

Why is the Sky Blue? An application of light waves

What are electromagnetic waves?

Electromagnetic waves are waves of energy that can move and transport their energy through a vacuum (empty space). Electromagnetic waves come in all sizes (**wavelengths**). This range of wavelengths is called the **electromagnetic spectrum**. Within the electromagnetic spectrum, there are many sections that have similar

Interesting Fact!

Light travels 186,000 miles per second or 299,792.458 kilometers per second. It can travel around the Earth 7.5 times per second!

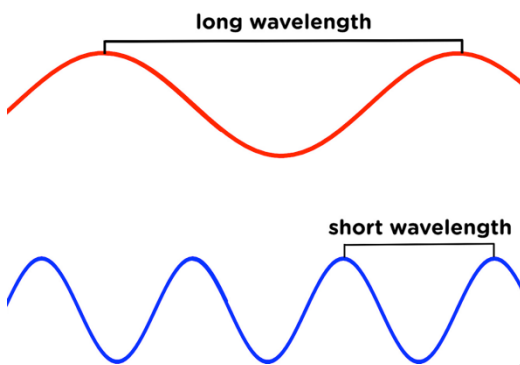


Photo credit: Siyavula Education

characteristics. These sections include radio waves, microwaves, infrared waves, visible light, ultraviolet, X-rays and gamma rays. The size of these waves varies from radio waves, which can be as long as a building, to gamma rays, which are about the size of an atomic nucleus.

To figure out why the sky is blue, we are going to focus on the visible light spectrum.

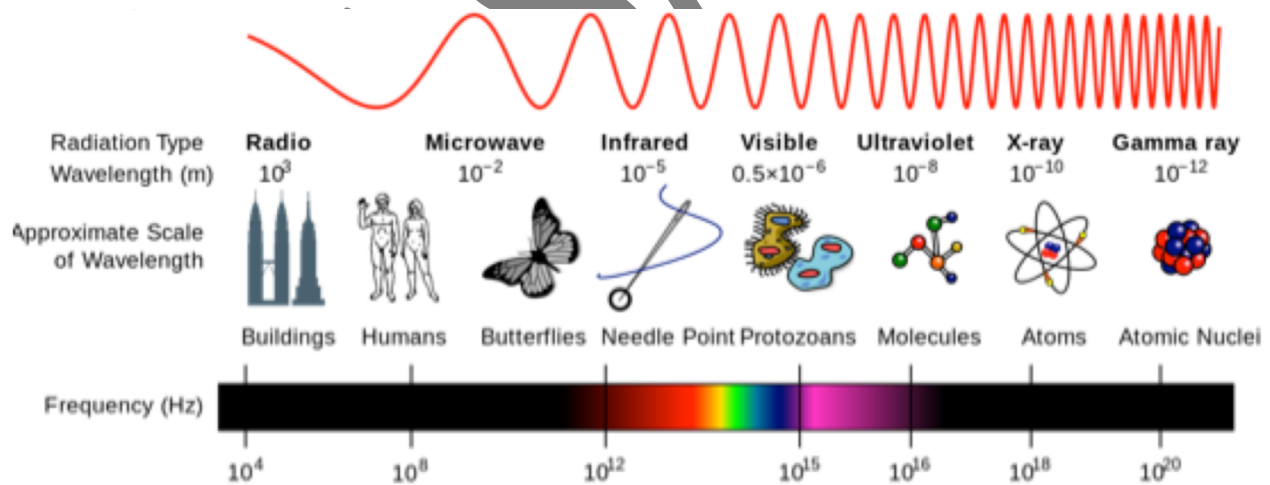


Photo credit: Inductiveload

Electromagnetic waves – Waves that can move and transport energy through empty space.

Wavelength – The distance from one peak (top of the wave) to the next.

Electromagnetic spectrum – The range of frequencies (or wavelengths) that electromagnetic waves come in.

What is the visible light spectrum?

Reading Sample



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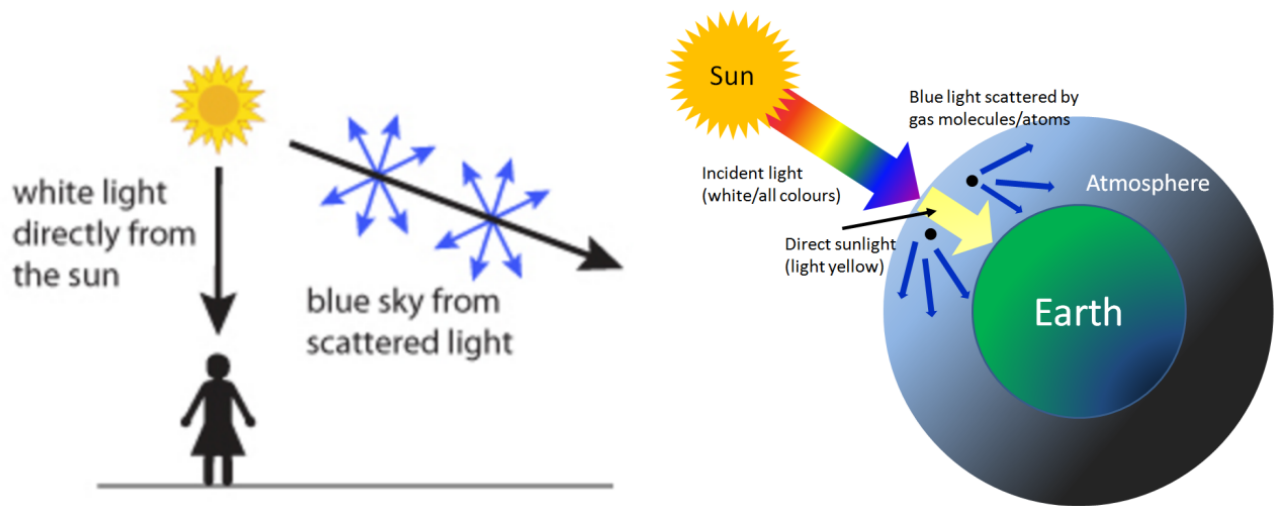
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Visible light spectrum – The range of electromagnetic wave frequencies that can be seen by the human eye.

Atmosphere – A layer of gases that surrounds Earth, protecting it and keeping our planet warm.

Rayleigh scattering – The shorter the wavelength of light, the more it is scattered by our atmosphere.

The other colors aren't scattered very much. They pass right through the atmosphere and light up the ground, buildings, people, etc. It's that light that makes daytime, bright. Violet light is scattered the most but the sky isn't violet. This is because it's a lot easier for humans to see blue light than violet light.



Why are sunsets red?

Reading Sample

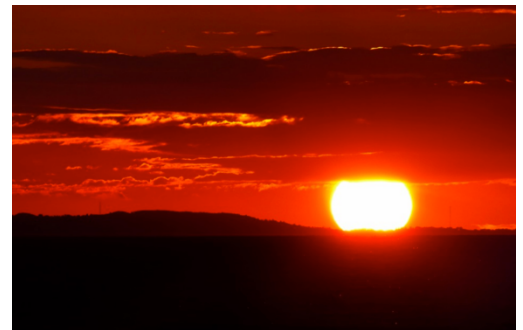
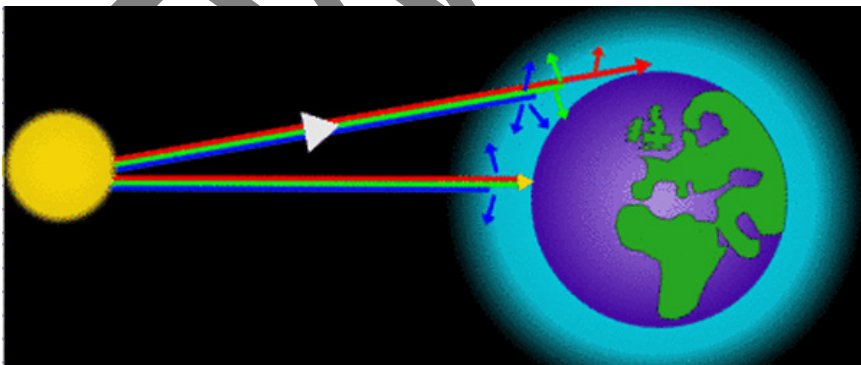
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The number of particles in the atmosphere affects the redness of a sunset – more particles means more scattered red light and redder sunsets. These particles can be pollution, water vapor, and dust.



Horizon: Also known as the skyline, it's the line that separates the Earth from the sky.

Reading Comprehension Questions:

1. What
2. What is the visible light spectrum?
3. What
4. What causes rainbows to appear?
5. According
6. Why is the sky blue?
7. What happens to the light that isn't scattered?
8. Why

Extension Questions:

9. If we
10. Create a diagram that visually explains why the sky is blue during the day and red at sunsets.

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