LIGHT SOURCES

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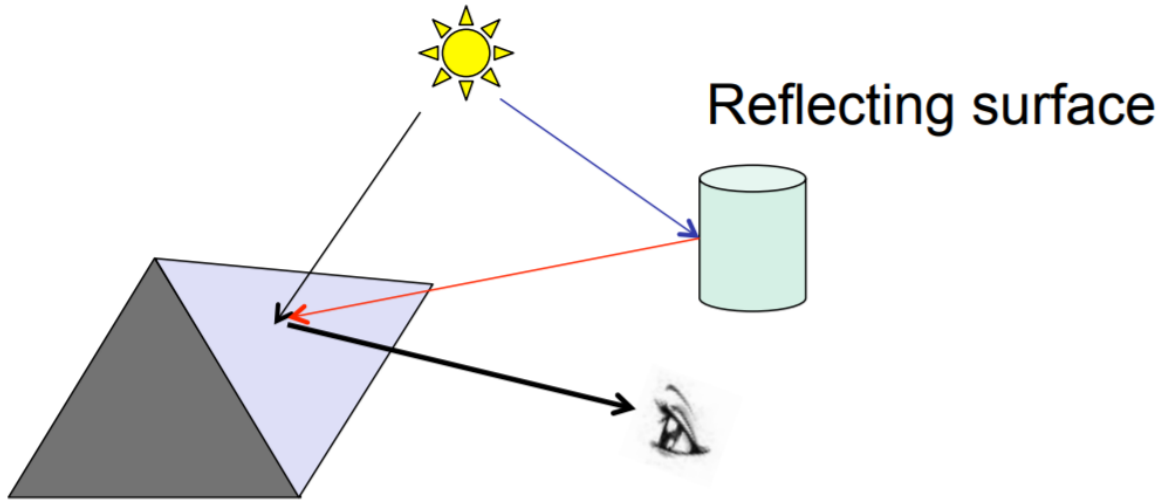
Outline

- Light Sources
- Light Source model
- Diffuse reflection
- Specular reflection

LIGHT SOURCES

- When we view an opaque nonluminous object, we see reflected light from the surface of the object.

- The total reflected light is the sum of the contributions from light sources and other reflecting surfaces in the scene.



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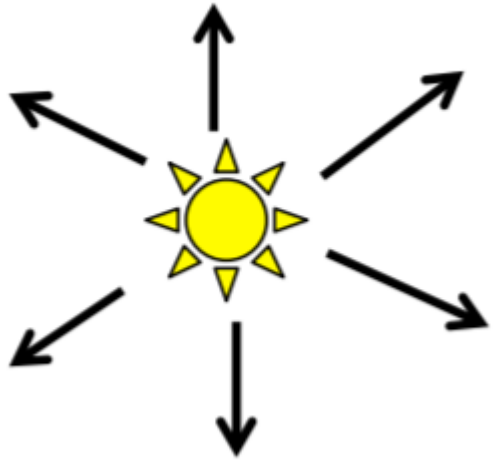
- Light sources are referred to as light-emitting sources.
- Reflecting surfaces such as the walls of a room are termed as light-reflecting sources.
- A luminous object can be both a light source and a light reflector.
- For ex- a plastic globe with a light bulb inside both emits and reflects light from the surface of the globe. Emitted lights from the globe may then illuminate other objects in the vicinity.

Light source model

- The simplest model for a light emitter is a point source.

- Diagram depicts the rays from the source then follow radially diverging paths from the source position.

- Sources such as sun, that are sufficiently far from the scene can be accurately modeled as point sources.



Diverging ray paths from a point light source

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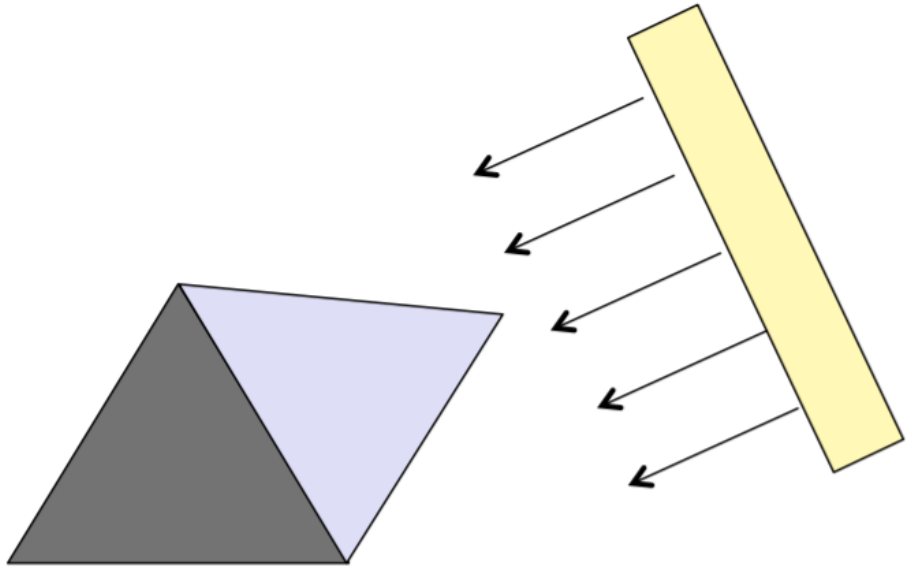
- A nearby source, such as long fluorescent light is more accurately modeled as a distributed light source.



An object illuminated with a distributed light source

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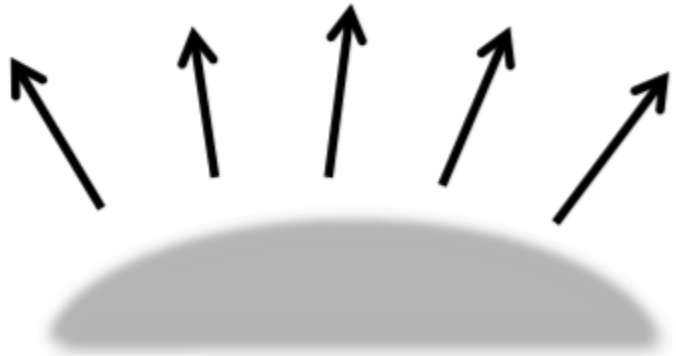
- Surfaces that are rough or grainy tend to scatter the reflected light in all directions.

- This scattered light is called diffuse reflection.

- A very rough matte surface produces primarily diffuse reflections.

(surface appears equally white from all viewing directions)

- When we call the color of an object is the color of the diffuse reflection of the incident light.



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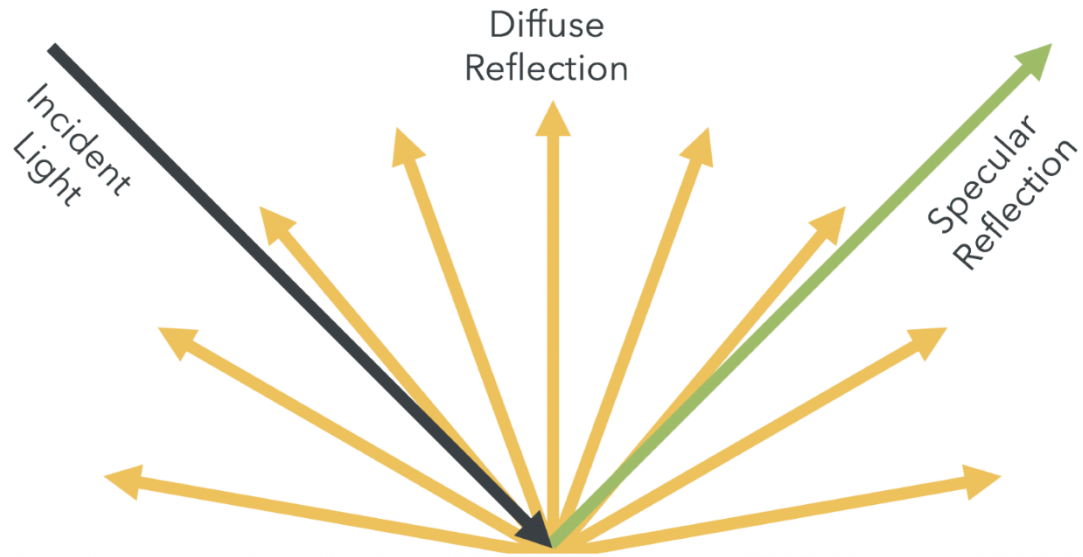
- A blue object illuminated by a white light source, for example, reflects the blue component and totally absorbs all the other components. Blue object under “red light” appears black.

- Light sources also create highlights (bright spots) called specular reflections (more on shiny surfaces)

Specular reflection

- In addition to diffuse reflection, light sources create highlights or bright spots called specular reflections.

- This highlighting effect is more pronounced on shiny surfaces than on dull surfaces.



THANKING YOU