

Atmosphere Basics

Answer the following questions using pages 271-274 & 278-279 in the textbook.

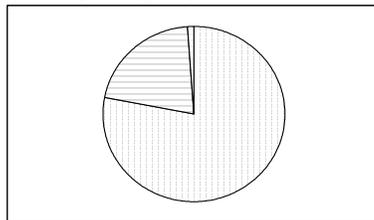
1. Introduction → Define these vocabulary terms using page 300 in the textbook.

A. Weather → _____

B. Climate → _____

2. **The Atmosphere** → Answer the following questions using pages 271-274.

A. What gases make up the composition of our atmosphere? Label the gases and their percents on the pie graph.



B. The atmosphere is made up of several different layers. This will be your homework tonight

3. **Temperature & Heat** → Using pages 278-279, answer these questions.

A. When we ask about the weather, we are typically asking about the temperature or heat level of the atmosphere. Define each below:

Temperature → _____

Heat → _____

A table for converting temperatures is listed below. Using these formulas, convert the temperatures. SHOW YOUR WORK!

From	To °F	To °C	To K
Fahrenheit (F)	°F	$(F - 32) \times 0.6$	$(F - 32) \times 0.6 + 273$
Celsius (C)	$(C \times 1.8) + 32$	°C	$C + 273$
Kelvin (K)	$(K - 273) \times 1.8 + 32$	$K - 273$	K

A. $30^{\circ}\text{C} =$ _____ $^{\circ}\text{F}$

C. $100^{\circ}\text{C} =$ _____ K

B. $60^{\circ}\text{F} =$ _____ $^{\circ}\text{C}$

D. $150\text{ K} =$ _____ $^{\circ}\text{F}$

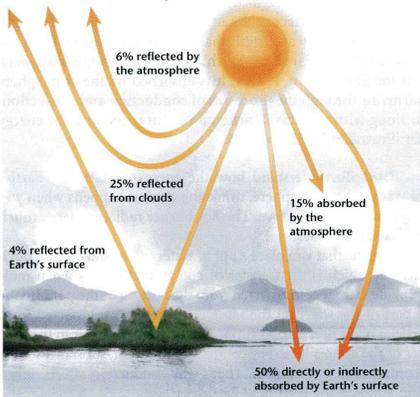
The source of all of the heat and energy in our atmosphere is the _____.

This energy is transferred to Earth and throughout the atmosphere in three ways:

1. **Radiation** → The transfer of energy through _____

A. Examples → _____

BUT...not all radiation from the sun is absorbed by the Earth. Examine this chart.



_____ % is actually absorbed by the Earth's surface.
 _____ % is absorbed by the atmosphere.
 _____ % is reflected by _____.

Note The rate of absorption/reflection is dependent upon the topography of different locations. Example: Darker objects absorb energy _____ than lighter ones.

2. **Conduction** → The transfer of heat by _____, usually through a _____

A. Examples → _____

3. **Convection** → The transfer of energy through a _____

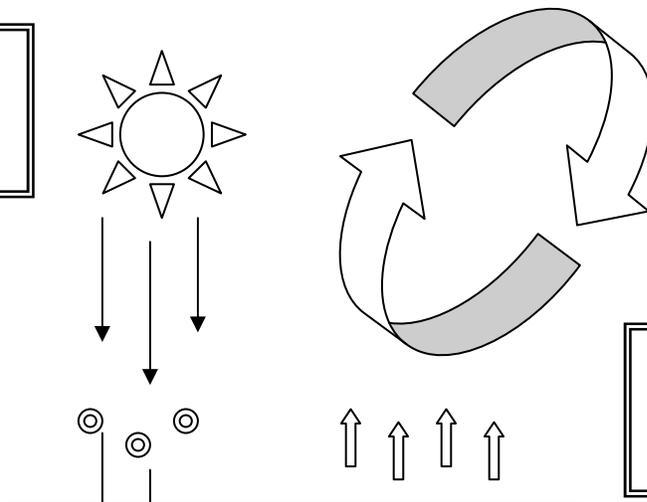
Usually a _____

A. Convection Currents → _____

When a substance is heated (given energy), its molecules _____ (expand/condense) and become _____ (more/less) dense. As a result, the gas or liquid will begin to _____ (rise/sink). As the molecules rise, the temperature _____ (increases/decreases). The process then goes into reverse. Cooling molecules _____ (expand/condense) and become _____ (more/less dense). As a result, the gas or liquid begins to _____ (rise/sink). This process continues in a cycle known as _____.

Applications: How do convection, conduction, and radiation work together to heat the atmosphere?

1. The sun gives off _____



3. The gas molecules that are heated near the ground expand, become _____ dense, and rise to circle in _____ currents. This process moves heat throughout the entire atmosphere!

2. Through direct contact, or _____, atmospheric gases closest to the ground are heated up.