Use complete sentences on those marked with an asterisk *.

Worksheet: Vapor, Clouds, and Precipitation

Name: _____

1. According to page 504, what is the most important gas in our atmosphere?

2. According to figure 2 on page 505, during which 3 phase changes do water molecules absorb heat from their surroundings?

_____ _____ _____

3. *What happens to the speed of water molecules as they change from vapor to ice?

4. What is the name of the phase change that causes frost to form? _____
The water molecules changed from _____ to _____.

5. If a gym that can hold 1,000 fans has 200 people in it, the gym is 20 % full. Which of the numbers in this statement are most like each of the following?
air's capacity: the relative humidity: the specific humidity:

6. According to the table on page 506, how many grams of water vapor can a kg of air hold at these temperatures?
14 F: _____ g. 68 F: _____ 95 F: _____

7. *What does the word "saturated" mean when we are talking humidity?

8. *Look at figure 3 on p. 507. Why did the relative humidity to go from 50 % to 100 % in this flask?

9. *Why is the relative humidity 50 % in flask A? (How was this calculated?)

10. The flask (B: 7 g. of vapor, 10 C) was cooled to 0 C. Now in C it has only 3.5 g. of vapor. What happened to the other 3.5 g. of vapor? Circle one.

It evaporated. It condensed to form liquid water. It formed frost.

11. Look at graph 2 on p. 529, showing an average day. What do each of the following lines represent?
Blue: Red:

12. What was the temperature range on the day represented in the graph? (think) _____ degrees Celcius

13. On this day the relative humidity varied from _____ % at 6 am to _____ % at 6 pm.

14. *What caused the relative humidity to change even though the amount of vapor in the air did not change?

15. Why did the relative humidity go up as the temperature dropped? Circle one.
A. The capacity increased. B. The specific humidity increased.
C. The capacity decreased. D. The specific humidity decreased.

16. Did the air reach its dew point on this day (still graph 2 on p. 529)? (Hint: what is the relative humidity when the air temperature reaches its dew point?)

17. Look at the photo on bottom of p. 508. When the relative humidity is low, why will there be a bigger difference between the wet-bulb and dry-bulb temperatures? Circle one.

A. There will be more evaporation from the wet-bulb when the relative humidity is low.

B. There will be less evaporation from the wet-bulb when the relative humidity is low.

18. If the dry-bulb temperature is 28 C and the wet-bulb temperature is 18 C, what is the relative humidity? Use the table on page 525.

_____%

19. *What is the point of the photo on the bottom of page 514?

20. Look at figure 7 on page 511. As air rises, it cools by expansion. Cloud formation started when the rising air reached 3000 m (condensation level) because the air reached its _____point.

21. *Look at diagram A on top of page 512. What is causing the air to rise here? (It is called "orographic lifting". What causes the "lifting"?)

22. What two characteristics are used to classify clouds? (p. 517)

23. *How is "fog" different from other clouds?

24. *What does "supercooled" mean? (see p. 521)

25. *Explain how "glaze" forms.

26. *The layers shown in the piece of hail shown atop page 522 were formed when supercooled droplets froze? Why are there so many layers? (Hint: "updrafts" p. 522)