READING MATERIAL

Read About Light Reflection

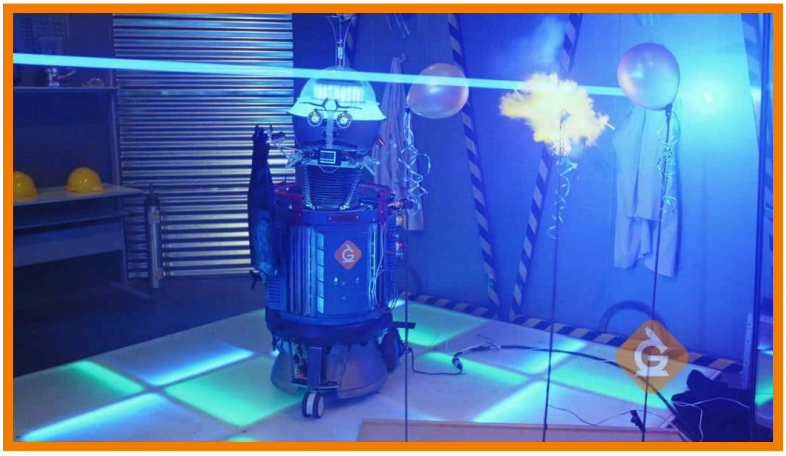
DEFINITION OF LIGHT

We can see because of light. Most light comes from the sun, light bulbs, and lasers. *Light* is a form of energy that moves in straight lines. It also reflects off things, and that reflected light enters our eyes, allowing us to see.

To better understand how light works....

LET'S BREAK IT DOWN!

There are many sources of light.



Sources of light can be divided into two groups: natural and made by humans. The sun is the most important natural source of light. The sun allows us to see during the day. Stars and lava from volcanoes also produce their own light. Some animals can produce their own light, such as fireflies and some glowing jellyfish.

Humans have created other sources of light. Light bulbs help us see in dark areas. Before light bulbs were invented, people used candles to provide light.

Laser beams are another source of light. Some high-powered laser beams can cause chemicals to explode!

Light travels in straight lines and reflects off things.

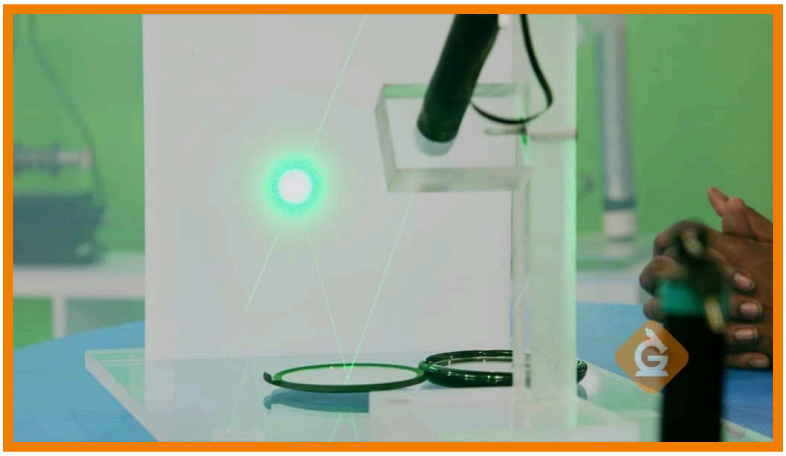
Light travels in a straight line from its source. It will keep moving in a straight line until it hits something.

If you have ever worn a hat on a sunny day, you have tested this idea. The brim of the hat blocks the sun from hitting our eyes.

Light reflects off objects and allows us to see. Some objects reflect light very well, like mirrors and white papers. Other objects, like brown construction paper, do not reflect as much light.

Water is also good at reflecting light off its surface. If you have ever been near a pool on a sunny day, your eyes may have hurt from too much light reflected from the water. Hats help block sunlight, but not the light that is reflected off the surface of water.

Light reflects off things and enters our eyes.



We see objects because they either give off their own light, or light reflects off the objects and enters our eyes.

The moon is an interesting example. It doesn't make its own light - we can see the moon because it reflects light from the sun.

If an object did not reflect any light, we would not be able to see it.

Our eyes do not produce light, they detect it.

Our eyes are amazing and allow us to detect light, focus on images, and see what is around us. The lens of the eye helps make images easier to see by focusing light. There are many other parts of the eye that work together to help you see. Some parts allow you to see color, and other parts detect the shapes of objects.

After the eye collects information about what you are seeing, it quickly sends the information to the brain. Believe it or not, the images that our eyes send to the brain are upside-down! Our brain flips it. The brain also tries to make sense of what we are seeing.

LIGHT REFLECTION AND VISION EXAMPLES

Convex mirrors allow us to see a wider view. This can help drivers see oncoming cars and drive more safely.

CDs, DVDs, and Blu-ray Discs use the science of reflection. Inside a blu-ray player is a laser which reflects light off the disk. This allows the blu-ray player to read the information on the disk.

Fiber optic cables transmit signals very quickly. They are frequently used to transmit information over the internet.

LIGHT REFLECTION AND VISION VOCABULARY

Light	Light comes from things like the sun, light bulbs and candles. It bounces off of things and allows us to see.
Light Reflection	When light bounces off the surface of an object.
Light Source	The place from which light originates.
Reflecting Surface	Surface from which the light bounces off.
Camera Obscura	A darkened box used to project an image of an external object onto a screen inside. It works in the same way as our eyes.
Lens	A curved piece of glass or plastic that concentrates light rays. They are used in magnifying glasses and telescopes.

LIGHT REFLECTION AND VISION DISCUSSION QUESTIONS

What is a laser?

A laser is a very narrow and concentrated beam of light.

Why does fog help us see laser beams?

Fog is made up of tiny particles that the laser light reflects off of. That reflected light is detected by our eyes.

What does the camera obscura model?

The camera obscura models a human eye.

Why is the image the camera obscura produces upside down?

This happens because light always travels in a straight line. BERT appears upside down because if you trace the path of light of his feet through the camera obscura, the feet end up on top. If you trace the straight path of light reflected off his head, it ends up at the bottom of the camera obscura. The same thing happens in our eyes!

If the image produced by the camera obscura is not in focus, what can be done to focus it?

Another lens can help focus the image, just like glasses that help people read.

Are other materials, besides a mirror, reflective? How do you know?

Yes, any object you can see must reflect light. If it did not reflect light you wouldn't be able to see it.