

## What Happens When Light Strikes Matter?



## Activity 4

## Investigate Like a Scientist

## Hands-On Investigation: Reflection

During the last activity, you learned about a special feature in some animals' eyes that reflects light and improves night vision. In this activity, you will investigate how light interacts with different types of materials. **Use** your flashlight to **investigate** which objects are reflective and which are not. **Identify** qualities that are common in the reflective materials.

## Make a Prediction

Which objects do you think will reflect light best? **Write** and **explain** your prediction.

## What Will You Do?

1. Choose four objects of different materials to investigate.
2. Shine your flashlight on each object.
3. Observe how the light interacts with the material.
4. Record how well the material reflects the light.
5. Fill in the table with your results.

## What materials do you need? (per group)

- Flashlight
- Various objects made of different materials (such as a plastic block, wooden block, piece of cloth, mirror, paper, piece of metal,

**Life Skills** I can analyze a situation.



Material	Observations	Is this what you expected to happen?

### Think About the Activity

**Review** your prediction. Did the results of the investigation provide evidence that supported your prediction? Or did they provide evidence against your prediction?

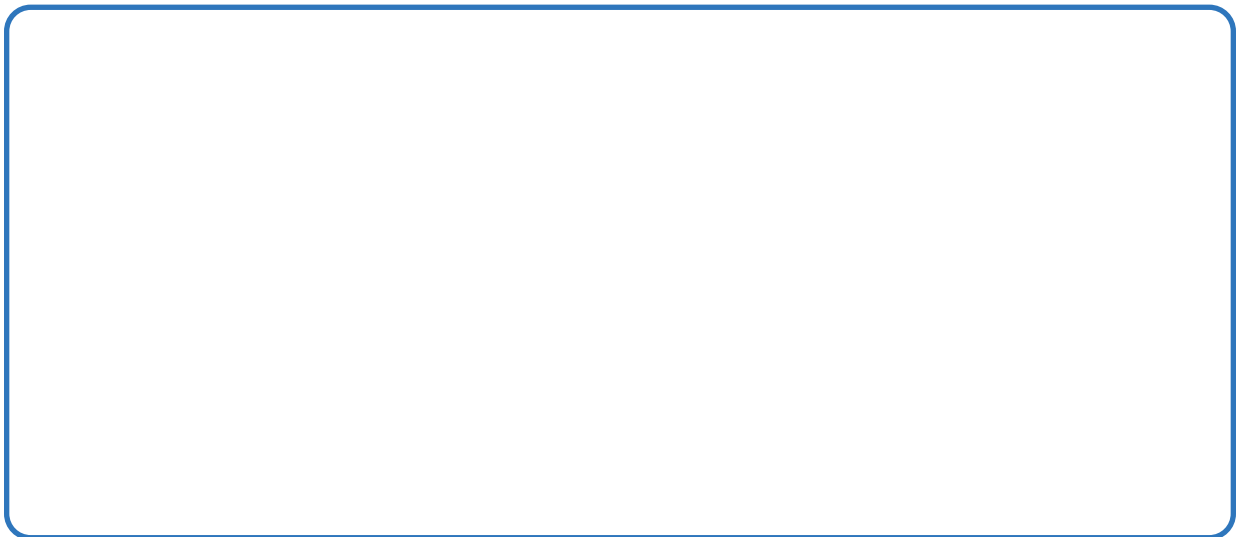
**Describe** how you know.

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Based on your results, which types of materials reflect light the best? Which reflect light poorly? **Explain** your answer.

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**Draw** a picture of your results showing the paths of the reflecting light rays.





## Activity 5

## Analyze Like a Scientist

## Light Strikes Different Matter

**Think** about what you have learned about how different materials reflect light. There are many ways that light interacts with matter. **Read** the text that follows. **Consider** how the way in which light interacts with objects affects your ability to make observations of the world around you. Then, **answer** the question that follows.

## Light Strikes Different Matter

Light is a form of energy that travels in waves. When traveling light hits an object, some of its energy is absorbed. Some of the energy may go through the object. Some of the energy bounces, or reflects, off the object's surface. You can examine these behaviors of light by observing different objects. Some objects, including your body, make shadows. This happens because light that hits your body either bounces off or is absorbed. None of the light passes through you. Objects that light cannot pass through are called **opaque**. **Transparent** objects or substances, such as air, water, windows, and lenses, allow light to pass through, which is why you can see through them.

When light hits an opaque object, some of it is absorbed. The rest of the energy bounces, or reflects, off. How the light is reflected depends upon the smoothness of the surface. If the surface is a polished mirror, the rays reflect off differently than from a painted surface, which is slightly rough. When light hits an opaque object, some of it is absorbed. The rest of the energy bounces, or reflects, off. How the light is reflected depends upon the smoothness of the surface.

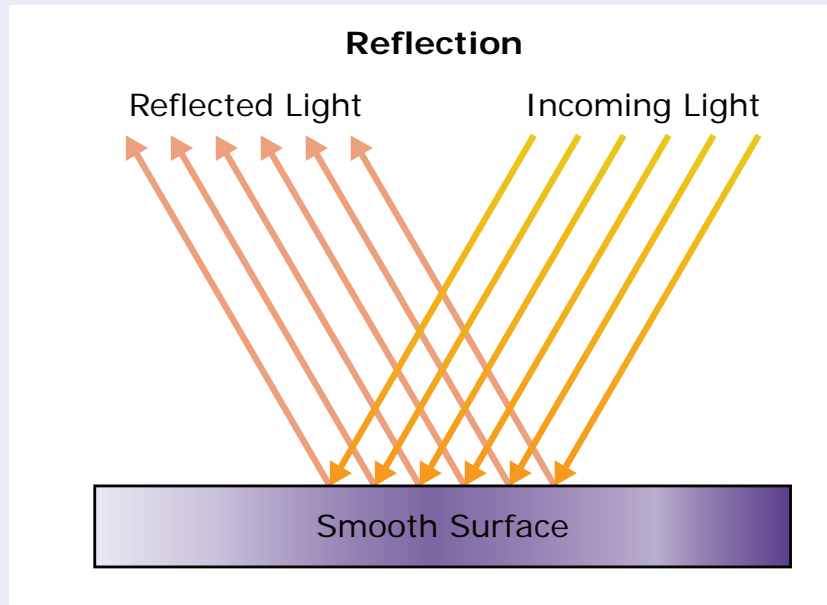


Reflecting Light

Photo Credit: Dynamicfoto / Shutterstock.com  
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If the surface is a polished mirror, the rays reflect off differently than from a painted surface, which is slightly rougher. Rough surfaces scatter or diffuse light.

How does light striking **matter** make it possible for animals, including humans, to see? Light waves bounce off objects around us. The reflected light then travels in a straight line into our eyes. In the eyes, special nerves send messages to the brain.



Your dropped cell phone, and now the screen has a few cracks. How do you predict that light will reflect off the screen compared to before it was broken?

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And what is the result of that?

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