

# Properties of Light

**Pre-Class Activity:**

Visit the following website and read about the characteristics and behaviors of waves.

Short URL: <http://goo.gl/eHok8o>

Full URL: [http://www.pbslearningmedia.org/asset/npe11\\_int\\_lightbehaviors/](http://www.pbslearningmedia.org/asset/npe11_int_lightbehaviors/)

(Note: does not work with Google Chrome)

**Aim of this activity:**

To observe how light behaves as it interacts with different materials, and to classify that behavior using vocabulary words.

**Materials:**

Plastic box   Laser            Incense stick            Aluminum foil            Tissue paper  
 Wax paper   Cardboard    Color paddle set

**Activity:**

\_\_\_ 1) Take the laser and shine it at the table. What color is it? \_\_\_\_\_

\_\_\_ 2) For the following materials, predict whether the material will *absorb*, *diffract*, *reflect*, or *transmit* the laser light. Now shine the laser at the materials and check the boxes corresponding to the behavior(s) you observe.

Item	Prediction	Results
Aluminum Foil		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Black Paper		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Cardboard		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Diffraction Slide		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Tissue Paper		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Wax Paper		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Red colored slide		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Green colored slide		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Blue colored slide		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit
Yellow colored slide		<input type="checkbox"/> Absorb <input type="checkbox"/> Diffract <input type="checkbox"/> Reflect <input type="checkbox"/> Transmit

- \_\_\_ 3) Place a piece of paper on one end of the plastic box, and shine the laser through the other end of the box. Where can you see the laser light? *On* the box? *In* the box? On the paper? Sketch and describe your observations.

Observations	Sketch

- \_\_\_ 4) Fill the plastic box up to the halfway point with water. Now have your teacher light an incense stick and place it in the hole in the side of the box.

- \_\_\_ 5) Shine the laser through the upper part of the box (through the smoke). What do you observe now? Sketch and describe your observations. What is this phenomenon called?

Observations	Sketch

- \_\_\_ 6) Holding the laser at an angle, shine it from the top of the box, through the smoky air and into the water. What do you notice about the light as it passes from the smoky air to the water?

Now shine the laser from the side of the box, through the water and into the smoky air. What do you notice as it passes from the water to the smoky air? Sketch and explain your observations. What is this phenomenon called?

Observations	Sketch

**Reflect:**

You have now observed examples of each of the terms listed below. As a group, identify which observations describe each term, and come up with a short definition for each.

<b>Term</b>	<b>Observation(s)</b>	<b>Definition</b>
Absorption		
Transmission		
Reflection		
Refraction		
Scattering		
Diffraction		