Warm-up  Week 6

1. _____ is the most abundant gas in the ATM.
   a. oxygen   c. carbon dioxide
   b. nitrogen  d. hydrogen

2. _______ is the lowest layer of the atmosphere.
   a. thermosphere  c. stratosphere
   b. troposphere  d. mesosphere

3. The form of oxygen that combines three oxygen atoms into each molecule is called ___.
   a. argon  c. chlorofluorocarbon
   b. thermopause  d. ozone
“Heating the ATM”
# Heat vs. Temp°

## 1. Temp°:
- Average kinetic **energy of molecules** in an object
- **Energy of motion**

## 1. Heat:
- **Energy** transferred from **one object to another**
- Due to **Temp° Differences**
# 3 Ways to Transfer Heat Energy

1. **Conduction** – Heat *through* molecules

2. **Convection** – Circulation
   - Fluids (air/water)

3. **Radiation** – Energy stored *in waves*
   - No material!
Which is **most important** in heating up atmosphere?

- Convection.
- Radiation.
- Conduction.
Radiation

- **Electromagnetic Waves**
- **Sun Energy**

![Radiation Diagram](image)
Radiation is...

1. “Absorbed” by objects
   - Get hot!

1. Goes through... “transmit”

2. Bounces off!
   - Reflection
   - Refraction

1. Photosynthesis
4 Laws of Radiation.

1. Everything “gives off” waves

2. Hotter = ↑ radiation

3. Hotter = ↓ wavelengths

4. ↑ absorbers = Good “givers”
Uneven heating causes...

1) Radiation
2) Conduction
3) ...CONVECTION!
Unequal heating causes convection!

- Heat from Equator $\rightarrow$ Poles
- “Equilibrium”
Can you spot the convection?
“Hot Air!” (15 pts)

Directions:

- Choose an **outdoor activity** that you enjoy
- Now, **draw yourself participating** in this activity.
- Include a **Picture, Definition, and Example** for each of the following **Vocab. Words**.

<table>
<thead>
<tr>
<th>1. Temperature</th>
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<td>2. Heat</td>
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<td>9. Reflection</td>
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<td>10. Photosynthesis</td>
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**Reflection** = When electromagnetic waves bounce off of a surface  
**Ex:** I must wear goggles to protect my eyes because radiation from the sun reflects off of the snow.

**Heat** = Energy transferred from one object to another  
**Ex:** Energy from my hand is transferred to my board as I grab on for dear life.

**Temp°** = Average Kinetic Energy of an object  
**Ex:** As I snowboard my temperature becomes greater because of my movement.