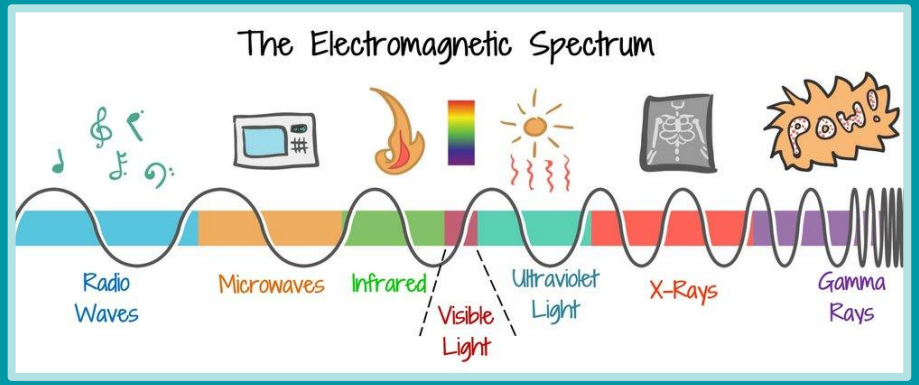
LIGHT SPECTRUM

WHAT IS LIGHT?

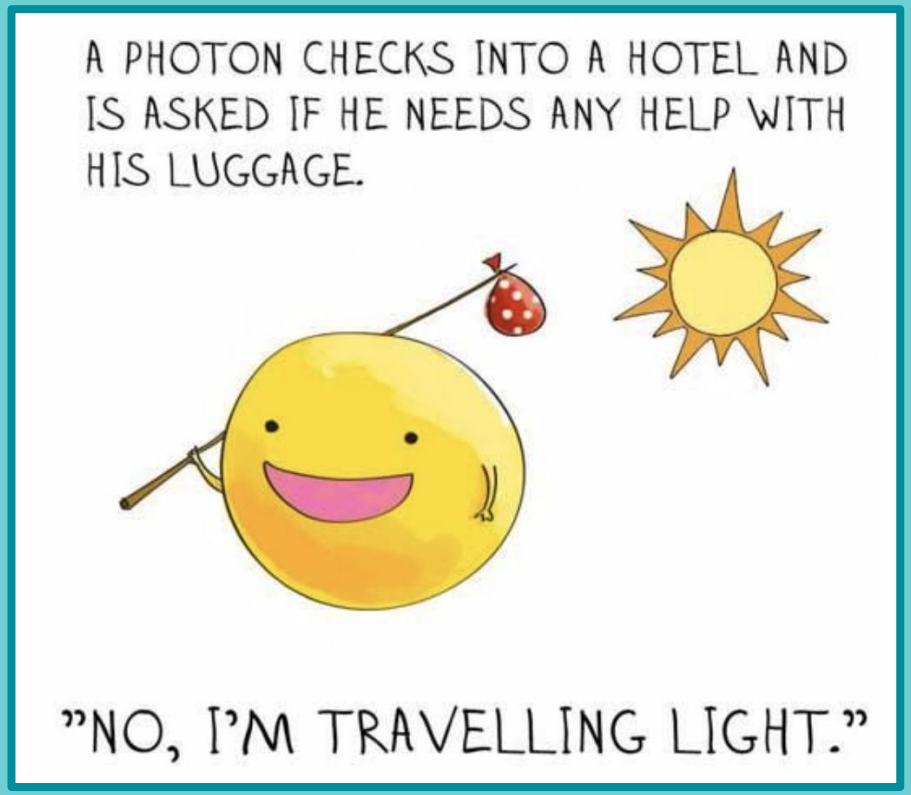
- Light is a source of energy!
- The electromagnetic spectrum is the entire range of light that exists, but a majority of this light is not visible to human eyes.



- The electromagnetic spectrum is comprised of 7 different types of light waves.
- One type of light wave that we cannot always see is called infrared radiation (IR)
- IR is a type of energy that's invisible to human eyes, but we can feel its presence as heat.
- The sun and fires are two sources of infrared heat.

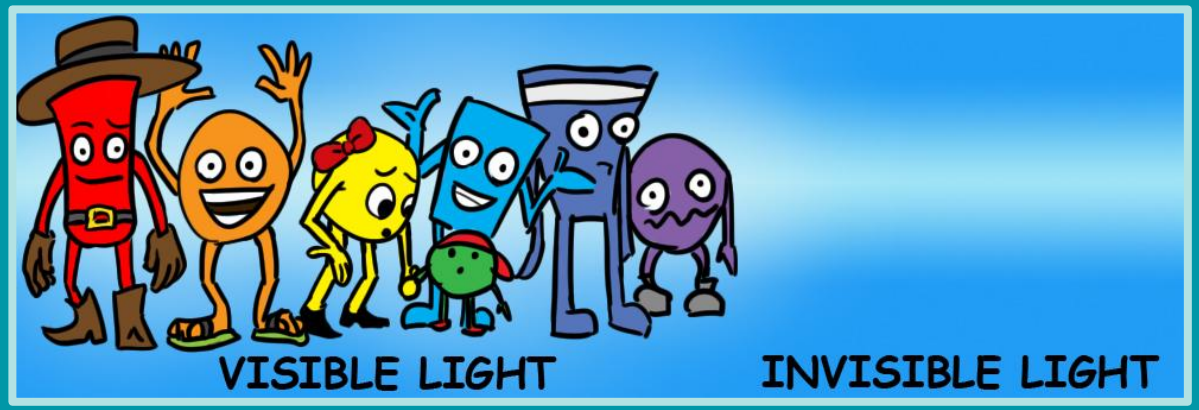
SO, WHAT IS LIGHT MADE OF?

- Light is made up of small particles called *photons*
- Photons are basically a “bundle of energy”
- They are *very* small (we cannot see individual photons with our eyes).
- And they move *very* quickly.
- Scientists believe that photons have so much energy and move so quickly that they never actually stop moving!

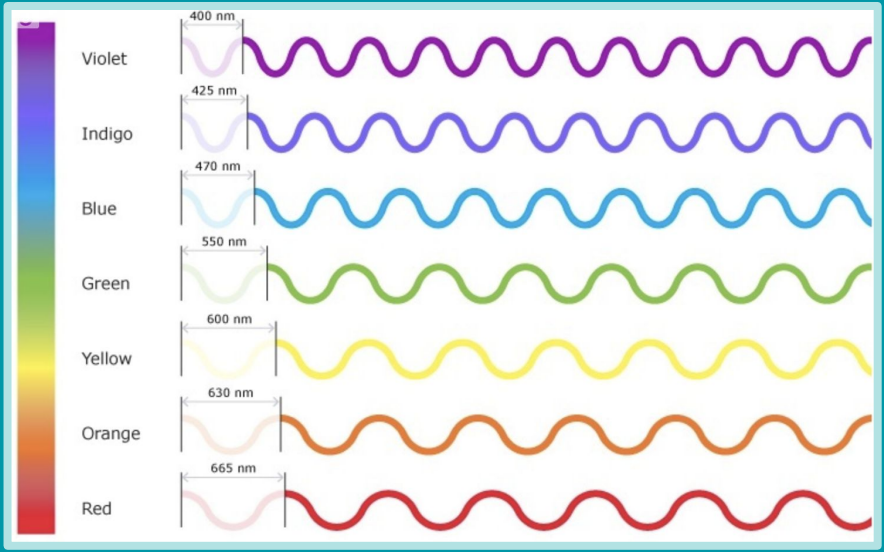


WHAT IS THE LIGHT SPECTRUM?

- **Have you ever seen a rainbow?**
  If you answered yes, you already know what the visible light spectrum looks like!
- Visible light is the light and colors our eyes can see (there are some types of light waves our eyes cannot process).



- Light travels in waves
- Light is measured in nanometers (nm)
- Our eyes can only see a *narrow range* of the electromagnetic spectrum
- Human eyes can see light between 400- 665 nm in wavelength

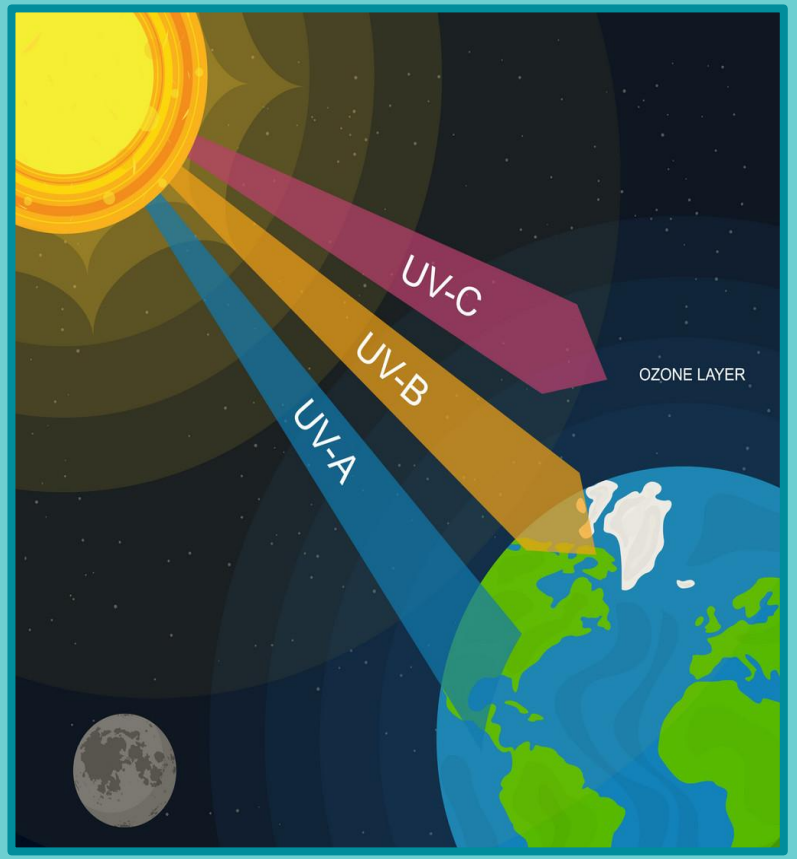


Fun fact: Remember, light is energy. And short wavelengths carry more energy than long wavelengths. Therefore, Violet wavelengths carry the most energy!

WHAT IS UV LIGHT?

- Ultraviolet (UV) light is a portion of the electromagnetic spectrum not visible to human eyes
- UV light is produced by the sun and travels all the way through space down to Earth
- There are 3 types of UV light:

UVA	315- 400 nm
UVB	280- 315 nm
UVC	180- 280 nm



UV LIGHT CAUSES SUNBURNS!

- UVB penetrates and damages the outermost layer of skin, resulting in a sunburn!
- Because we cannot *see* UVB rays, sometimes it is hard to tell that they are out
- Even on cloudy days when the sun is hiding, UVB rays can travel through clouds and rain to reach our skin

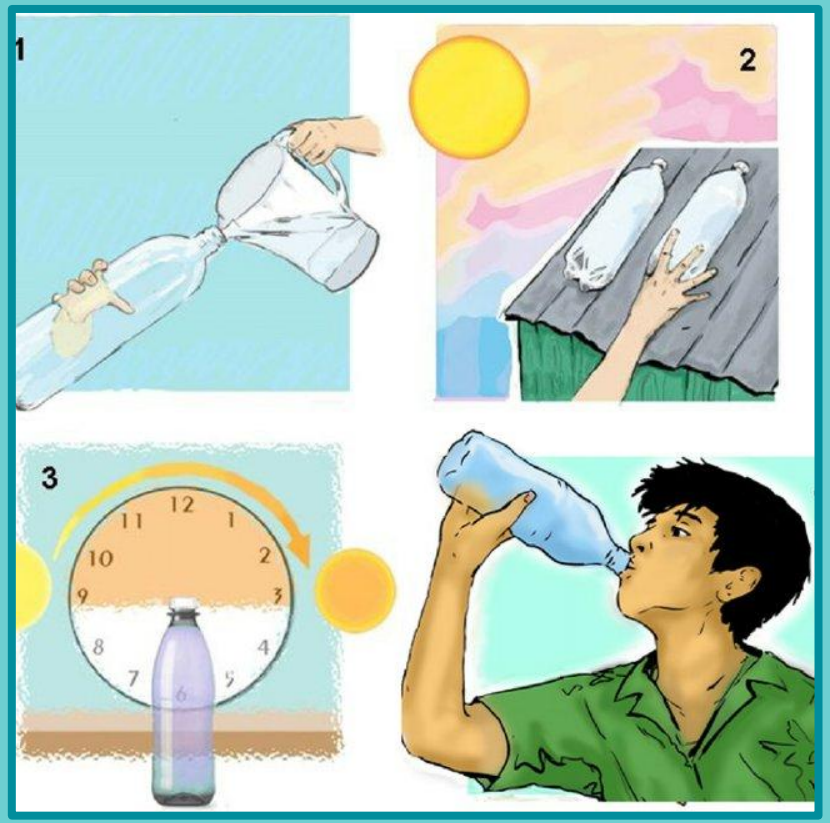
HOW CAN WE PREVENT SUNBURNS?

Let's talk about it:

Wearing long sleeve shirts and long pants creates a barrier between the sun and our skin. Hats and sunglasses are another good way to protect your face and eyes from sun damage. Sunscreen is also very effective at blocking the sun rays from our skin!

HOW UV LIGHT FILTERS WATER

- The same energy waves that cause sunburns on our skin kill bacteria in water.
- When there are living bacteria in water (like *E. coli*), energy from UV light kills them, so they cannot make you sick.
- The amount of time it takes for UV light to kill bacteria depends on the season and the time of day.
- UV rays are stronger in the spring and summer and peak in the middle of the day.



UV LIGHT AND THE WATER FILTER

- The intelligent filter is equipped with a UV sensor that eliminates bacteria (such as *E. coli*)
- More information to come

INTELLIGENT FILTER