


## Electromagnetic Spectrum

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### Product of Fusion


- ▶ Review: What are the products (what is made) in the fusion process in the sun's core?
  - ▶ Helium, Energy (and a neutron)
- ▶ Energy produced in the form of heat and light



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### What does light look like?

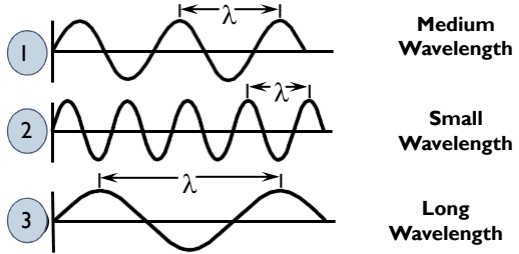
- ▶ Light can be thought of as a **wave** or a **particle**
- ▶ For our class we will focus on light's function as a wave



▶ 3

### Wavelengths

- ▶ There are different types of light
- ▶ Each type is identified by its wavelength. (Symbol  $\lambda$ )



▶ 4

### Surf the Waves! - Activity

- ▶ Using the wave cards arrange the waves in order of longest wave to shortest wave.

Long Waves      →      Short Waves

▶ 5

### Electromagnetic Spectrum

Electromagnetic Spectrum

Dealing with  
electricity and  
magnetism

"Fingerprint"  
Referring to the  
wavelengths

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### Electromagnetic Spectrum

Order of light waves from largest to smallest wavelength:  
Radio Waves, Microwaves, Infrared, Visible Light, Ultra Violet, X-Rays & Gamma

▶ 7

- Reading -

Answer the following questions in your notebook as you do the reading. The questions are in order of appearance.  
**Answer in complete sentences.**

- How fast do light waves travel?
- Which type of electromagnetic radiation contains little energy? Which as a great amount of energy?
- Why is advantageous to explore space using all regions of the electromagnetic spectrum?
- What filters and blocks most wavelengths in the electromagnetic spectrum?

▶ 8

- Reading Discussion -

- How fast do light waves travel?
- Which type of electromagnetic radiation contains little energy? Which as a great amount of energy?
- Why is advantageous to explore space using all regions of the electromagnetic spectrum?
- What filters and blocks most wavelengths in the electromagnetic spectrum?

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### Forms of EM Radiation from the Sun

- ▶ From the core: Gamma Rays
  - ▶ Good news! By the time it reaches the surface its energy has dropped to IR/Visible/UV
- ▶ From the surface: Infrared, Visible and Ultra Violet
- ▶ From solar flares: X-Rays

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### Sunlight's Journey to the Earth = 8 Minutes

ARRIVAL TIMES → 0 8 MINUTES 15 MINUTES 1 DAY 4 DAYS 10 DAYS

▶ 11

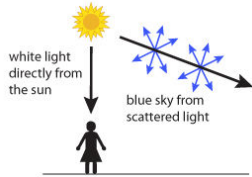
### Today's Main Idea

▶ Not all sunlight emitted from the sun reaches the surface of the Earth. Filtered by the atmosphere.

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### Why is the sky blue?

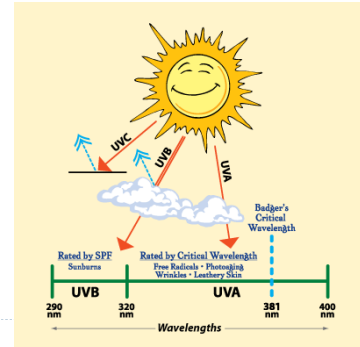
- ▶ Due to "Rayleigh Scattering"
- ▶ Long wavelengths (red, orange, etc.) pass straight through the atmosphere.
- ▶ Short wavelengths are absorbed by the gas molecules.
- ▶ Blue light is absorbed then radiated in different directions. Scattering across the sky.
- ▶ Since you see the blue light from everywhere overhead, the sky looks blue.



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### Sunscreen – Which Would You Pick?

- ▶ There are three types of Ultra Violet (UV) rays
- ▶ When choosing a sunscreen which one(s) do you need protection from?



▶ 14

### Explore HW Questions

2. Explore today's main idea with this question:  
What is the same for all types of electromagnetic radiation?

Helpful Textbook Pages: 747 - 748

#### Vocabulary for Next Time:

- ▶ Photosphere
- ▶ Chromosphere
- ▶ Corona

Helpful Textbook Pages: Glossary

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