paper (Red, Green, Blue, etc.)

Piece of aluminum foil

Procedure

1. Place the various items on a flat table surface.
2. Darken the room. Shine the flashlight at an angle onto the various items on the table.
3. Note the angle of the light from the flashlight and the angle of reflection from the surface of the items.

Questions

1. Do the items reflect light the same way? Explain your answer.

2. Which item(s) reflected light?_____

3. Do these items that reflected light do so in the same way? Explain your answer.

Conclusion

1. Explain why you sometimes get a glare when reading a magazine.

2. Based on the information about reflectivity of smooth and rough surfaces, explain why it is more difficult to drive at night on a wet asphalt road than it is to drive at night on a dry road.

