

LIGHT AND SOUND

Light!

Light is a form of energy that travels in waves.

Seeing in Color

We can see only the wavelengths and frequencies of the colors in the visible spectrum which include red, orange, yellow, green, blue, and violet. On the visible spectrum, as you move from the colors on the right to the colors on the left, wavelength decreases and frequency increases.



Mos
eyes
exam

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Light Behaves in Different Ways

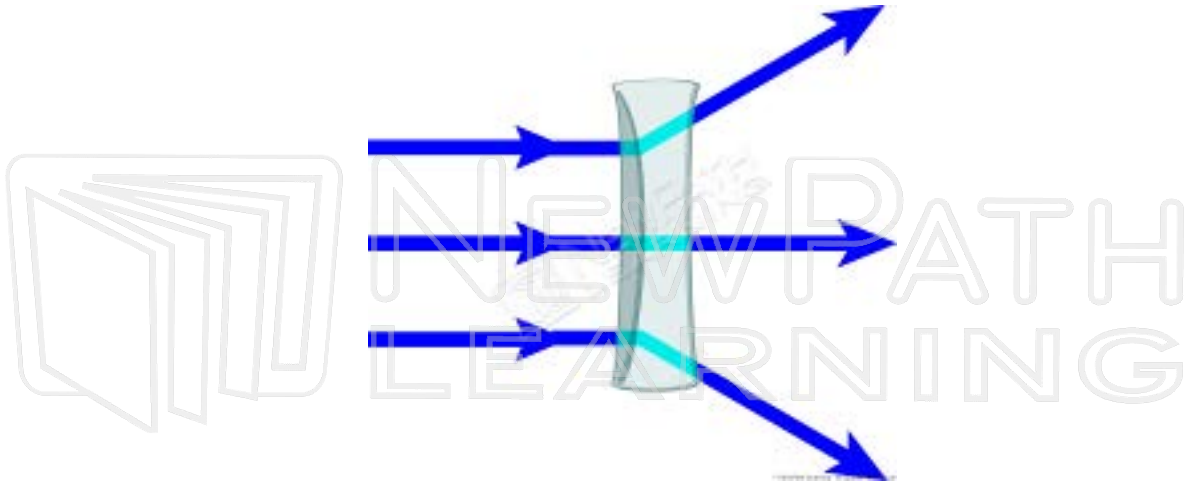
A **reflection** occurs when light rays bounce off a surface back to your eyes, such as when you see your reflection in a mirror.

Absorption is when an object takes in light wave.

Refraction is when light **bends** moving from one medium to another.

Different Lenses

A **concave lens** is **thinner in the middle** than on its edges and makes things look **smaller**.



A **convex lens** is thicker in the middle than on its edges and makes things look larger. A magnifying glass contains a convex lens.



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Materials react to light in different ways:

- A **transparent** material allows light to pass through **clearly without any effects**, like a window.



- A **translucent** material allows light to pass through, **but it's not clear**, like waxed paper.



- An **opaque** material does **not** allow any light to pass through at all, li



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Different Kind of Light

Lasers are powerful beams of light that create a lot of heat.

Optical fibers are extremely thin fibers, made out of glass or plastic, which are bundled together in a flexible tube and have a source of light at the end.

Lesson Checkpoint:
What is a transparent material?

What is that you hear?

Sound is a type of energy that travels in waves that is caused by vibrations. **Vibrations** are movements made rapidly back and forth. Sound needs something in which to travel. Sound can travel through solids, liquids, and gases. Sound travels through solids the fastest.

How do we hear?

- 👂 Sound is funneled into our inner ear by our outer ear.



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(named stirrup, hammer, and the anvil bone) to vibrate too.

- 👂 The vibrations then move into the cochlea of the **inner ear**, which is filled with liquid that begins to vibrate causing tiny hairs within it to vibrate as well.
- 👂 The vibrations of the **hairs inside the cochlea** of the ear send a signal to the brain, which the brain then interprets as SOUND!

Lesson Checkpoint:
How do you hear sound?

Characteristics of Sound:

The **pitch** is the highness or lowness of a sound.

Volume is the **loudness or quietness** of a sound.

Frequency is the number of vibrations in a certain amount of time.
The faster the vibration, the higher the frequency.

A **wavelength** refers to the **distance between** a point on one sound wave and a similar point on another sound wave.

Is there an echo in here?...Is there an echo in here?

An **echo** occurs when a sound wave bumps into an object and **bounces back**.

An echo is a **reflected sound**.



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