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Period 2

2013

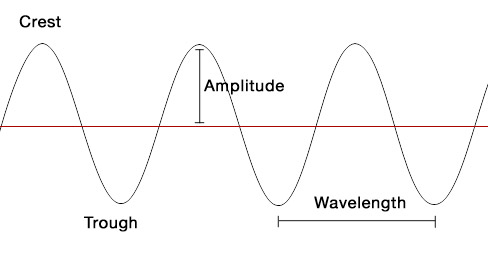
**Review for Waves and Light test**

**Waves:**

- What are the parts of a wave?

- Amplitude  
- Crest  
- Resting Position  
- Trough  
- Wavelength

- Be able to label all parts correctly (amplitude, crest, resting position, trough, wavelength)



**Electromagnetic spectrum:**

- What are the 7 types of electromagnetic radiation from longest to shortest?

Longest

* Radio
* Microwave
* Infrared
* Visible (ROYGBIV)
* UV rays
* X rays
* Gamma Ray

Shortest

- What is 1 use for each type of wave?

- **Radio:** Transport information from one place to another.

- WiFi, AM Radio, Antennas, TV, FM Radio.

- **Microwave:** Microwaves, Cell Phone, Sanitize Hospitals, Separating Chemicals and Satellites.

- **Infrared:** iPod touch, Remote Control, Night Vision Goggles, Alarms, TV, computer, camera.

- **Visible (ROYGBUV):** We use visible light daily to see so any frequency that is visible is not harmful of itself.

- **UV rays:** Black Lights and Tanning.

- **X-rays:** Airports to see the luggage and to see the bones.

- **Gamma ray:** Gamma rays are used to sterilize surgical instruments and to kill bacteria’s in food. Since gamma rays can kill living cells, they are also used to kill the cancerous cells.

- How much of it can people see?

- Just a little: We can only see visible light.

- What does wavelength of visible light have to do with color?

- Every color is a different wavelength.

**Transmission:**

- What is it?

- Light passing through an object (transparent transmits best)

- When does it happen?

- All most always, because transmission is when light goes through an object, and that happens if the object is not opaque

- Does light transmit fully through transparent, translucent, or opaque objects?

- Transparent objects.

**Reflection:**

- What is it?

- Lights reflects/bounces back from an object (objects reflect the color light that they are).

- When does it happen?

- When you look in a mirror, its reflection. Light reflects off of opaque objects

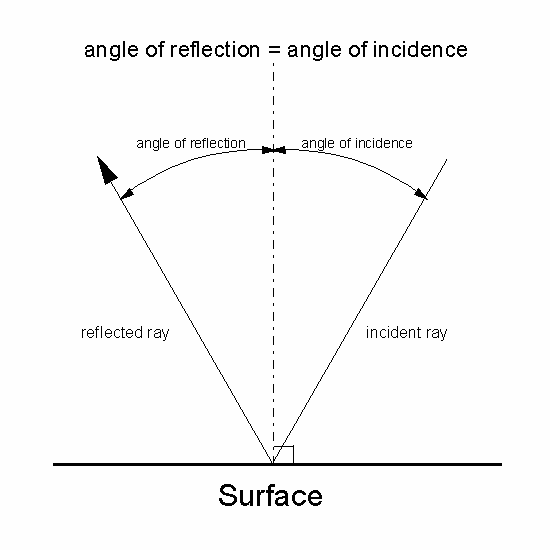
**Law of Reflection:**

- What is it?

- The angle of incident ray and the angle of reflected ray are always equal.

- Be able to label all parts of a "angle of reflection" diagram.

- Be able to complete a reflection diagram and calculate the angles.



**Scattering:**

- Why is scattering also called diffuse reflection?

- Because it is diffuse reflection, the light bounces back in all directions.

- When does it happen?

- When objects reflect light in all directions. Light scatters most with translucent objects.

**Absorption:**

- What is it?

- Light is taken up by matter (objects absorb all the colors except for the color of the object)

- When does it happen?

- Every time, everyday because all the objects, everything, they do the same thing, they all absorb all the color but reflect the one that they are.

**Refraction:**

- What is it?

- The bending of a wave when it enters a medium where its speed is different.

- When does it happen?

- When objects go through water. Or lenses.

- What does the speed of light have to do with refraction?

- When the light slows down, it refracts.

- What happens when an object has a higher index of refraction?

- If you put a pencil in water and half outside the higher index of refraction the thicker the offset between them.

- An object refracts light even more when the index of refraction is higher.

**Transparent, translucent, opaque:**

- What is the difference between each of these types of object?

- The amount of light that passes through the object.

- What happens when light hits each of these types of object?

Transparent: Light passes through object. Transmission

Translucent: **Some** light passes through object. Scattering.

Opaque: **NO** light passes through object. Opaque.

**Color:**

- Why do objects appear to be the color they are?

- Because it absorbs every color except the color that they are (it reflects it).

- What color of light will be reflected from a red object?

- Red.

- What happens if a red light is shined on a blue ball?

- It looks Black because there´s no blue light to reflect back.

**Lenses:**

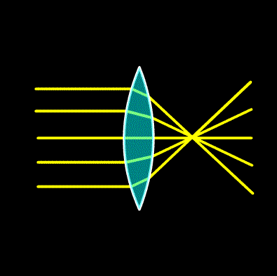
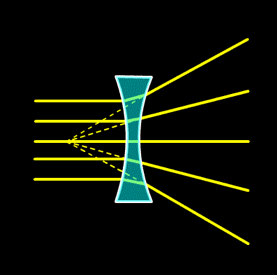
- Does light converge (come to a focal point) or diverge (spread apart) when it goes through a convex lens?

- It converges.

- Does light converge (come to a focal point) or diverge (spread apart) when it goes through a concave lens?

- It diverges

- Draw or copy/paste a diagram of each.

Convex:  Concave:

- Describe the shape of a convex lens.

- A convex has like a little bump shape.

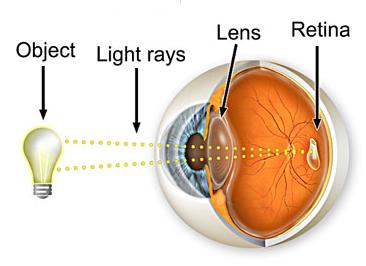
- Describe the shape of a concave lens.

- A concave has like a little cave shape.

**Lenses and the Human Eye:**

- What happens to an image when it goes through the eye? Draw a diagram to help you.

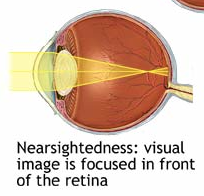
- It turns upside down and is focused on the retina



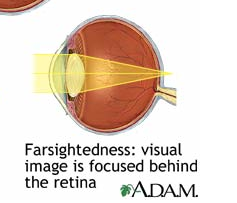
- Why is an image upside down on your retina?

- Because when the object goes through the lens, its puts it upside down, but your brain fixes it to look rightside up

- Draw an image of light going through a nearsighted eye.



- Draw an image of light going through a farsighted eye.



- What type of lens fixes nearsightedness?

- Concave Lens.

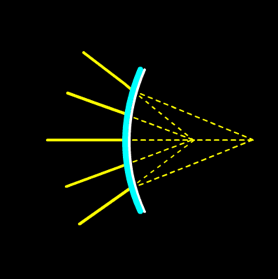
- What type of lens fixes farsightedness?

- Convex Lens.

**Mirrors:**

- Draw a convex and concave mirror.

- Draw what happens when light reflects off of these two types of mirrors.

Convex: Concave: