WS - Atmospheric Science Review

Origins of the Atmosphere - use the spaces at right to "fill in the blanks."

The gasses of our atmosphere were probably released at first by ____.	
2 billion years after the formation of the earth a group of bacteria began the chemical process of __, releasing the important gas _____ into the atmosphere.	
The early atmosphere was composed mostly of ____, a very important "greenhouse gas."	

Current Composition of the Atmosphere

- complete this chart

Gas(es)	% of atmo.	Fact/feature
	78%	
		produced by photosynthesis
	0.93%	is a noble gas
Trace		includes water, carbon dioxide, ozone and more

Give some examples of air pollution.

Structure of the Atmosphere

The atmosphere is divided into 5 layers, and the division into layers is determined by the temperature patterns of the layers. *The layers are troposphere, stratosphere, mesosphere, thermosphere and exosphere.* Select the layer(s) that apply to the statement or questions by highlight, **bold** or underline.

Layer that contains the most gas, weather and highest air pressure	tropo- strato- meso- thermo- exo-
The ozone layer is found here	tropo- strato- meso- thermo- exo-
Temperatures increase as you go up (2)	tropo- strato- meso- thermo- exo-
Temperatures decrease as you go up (3)	tropo- strato- meso- thermo- exo-
The coldest layer	tropo- strato- meso- thermo- exo-
Contains the ionosphere, which glows with aurora	tropo- strato- meso- thermo- exo-
Layer that fades away into space	tropo- strato- meso- thermo- exo-
The hottest layer	tropo- strato- meso- thermo- exo-

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The Ozone Layer - enter any/all letters that apply from the list. Some may be used more than once.

	Ozone		**A. Three atoms of oxygen** **B. Found in aerosol cans and air conditioners** **C. Two atoms of oxygen** **D. Causes cancers, mutations, and eye damage** **E. Is a poisonous gas** **F. Released by the sun** **G. Destroys ozone** **H. Found at the north and south poles** **I. Absorbs UV radiation**
	CFCs		
	Oxygen molecule		
	UV Radiation		
	Ozone hole		

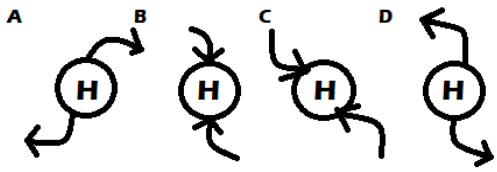
Energy Transfer - Conduction, Convection, or Radiation? ***select your choice*** by highlight, **bold** or underline.

Energy transfer in the form of waves	Conduction Convection Radiation
The method used to transfer power from the turbine to your house	Conduction Convection Radiation
Energy transfer caused by differences in density	Conduction Convection Radiation
Energy transfer due to direct contact	Conduction Convection Radiation
The reason cold water sinks to the seafloor or hot magma rises	Conduction Convection Radiation
How the sun's full spectrum of energy reaches the earth	Conduction Convection Radiation

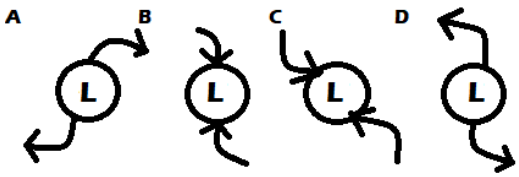
Comparison of Atmospheres -*select your choice* by highlight, **bold** or underline.

Just like the story of Goldilocks, the temperature of Earth's atmosphere is (too cold / just right / too hot) This is compared to the planet Venus which is (too cold / just right / too hot) and to the planet Mars that is (too cold / just right / too hot). Mars has a (thin / moderate / dense) atmosphere, while the atmosphere of Venus is (thin / moderate / dense). Both of these planets' atmospheres contain a significant percentage of the gas (carbon dioxide / oxygen / nitrogen), though the amount of that gas in the Martian atmosphere is (much less / much more). Venus also has much (thinner / thicker) clouds, which (absorbs / reflects) energy.

Wind



Which diagram shows the proper rotation and direction of the wind around a High pressure system? -Assume northern hemisphere	



Which diagram shows the proper rotation and direction of the wind around a Low pressure system? -Assume northern hemisphere	

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Just like with ocean currents, global winds are deflected by the rotation of the earth, creating large scale wind patterns. What is the name of this force/effect that causes turning winds?

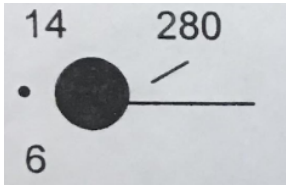
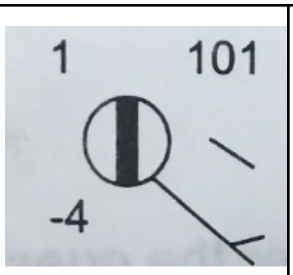
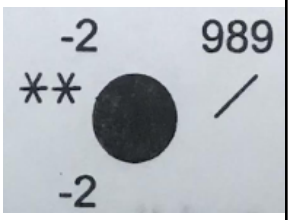
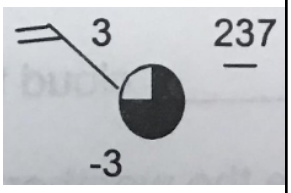
Global Winds - *Complete the chart by selecting your choice* by highlight, **bold** or underline.

Wind Name	Wind direction *select one of each row*	Latitude range *both north & south - select 1*
Prevailing Westerlies	Towards Equator / Away from equator / None From the east / From the west / None	(around 0°) (>0°-23°) (23°-66°) (66°-90°)
Doldrums	Towards Equator / Away from equator / None From the east / From the west / None	(around 0°) (>0°-23°) (23°-66°) (66°-90°)
Polar Easterlies	Towards Equator / Away from equator / None From the east / From the west / None	(around 0°) (>0°-23°) (23°-66°) (66°-90°)
Trade Winds	Towards Equator / Away from equator / None From the east / From the west / None	(around 0°) (>0°-23°) (23°-66°) (66°-90°)

High level “rivers of wind” that are found along the borders of global wind zones are called

Station Models and Weather Maps

Interpret these station models: enter the data into the chart (**Station Model Info Sheet**)

Model				
Temp				
Dew pt				
Wind Dir				
Wind Sp				
Pressure				
Trend				
Cloud				
Precip.				

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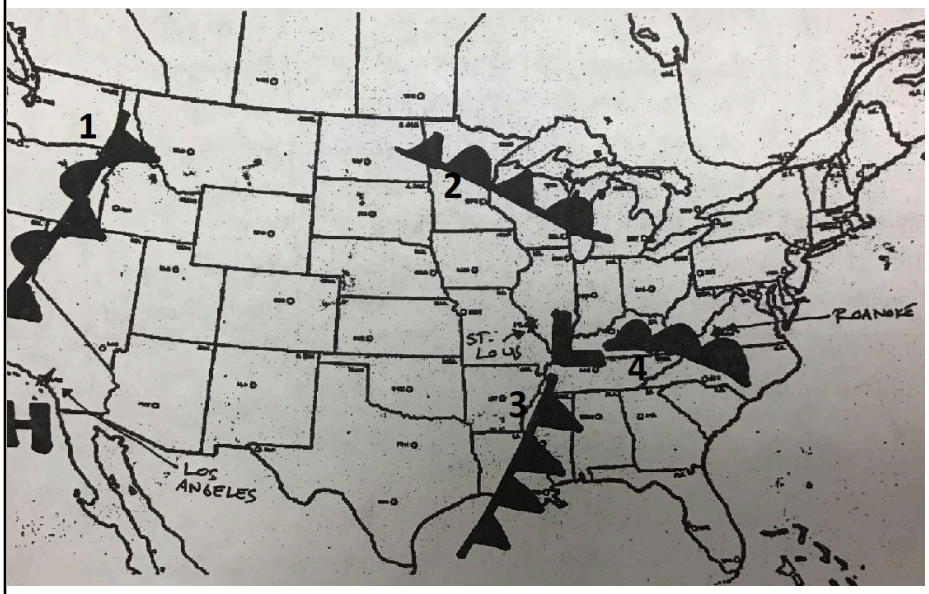
Distinguish between an isotherm and an isobar. What do they have in common and what is their major difference?

Use this weather map to answer the questions or *select your choice* by highlight, **bold** or underline



Identify each type of front:

1.

2.

3.

4.

Which city is probably experiencing clear skies?	Los Angeles or St. Louis
What change in temperature would you expect soon in Roanoke?	Warming or Cooling

Severe Weather

What type of cloud and front do we associate with thunderstorms?

Why does lightning form?

What causes thunder?

What type of pressure is associated with tornadoes and hurricanes?

Describe a hurricane.