

NAME: ANSWER KEY Date: _____ Period: _____

Student Worksheet

After reading the background information complete the first data table.

Data Table #1	
Atmospheric Layer	Based on the background information, list important characteristics of each layer.
Troposphere	<ul style="list-style-type: none"> • WEATHER OCCURS HERE • CONTAINS 50% + OF EARTH'S ATMOSPHERIC MASS
Stratosphere	<ul style="list-style-type: none"> • JETS & COMMERCIAL AIRCRAFT FLY HERE • VERY STABLE • OZONE LAYER LOCATED HERE, ABSORBS ULTRA VIOLET RADIATION
Mesosphere	<ul style="list-style-type: none"> • METEORS BURN UP HERE • THE COLDEST TEMPERATURES IN OUR ATMOSPHERE OCCUR HERE
Thermosphere	<ul style="list-style-type: none"> • AURORAS OCCUR HERE • THE INTERNATIONAL SPACE STATION & SATELLITES ORBIT EARTH HERE • THE HOTTEST TEMPS. OCCUR HERE
Exosphere	<ul style="list-style-type: none"> • REGION WHERE ATOMS & MOLECULES ESCAPE INTO SPACE • UPPER LIMIT OF OUR ATMOSPHERE
Ionosphere	<ul style="list-style-type: none"> • THIS LAYER/REGION EXISTS IN THE THERMOSPHERE • MAKES LONG DISTANCE COMMUNICATION POSSIBLE

Refer to the graph "The Average Temperature Profile of the Earth's Atmosphere" and complete the data table two.

Data Table #2			
Atmospheric Layer	Exists between which altitudes (km)	Thickness (km) (Hint: subtract)	Maximum Temperature (°C)
Troposphere	0 - 10	10	20
Stratosphere	10 - 50	40	- 2
Mesosphere	50 - 85	35	- 2
Thermosphere	85 - 600	515	1500 +
Exosphere	600 - 10,000 +	9,400 +	1500 +
Ionosphere	60 - 1,000	940	400 - 1500

Study and analyze the graph "The Average Temperature Profile of the Earth's Atmosphere" as you complete table 3:

Data Table #3	
Atmospheric Layer	Describe what happens to the temperature as altitude increases. Be sure to note specific altitudes where abrupt changes occur and how each layer is heated.
Troposphere	TEMP. DECREASES w/ ALTITUDE ↓
Stratosphere	TEMP. INCREASES w/ ALTITUDE ↑
Mesosphere	TEMP. DECREASES w/ ALTITUDE ↓
Thermosphere	TEMP. INCREASES w/ ALTITUDE ↑
Exosphere	TEMP. DECREASES w/ ALTITUDE ↓
Ionosphere	TEMP. INCREASES w/ ALTITUDE ↑

Analysis Questions:

Study the graph, "The Average Temperature Profile of the Earth's Atmosphere". Does information there help you to explain why scientists decided where one layer of atmosphere ended and the next one began? Explain your answer.

DIVIDED BY BEHAVIOR OF TEMPERATURE,
WHERE TEMP "PAUSES" OR STAYS CONSTANT, BOUNDARY OF LAYER
What important layer exists within the stratosphere? OZONE

What is the importance of this layer within the stratosphere?

OZONE ABSORBS 97-99% OF UV RADIATION

After reviewing the effects of both "good" and "bad" ozone, how do you think our lives would be different if the "good" ozone were destroyed?

UV RADIATION WOULD STRIKE EARTH

What important layer exists within the thermosphere? IONOSPHERE

What is the importance of this layer within the thermosphere?

MAKES LONG DISTANCE RADIO COMMUNICATION POSSIBLE BY
REFLECTING RADIO WAVES BACK TOWARDS EARTH

Summarize the differences between the D, E, and F layers. Be sure to pay close attention to which wavelengths of sunlight are absorbed and which wavelengths are reflected.

Ionospheric Layer	Characteristics
F	ABSORBS EXTREME ULTRAVIOLET, REFLECTS SHORT WAVE RADIO WAVES
E	ABSORBS SOFT X-RAYS, REFLECTS AM RADIO WAVES
D	ABSORBS HARD X-RAYS, REFLECTS AM RADIO WAVES

If the ionosphere did not exist, what do you think might be some possible consequences to humans? Think about which wavelengths the ionosphere blocks and what would happen if these wavelengths were allowed through the atmosphere to the Earth's surface.

X-RAYS WOULD STRIKE EARTH, LONG DISTANCE RADIO
COMM. WOULD REQUIRE SATELLITES

How does an increase in solar activity affect the ionosphere? Why do you think this effect on the ionosphere is observed on the dayside and not the night side of the Earth?

DENSITY INCREASES W/ INCREASED SOLAR ACTIVITY