

Students will answer all vocabulary, study guide questions and additional study problems as outlined below.

Supplemental and Reading Material provide additional information to help master concepts.

Essential Standards:	Students Will Be Able To:
<p>2.5.1 Summarize the structure and composition of the atmosphere.</p> <p>2.5.2 Explain air masses and weather systems that result from their interactions.</p> <p>2.5.3 Explain cyclonic storms based on the interaction of air masses.</p> <p>1.1.4 Explain the difference in heating or land vs. water.</p> <p>1.1.3 Summarize how energy from the sun flows through space.</p>	<ul style="list-style-type: none"> • Explain how energy is produced, flows through space and interacts with the atmosphere. • Identify and describe layers of the atmosphere in terms of temperature, composition & energy interactions. • Explain how air masses move and interact to form boundaries, clouds and wind patterns. • Explain factors that affect air density and its influence on fronts, wind, air masses and storm systems. • Explain the role of water in atmospheric processes, including dew point, clouds, humidity and precipitation.

Vocabulary—Define, know, and be able to apply the following terms:

- | | | |
|-----------------|-----------------------|--------------------------|
| 1. Weather * | 8. Front * | 15. Jet Stream |
| 2. Ozone * | 9. Air Mass * | 16. Troposphere |
| 3. Windward * | 10. Cyclone * | 17. Stratosphere |
| 4. Leeward * | 11. Anticyclone * | 18. High Pressure System |
| 5. Radiation * | 12. Air Pressure * | 19. Low Pressure System |
| 6. Reflection * | 13. Relative Humidity | 20. Orographic Lifting |
| 7. Scattering | 14. Dew Point * | |

Academic students complete vocabulary with asterisks *only. Honors students complete all 20 words.

Study Guide—Answer, know, and understand the following concepts:

1. Describe the layers of the atmosphere, including important functions/associations for each.
2. Identify the composition of the atmosphere including percentages of gasses.
3. Identify the 4 types of air masses, where they form, and how they relate to weather in the United States.
4. Describe the 4 types of fronts including formation, symbols, and associated weather.
5. Describe the 3 ways in which heat can be transferred.
6. Draw a diagram illustrating the amount of radiation reflected and/or absorbed by the Earth, clouds, and atmosphere.
7. Describe the connection between air pressure and wind.
8. Describe global air pressure differences and the resulting wind patterns.
9. Identify and describe types of local winds.
10. Compare and contrast cyclones and anticyclones. Include symbols and associated weather and wind patterns.
11. Describe the process of cloud formation.
12. Sketch and describe cirrus, cumulus, and stratus clouds.
13. Identify various forms of precipitation.

Supplemental--Do practice the following activities as you work through the unit:

1. Draw diagrams to illustrate the layers of the atmosphere, air mass interactions, and energy transfer.
2. Utilize a humidity chart to calculate relative humidity using wet bulb and dry bulb measurements.

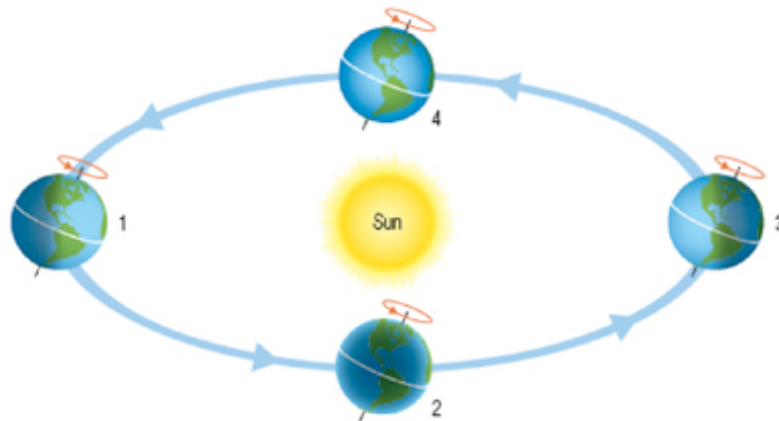
Unit Reading Material:

- Textbook: Chapter 17-21
- Digital Textbook: Ch. 7.1-7.20
- Class Notes
- Handouts

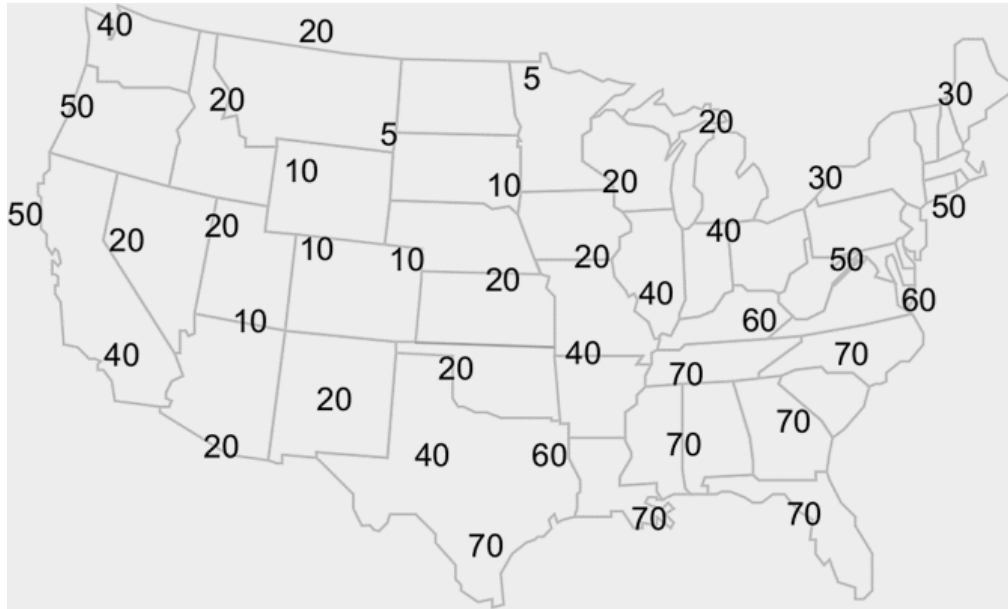
Additional Study Problems:

1. Graph the changes in atmospheric temperature as altitude increases from the Troposphere to the Exosphere. Label each layer. Identify location of the ozone layer and where weather occurs.

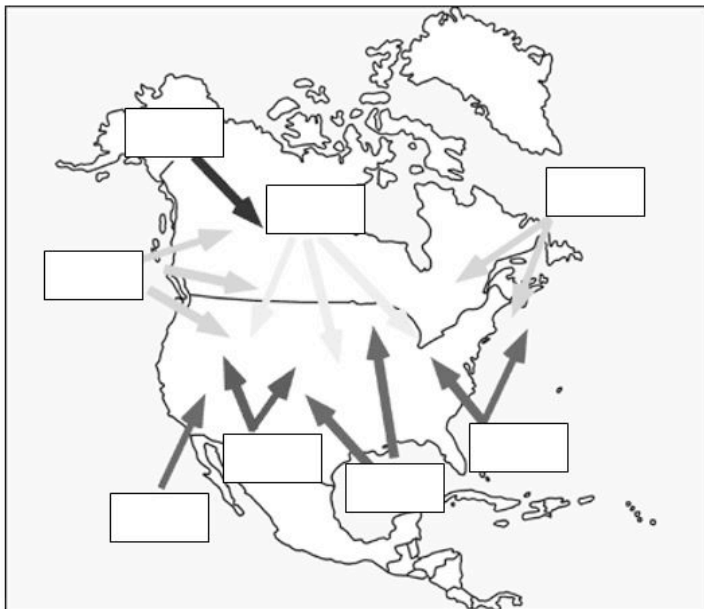
2. Identify the seasons experienced by both the Northern & Southern hemispheres based on the diagram below:



3. Draw a weather symbol for an area experiencing rain on an overcast day with a pressure of 120 millibars, a temperature of 72°F, a dew point of 44°F, and southwest winds at 15 knots.
4. Sketch a high pressure and low pressure system, illustrating how the winds are moving. Describe the weather in these two systems.
5. Draw the isobars on the diagram below. Identify the location of a high and low pressure system.



6. Identify each of the following air masses and describe the characteristics of each:



7. Determine relative humidity for a dry bulb that reads 25°C and a wet bulb that reads 17°C.

Dry Bulb (°C)	Number of degrees difference between the wet- and dry-bulb readings (°C)									
	1	2	3	4	5	6	7	8	9	10
10	88%	77	66	56	45	35	26	16	7	--
11	89	78	67	57	47	38	28	19	11	2
12	89	79	68	59	49	40	31	22	14	5
13	89	79	69	60	51	42	33	25	16	9
14	90	80	70	61	52	43	35	27	19	11
15	90	80	71	62	54	45	37	29	22	14
16	90	81	72	63	55	47	39	31	24	17
17	91	82	73	64	56	48	41	33	26	19
18	91	82	73	65	57	50	42	35	28	21
19	91	82	74	66	58	51	44	37	30	24
20	91	83	75	67	59	52	45	38	32	26
21	91	83	75	68	60	53	47	40	34	27
22	92	84	76	69	61	54	48	41	35	29
23	92	84	77	69	62	56	49	43	37	31
24	92	84	77	70	63	57	50	44	38	32
25	92	85	77	71	64	57	51	45	40	34
26	92	85	78	71	65	58	52	46	41	35
27	93	85	78	72	65	59	53	47	42	37
28	93	86	79	72	66	60	54	49	43	38