Happy Tuesday!!!

Agenda:
1. Homework Check 2 column notes C.10
2. Notes: Greenhouse gas/EM Spectrum
3. Forever Warm pages 4-5
4. Electromagnetic Radiation Questions page 6

HW: Finish Electromagnetic Radiation SG: page 6
Greenhouse Effect:
Climate Control and Global Warming Background Information
Composition of the Earth’s Atmosphere
(Gases - Percent by Volume)

- Oxygen - 20.6%
- Nitrogen - 78%
- Other - 1.4%
- Argon (0.934%)
- Water Vapor (0.4%)
- Carbon Dioxide (0.035%)
- Neon (0.00182%)
- Helium (0.000524%)
- Methane (0.00015%)
- Krypton (0.000114%)
- Hydrogen (0.00005%)
- N₂O (0.00003%)
- Ozone (0.000005%)
- CFCs (0.0000001%)

* Known Greenhouse Gas

Troposphere
This is a greenhouse. How is it similar and different to our atmosphere?

Visible energy from the sun passes through the glass and heats the ground.

Infra-red heat energy from the ground is partly reflected by the glass, and some is trapped inside the greenhouse.
Greenhouse Effect & Global Warming

- The "greenhouse effect" & global warming are not the same thing.
  - Global warming refers to a rise in the temperature of the surface of the earth

- An increase in the concentration of greenhouse gases leads to an increase absorption of UV rays.
  - This results in global warming
30% of UV rays is reflected back into space, 70% of UV rays are absorbed by the atmosphere.
Parts of a wave:

- **WAVELENGTH**
- **crest** (highest point)
- **peak** (highest point)
- **amplitude** (height)
- **trough** (lowest point)

**WAVELENGTH** - **DISTANCE BETWEEN CRESTS**

**Frequency of a wave** - The number of waves that pass a given point per second.

**NOTE:** All waves travel at the speed of light!!! 30,000,000 m/s
Electromagnetic Spectrum

Wavelength: from IR to ultraviolet

Wave length: visible light (ROYGBIV)

Frequency: high frequency, high energy
Electromagnetic Spectrum
Environmental scientists continue to issue warnings about global warming, or the possible increase in average global atmospheric temperatures. Is there any legitimate concern about the earth’s temperature rising a few degrees? In fact, a surface temperature increase of just a few degrees could lead to a partial melting of the polar icecaps, resulting in a major rise in sea levels. Some scientists predict that by the middle of the 21st century sea levels could rise by three or more feet. If sea levels rise as expected, coastal areas or tidal cities, such as New York and London, as well as of the best low-lying agricultural areas would experience regular flooding. In Bangladesh, where

1. What is the impact of flooding in the community?

2. Identify 3 extreme weather effects that result from global warming.
Global warming is caused when heat radiated by the earth's surface becomes trapped in the lower atmosphere by gases, such as water vapor (H₂O), carbon dioxide (CO₂), and methane (CH₄), and is reradiated back to the earth's surface, thereby warming it. Although some of this “greenhouse effect” occurs naturally in the atmosphere, the effect intensifies as atmospheric greenhouse gases increase. Human actions, such as the burning of fossil fuels and the destruction of tropical rain forests, add to the greenhouse gases, particularly carbon dioxide, in the atmosphere and thus increase the warming of the earth's surface. If global warming occurs as many scientists predict, the repercussions will be severe for ecosystems and human populations on earth.

3. What causes global warming?

4. What human actions would prevent or reduce global warming?
1. What is the main idea of the passage?
   a. Global warming may very well happen.
   b. Global warming may have severe repercussions for the entire earth.
   c. Sea levels could rise by three or more feet by the middle of the 21st century.

2. This passage is concerned with the
   a. scientists who study earth’s environment.
   b. polar ice caps and why they melt.
   c. regular flooding of coastal areas.
   d. consequences of the increase in average atmosphere temperatures around the earth.

3. Some scientists predict that in 50 years,
   a. there will be no winter weather on earth.
   b. the earth will be uninhabitable.
   c. seas could rise three or more feet.
   d. New York City and London will disappear.

4. The effects of global warming as described in this passage
   a. seem likely to happen.
   b. are certain to happen.
   c. are based on faulty ideas.
   d. cannot be prevented at this late date.

5. The writer presents “greenhouse effect” by
   a. explaining the chemical names of the gases.
   b. giving an explanation of the process.
   c. listing the results of careful measurements.
   d. defining the major climatic zones.

6. In this passage, the word *displace* means to
   a. incur the disapproval of.
   b. force to flee from home.
   c. put in a particular position.
   d. restore to a former position.
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Electromagnetic Radiation Questions

1. Why is the word spectrum a good descriptor of the types of energy found in electromagnetic radiation?

2. What is the relationship between frequency and wavelength of a wave?

3. Use the wave on the left to:
   a. Label the wavelength for each
   b. Label the amplitude for each
   c. Circle one cycle
   d. Which wave has a longer wavelength? ______
   e. Which wave has a larger frequency? ______
   f. Which wave has a larger energy? ______
4. Use the figure to the right to identify the type of wave that has:
   a. The highest frequency
   b. The longest wavelength
   c. The color of visible light with the greatest energy

5. Which type of electromagnetic radiation travels through the atmosphere?

6. Which type of electromagnetic radiation is harmful to humans? Explain how.

7. Besides visible light, what are possible uses for electromagnetic radiation? (Tell me the type of radiation and the use.)