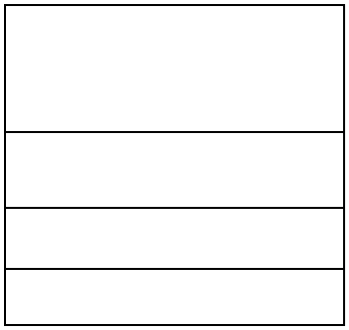
Name: _____ Period: _____ Date: _____

Atmosphere Unit Study Guide

9th Grade Science

Section 17.1: *Atmosphere Characteristics*

1) Label the layers of the atmosphere in order from Earth to space:



2) On the left side of the diagram, indicate the following: location of ozone layer, location of the greenhouse effect, temperature ranges (cold to warm, etc.), location of weather/clouds, and any other important characteristics.
3) How are the layers of the atmosphere divided?
4) What are the most abundant gases in the atmosphere?
5) What are the main gases in the atmosphere that are responsible for absorbing heat?
6) What happens to temperature as you increase altitude? What happens to pressure?
7) What is *insolation*? What is the angle of insolation and how does it relate to latitude?
8) How does the angle of insolation change from season to season?

Section 17.2: *Heating the Atmosphere*

9) Describe the difference between conduction, convection, and radiation:
10) What are the different things that can happen to incoming solar radiation? (*HINT → Look at diagram on p. 486*)
11) Why isn't the Earth heated evenly?
12) What is the greenhouse effect? What gases are involved in the greenhouse effect? What do these gases do?
13) Compare and contrast ozone depletion and climate change:

	Ozone Depletion	Global Climate Change
Cause		
Effect		
Possible Solution		

Section 17.3: *Temperature Controls*

14) What climate trends can you expect to see at a coastal location versus an inland location?

15) What are some of the other factors that influence a region's climate? Briefly describe each.

16) How do cloudy conditions affect temperatures during the day vs. at night?

Section 19.1: *Understanding Air Pressure*

17) The uneven heating of the Earth creates differences areas of higher and lower pressure. How does air move between high and low-pressure centers?

18) Due to the uneven heating of the Earth, what is the ultimate source of energy for wind?

19) What is the average air pressure at sea level (in millibars)?

20) What is the Coriolis effect?

21) Explain effect of the Coriolis effect on wind in each hemisphere:

Section 19.2: *Pressure Centers and Winds*

22) Draw the winds that result from the Coriolis effect acting upon high and low-pressure systems:

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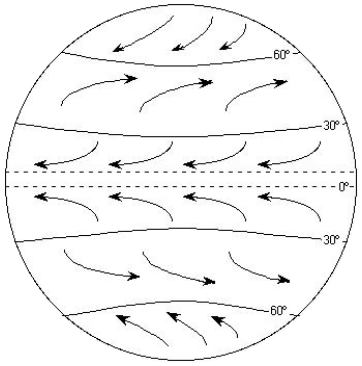
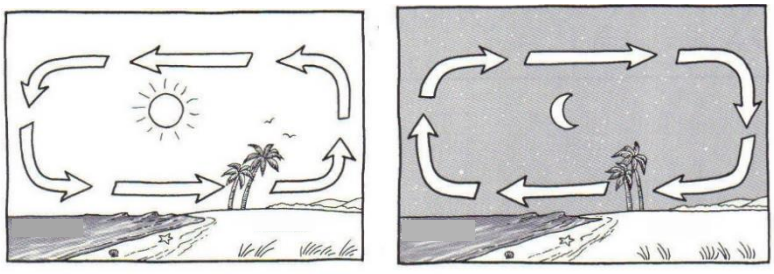
23) Label the names of the six wind belts on the globe. Then, along the right side, draw in convection cells to indicate where air is rising and sinking.



Section 19.3: *Regional Wind Systems*

24) Label the diagrams below with the following: Identify the land breeze and the sea breeze, the high and low pressure, direction of wind, and temperature of the land and water.



Sections 21.1 and 21.2: *Climate*

25) What is climate (as opposed to weather), and what are the main conditions that determine the climate of any one region?

26) What are the three main climate *zones*, based on latitude?

27) Choose four climate types from the map on p. 594 – 595. Describe what the conditions are like in each of these climates, and why they are that way.