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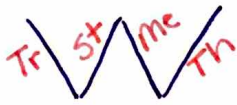
## Keys to Success for the Science Final Exam!

### (aka- 2<sup>nd</sup> Quarter Exam Study Guide)

7.E.1.1 - Compare the composition, properties and structure of Earth's atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.

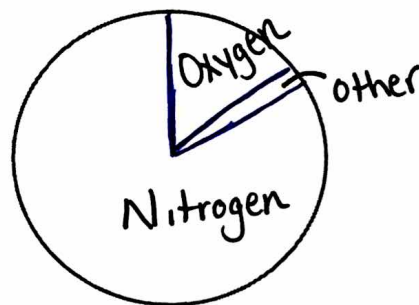
1. Explain the temperature differences in each layer of the atmosphere.

Think of the



Troposphere — As altitude increases, temp. decreases  
Stratosphere — As altitude increases, temp. increases  
Mesosphere — As altitude increases, temp. decreases  
Thermosphere — As altitude increases, temp. increases

2. Create a pie chart that represents the main components (w/ percentages) of Earth's atmosphere.

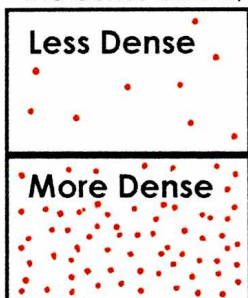


Nitrogen = 78%

Oxygen = 21%

Water Vapor, Carbon Dioxide,  
& other gases = less than  
1%

3. Explain the differences in air pressure in each layer of the atmosphere. How does <sup>air pressure</sup> relate to density? In the boxes below, show an example of air that is less dense and air that is more dense.



As altitude increases, air pressure decreases

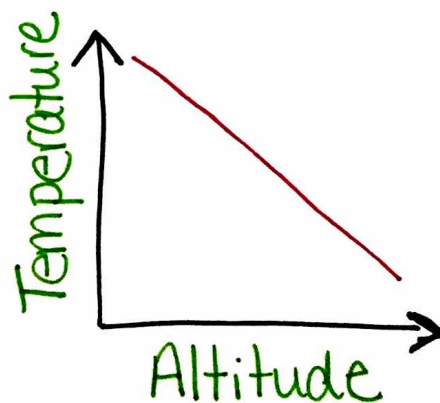
more pressure = more dense

less pressure = less dense

4. Create line graph that shows the relationship between altitude and temperature in the troposphere. Remember, temperature is on the "y-axis" and altitude is on the "x-axis." (Hint... As altitude increases temperature decreases in the troposphere)

\* look @ x and y axis

temperature increasing as go up.



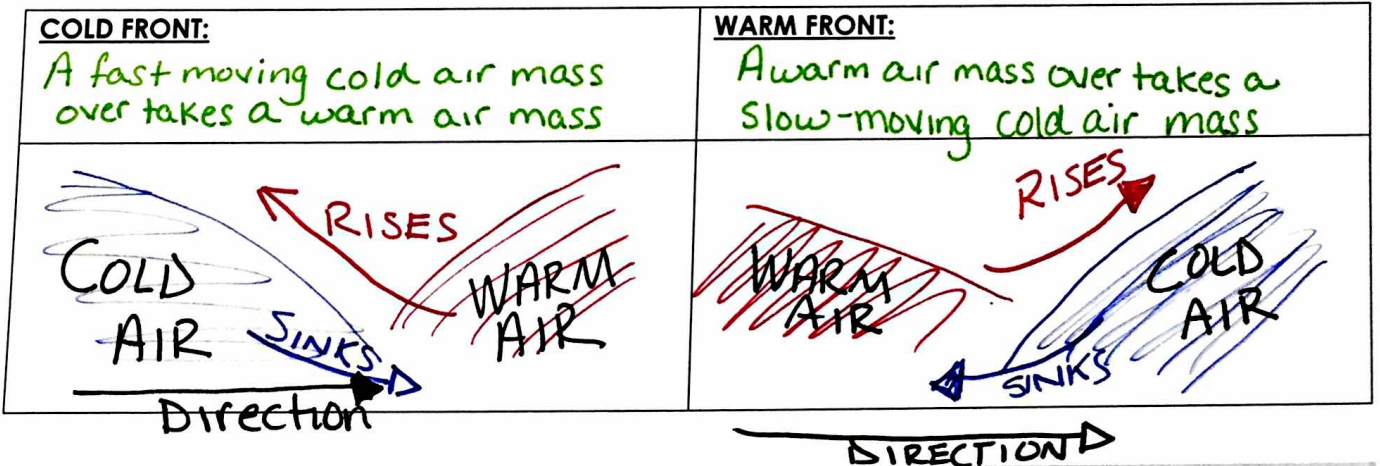
altitude increasing as move to right.

**7.E.1.2 Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.**

5. Define the term water cycle? The water cycle is the continual <sup>never stops</sup> movement of Water from Earth, to the atmosphere, and back to Earth
6. When condensation occurs, the water vapor in the air cools changing back into liquid form. Give a real-world example of where you have seen condensation (not the creation of clouds).  
 • on car windows • on sides of cup (cold drink)  
 • dew on grass
7. True or False: The water we drink today is the same water that dinosaurs drank. JUSTIFY your answer.  
 True - Because the water cycle is a continual cycle, the water that dinosaurs had is same water we have today.

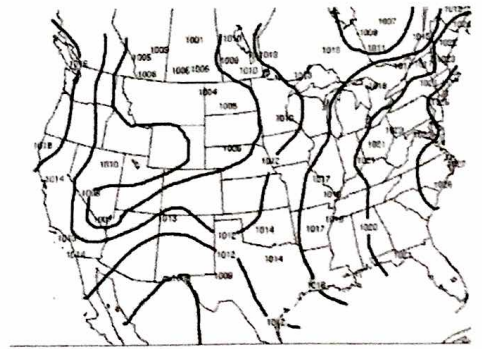
**7.E.1.3 Explain the relationship between the movements of air masses; high and low pressure systems, and frontal boundaries to storms.**

8. What are the major air masses AND what type of air do they bring?  
 Continental = dry (think land) Maritime = humid (think sea) moist wet  
 Tropical = warm Polar = cold
9. Explain the conditions that are ideal for hurricane formation.  
 A hurricane begins over warm ocean waters as a low pressure area.
10. Define and create a drawing of the following...



**7.E.1.4 Predict weather conditions and patterns based on information obtained from: data, weather tools, weather maps, cloud types and shapes.**

11. Explain what the map to the <sup>right</sup> ~~left~~ represents.  
 The lines, called isobars, are connecting areas of equal pressure.





12. Explain what type of weather is expected if...

- a. the barometric pressure is falling means low pressure = bad weather
- b. The barometric pressure is rising means high pressure = good weather

13. Analyze the data below for City Y. Explain what has most likely occurred in the area.

Day and Time	Friday at 7:00am	Saturday at 4:00pm
Temperature	60°F	75°F
Pressure	27.35 in.	30.22 in.
Skies	Partly Cloudy	Clear Skies; Sunny

A possible high pressure system moved into the area (or warm front). Temp. increased as well as pressure

14. Explain the weather conditions for the next few days for the following areas...

- a. New York (if the current temperature is 65°F and cloudy)

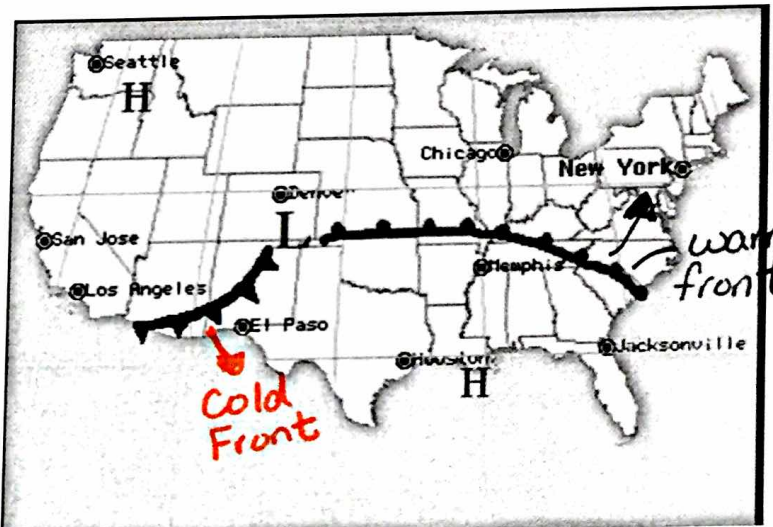
Warm front moves into area. Temp. will increase. Cloudy Skies or steady rain

- b. El Paso (if the current conditions are clear skies and 80°F).

Cold front moves into area. Temp. will decrease. Possible Storms/heavy rain

- c. Seattle (if the current conditions are rainy and 65°F)

w/ high pressure system near temp. will increase; skies will clear.

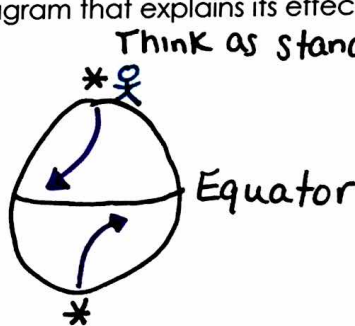


**7.E.1.5 Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.**

15. Define the Coriolis Effect AND create a diagram that explains its effect of the Northern & Southern Hemispheres.

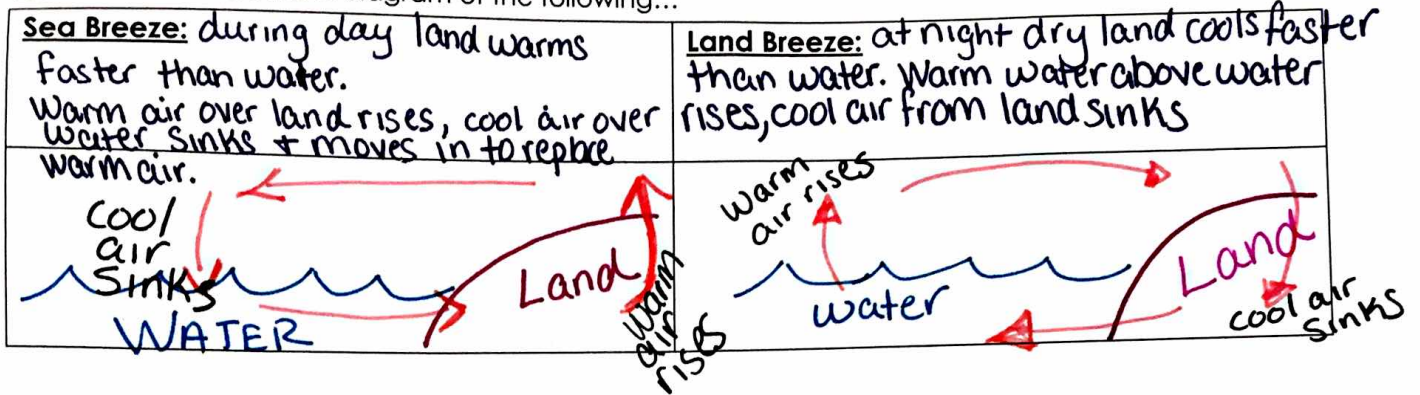
Winds curve right in Northern Hemisphere

Winds curve left in Southern Hemisphere





16. Define and create a diagram of the following...



17. Winds are caused by...

unequal heating of earth and differences in pressure

18. What major wind belt affects weather over the continental United States? Explain how this wind belt pushes the air over the U.S.

The Prevailing Westerlies move from west to east and affect weather over the U.S.

19. Explain why a flight from Raleigh, NC to Los Angeles, California would take longer than the return flight from Los Angeles to Raleigh.

A flight from Raleigh to Los Angeles takes longer because the plane is moving against the jet stream (which moves from west to east). The return flight back is shorter because the plane is being pushed by the jet stream.

**7.E.1.6 Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.**

20. Define the term environmental steward.

An environmental steward is someone who helps the environment through recycling, conservation and regeneration.

21. How can students at DMS help with the issue of pollution? (Answers will vary)

Recycle bottles, cans, paper, etc...  
pick up trash around campus  
car pool  
walk to school

22. Why is it important for the United States to monitor air pollution levels in other countries?

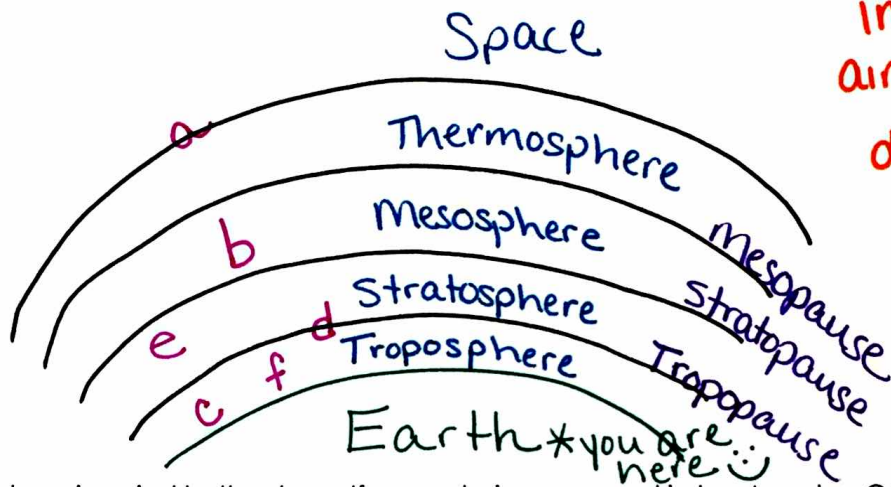
It is important for the U.S. to monitor air pollution in other countries because air pollution can travel to other areas because of the major wind belt systems. (Remember Chernobyl!)

23. Explain what effect would occur if there were an INCREASE in ground level ozone AND a DECREASE in upper atmosphere ozone.

If there was an increase in ground level ozone and a decrease in upper atmosphere ozone, people could experience increased health issues such as skin cancer, respiratory issues, heart problems, etc...

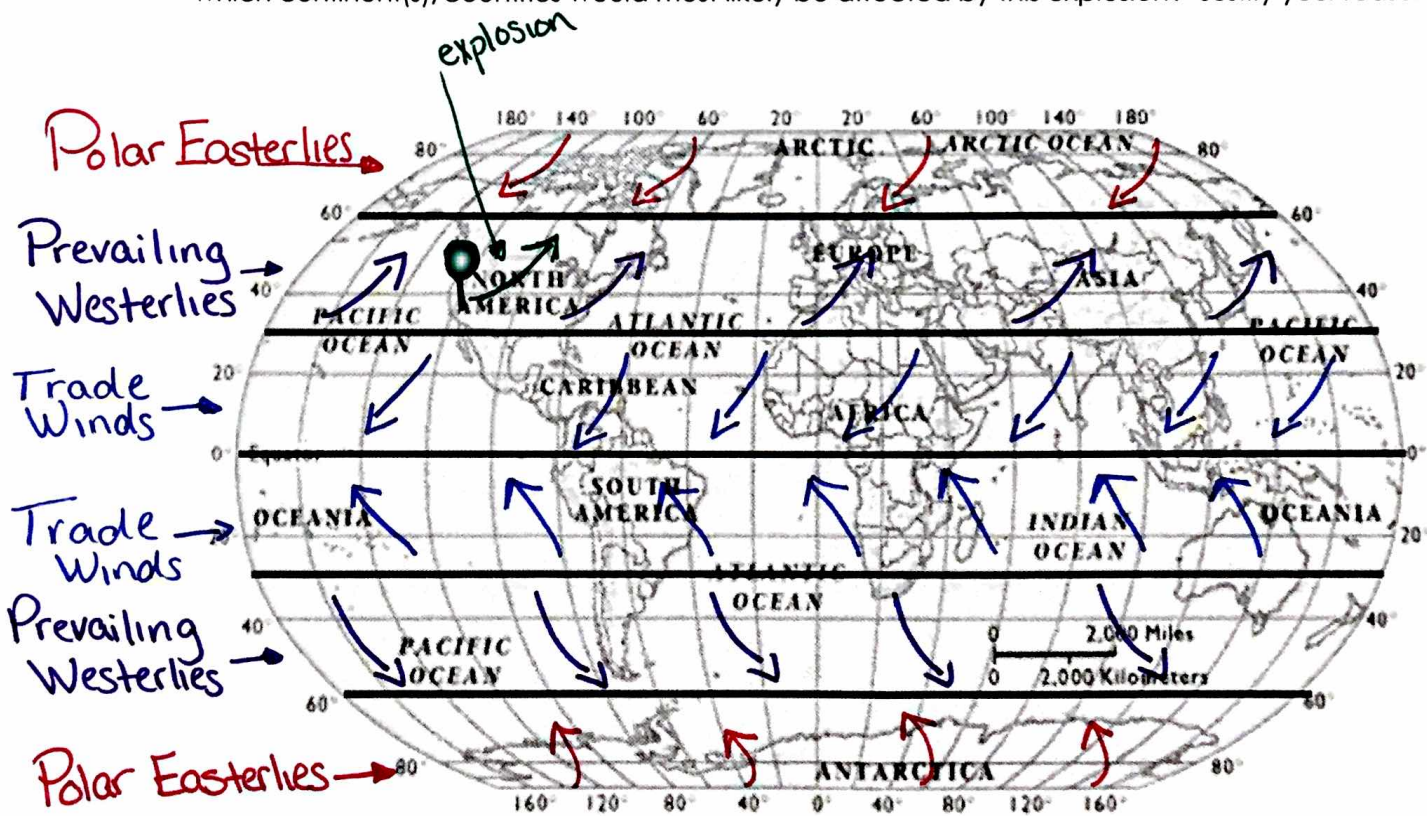


24. Create a drawing that shows the main layers AND pauses of the atmosphere, in order, starting at Earth. Identify which layer the following would be found...
- Space Shuttle
  - Meteors
  - Water Vapor
  - Airplane
  - Ozone Layer
  - Weather/Clouds
  - Describe what happens to pressure and density as you increase in altitude within the layers of the atmosphere.



As you increase in altitude, air pressure and density decrease.

25. Label each major wind belt system. If an explosion occurred in Los Angeles, California, which wind belt system would be responsible for carrying pollutants from the explosion? Over the next several weeks, which continent(s)/countries would most likely be affected by this explosion? Justify your reasoning.



The Prevailing Westerlies would carry the pollution east affecting much of the U.S. and Canada. These winds move from west to east.

26. Create a diagram that shows the cycling of water in and out of the atmosphere. Make sure to include the following processes...

- a. Infiltration
- b. Evaporation
- c. Transpiration
- d. Runoff
- e. Condensation
- f. Groundwater
- g. Precipitation
- h. Arrows showing the direction of movement through the cycle

