\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chapter 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Read p. A9-A11 to distinguish the two truths from the lie.
	1. Air gets thinner the higher you go up a mountain.
	2. Air is mostly oxygen.
	3. Here is an analogy: earth : atmosphere :: peach : fuzz
* What is the Atmosphere?
	+ Atmosphere is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ In addition to these gases, particles of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ can also be found in Earth’s atmosphere
	+ Our atmosphere makes conditions on Earth \_\_\_\_\_\_\_\_\_\_\_\_\_\_for living organisms
* Characteristics of the Atmosphere
	+ As height increases above sea level (ALTITUDE), the air has \_\_\_\_\_\_\_\_\_\_ oxygen and is called “thinner.”
		- Altitude is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- The \_\_\_\_\_\_\_\_\_\_\_\_ the altitude the less dense the air.
	+ The thickness of the air is determined by looking at its density, or the amount of material that is contained within a space. Think about a brick and a wooden block the same size. The brick has a greater density because there is more mass in the same size block.
* Layers of Atmosphere
	+ Scientists divide Earth’s atmosphere into \_\_\_\_\_\_\_\_ main layers classified according to changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Troposphere
	+ Inner or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer of Earth’s atmosphere
	+ The layer in which we \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and our \_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs
	+ As altitude \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Goes from Earth’s surface to approximately 10km above the surface
* Stratosphere
* Extends from the top of the troposphere (10km) to about 50km above Earth’s surface
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ protects us from the sun’s harmful ultraviolet (UV) rays
	+ As altitude \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Mesosphere
* Begins 50km from Earth’s surface and extends to 80km
* Considered to be the “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” of the layers
* Protects Earth from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ As altitude \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Thermosphere
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer of Earth’s atmosphere
* Extends from 80km into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* ‘\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_’ means hot
	+ As altitude \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Materials in the Atmosphere
* Most of the atmosphere is composed of gases but there are some other solid and liquid particles, like dust and smoke.
* Air is . . .
	+ 78% \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ 21% \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ 1% combined argon, carbon dioxide, and other gases
* Humidity is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Ongoing Processes in the Atmosphere
	+ Carbon Cycle:
		- Animals breathe in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and release \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		- Plants breathe in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and release \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		- This is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ relationship. We \_\_\_\_\_\_\_\_\_\_\_\_\_\_ one another.
	+ Water Cycle
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, run off, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Nitrogen Cycle
	+ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ remove nitrogen from the air and change it into other chemicals, which are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into the soil.
		- Living things then use this nitrogen. When they die, the nitrogen returns to the soil.
		- Nitrogen from the soil is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ released into the air.
* Sudden Atmospheric Changes
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, disrupt the normal atmospheric cycles and release substances and gases into the atmosphere.
* Moving Energy

|  |  |  |
| --- | --- | --- |
|  |  |  |
| * + - Energy moving by heated \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_
		- Hot air \_\_\_\_\_\_\_\_\_\_\_\_\_ and cool air \_\_\_\_\_\_\_\_\_\_\_\_\_
 | * + Radiation
		- Energy that travels in \_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_warming the Earth
 | * + - Energy that travels from one substance to another by \_\_\_\_\_\_\_\_\_\_\_\_\_contact
		- Walking barefoot on hot sand
 |

* Gases in the Atmosphere Absorb Radiation
	+ The atmosphere can . . .
		- \_\_\_\_\_\_\_\_\_\_\_\_\_light – take it in
		- \_\_\_\_\_\_\_\_\_\_\_\_\_light – bounce it back off
		- Let light pass through
		- Give off light
* Types of Radiation

|  |  |
| --- | --- |
| Ultraviolet Radiation | Infrared Radiation |
| * + - Lots of \_\_\_\_\_\_\_\_\_\_\_\_\_
		- “Ultra violent”
		- Causes \_\_\_\_\_\_\_\_\_\_\_\_\_
 | * + - \_\_\_\_\_\_\_\_ energy
		- Night vision goggles
 |

* Ozone
	+ Made of \_\_\_\_\_\_\_ oxygen molecules stuck together
	+ The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has a collection of ozone called the OZONE LAYER.
		- The Ozone Layer protects the Earth by \_\_\_\_\_\_\_\_\_\_\_\_\_bad UV radiation.
* The Greenhouse Effect
* Gases in the atmosphere keep energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the Earth’s surface.
* The term GREENHOUSE EFFECT came from the way our atmosphere holds gases \_\_\_\_\_\_\_\_\_\_\_\_, much like the way a greenhouse maintains heat for its plants.
* Greenhouse Gases . . .
	+ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Others
		- Most greenhouse gases are in the atmospheric layer closest to Earth, the troposphere.
* Greenhouse gases enable life to thrive on Earth. Without them, Earth would be too cold for life.
* Over time, energy escapes into outer space. Otherwise, Earth’s temperature would rise higher and higher until life could not survive.
* Human Activity Cause Air Pollution
* Air pollution refers to \_\_\_\_\_\_\_\_\_ and other harmful particles that are added to otherwise healthy air.
* Winds spread air pollution.
* Gas pollutants: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Some are naturally occurring, like the methane produced by cows.
* Pollutants refer to when these particles cause \_\_\_\_\_\_\_\_\_. Ozone in the stratosphere is good but breathing it in is bad.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the tiny particles or droplets that are carried in the air, like smoke, dust, pollen, salt, etc.
* Burning \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like coal and oil produce pollution.
* SMOG = smoke + fog
* Smog comes from both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .
* Effects of Pollution
* Irritates \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_,
* Smells bad
* Difficulty breathing
* \_\_\_\_\_\_\_\_\_\_\_\_, skies
* Controlling Pollution
* Ozone alerts on the news warn people of \_\_\_\_\_\_\_\_\_\_\_\_days.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ limits the amount of pollution factories are allowed to introduce into the air.
* Car inspection stickers
* Environmental Protection Agency (\_\_\_\_\_) keeps track of pollution and enforces laws – big $$$ fines for breaking laws
* Global Warming
* Earth can handle \_\_\_\_\_\_\_\_\_ greenhouse gases on its own. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ contributes some of these gases. The problem occurs when Earth can’t keep up with the added \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ place on it.
* Due to the increase of greenhouse gases, Earth is slowly becoming \_\_\_\_\_\_\_\_\_\_\_\_\_ and warmer. This theory is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* CFCs (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) in air conditioners, refrigerators, spray cans, and packaging materials increase bad chemicals in the air.
* Ozone levels vary across the globe. The \_\_\_\_\_\_\_\_\_\_\_\_ Pole has suffered greatly.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was created in 1987 and includes 18+ nations. The MP asks companies to stop making and using chemicals that destroy the ozone layer.