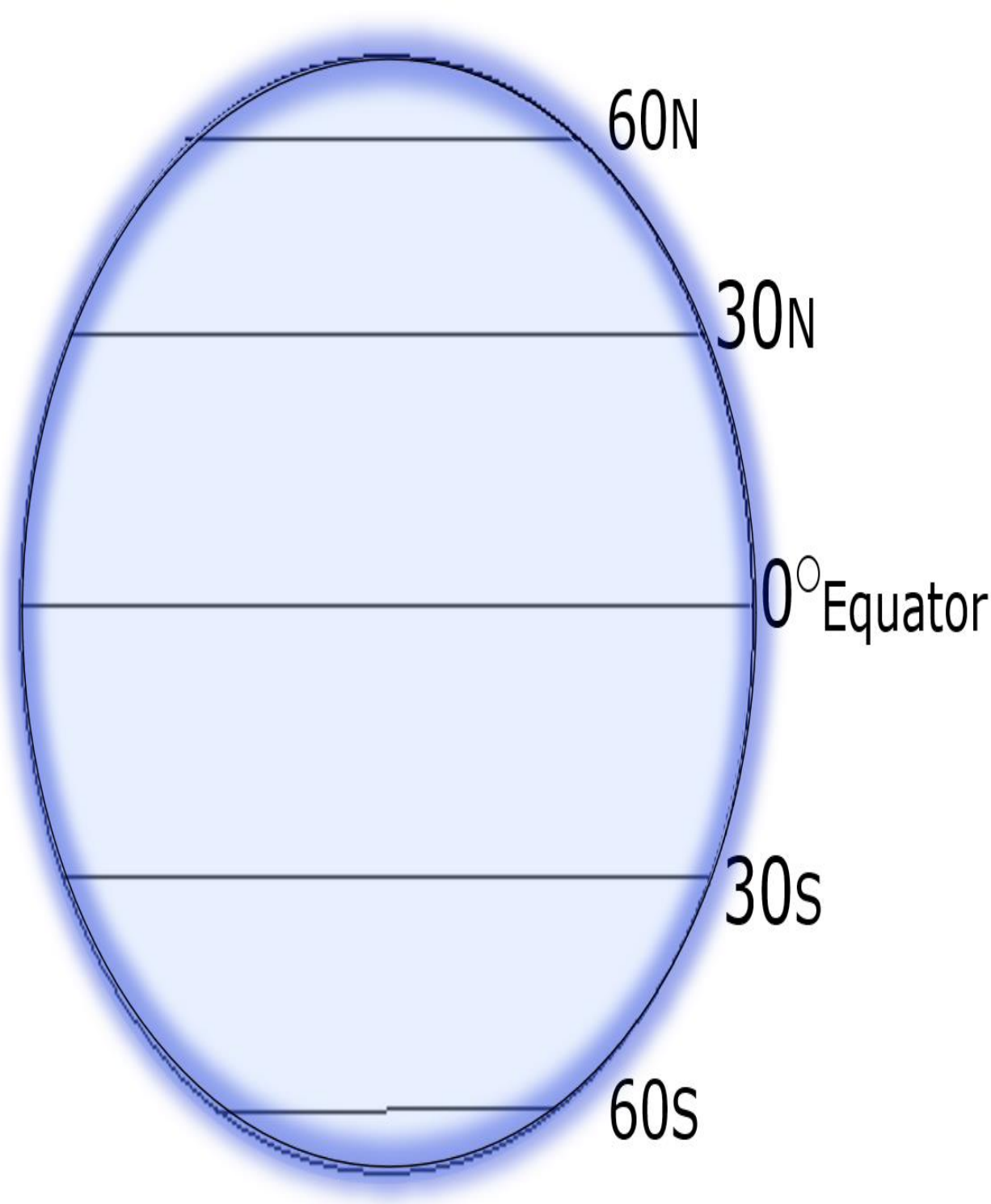
Part 3 Winds

Part 3 Lesson 1 Global Winds

Name:

Due:



Wind

The movement of air, from _____ pressure to _____ pressure.

The wind is caused by the different _____ (and therefore air pressure differences) around a planet - this is caused by the _____.

Temperature differences over the land and over the _____.

The _____ of the land (Mountain Effect)

Part 3 Lesson2 Coriolis Force, Jet Stream, Sea Breeze, Land Breeze

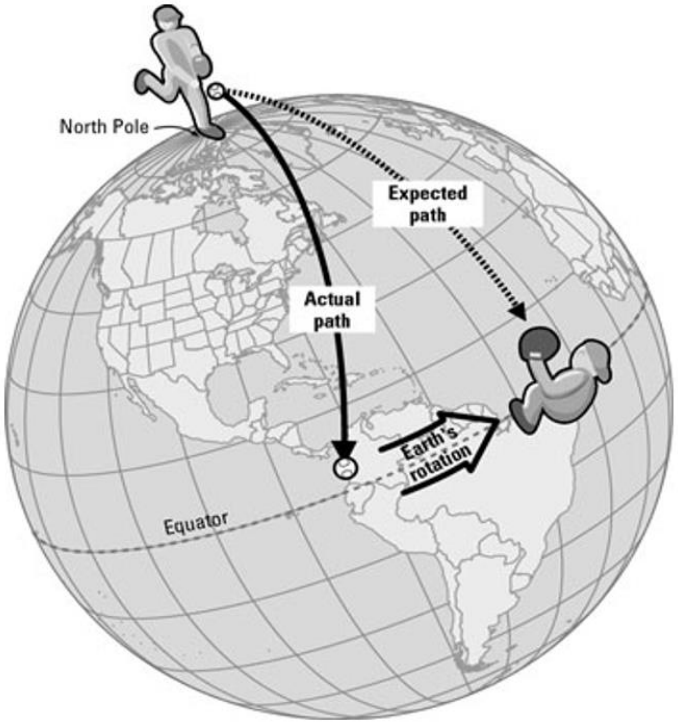
How did a spinning system change the food coloring in the water / "weather patterns".

The Coriolis Force: An _____ force, relative to the earth's surface, that causes deflection of moving objects. A rotating body deflects.

- Right in the Northern Hemisphere and to the left in the southern hemisphere.

True or False? Something near the equator is traveling faster than something near the poles?
Answer=_____

Explain the Coriolis Force as if you were a giant playing catch on a rotating earth?
Why is the actual path of the ball different than the expected path?

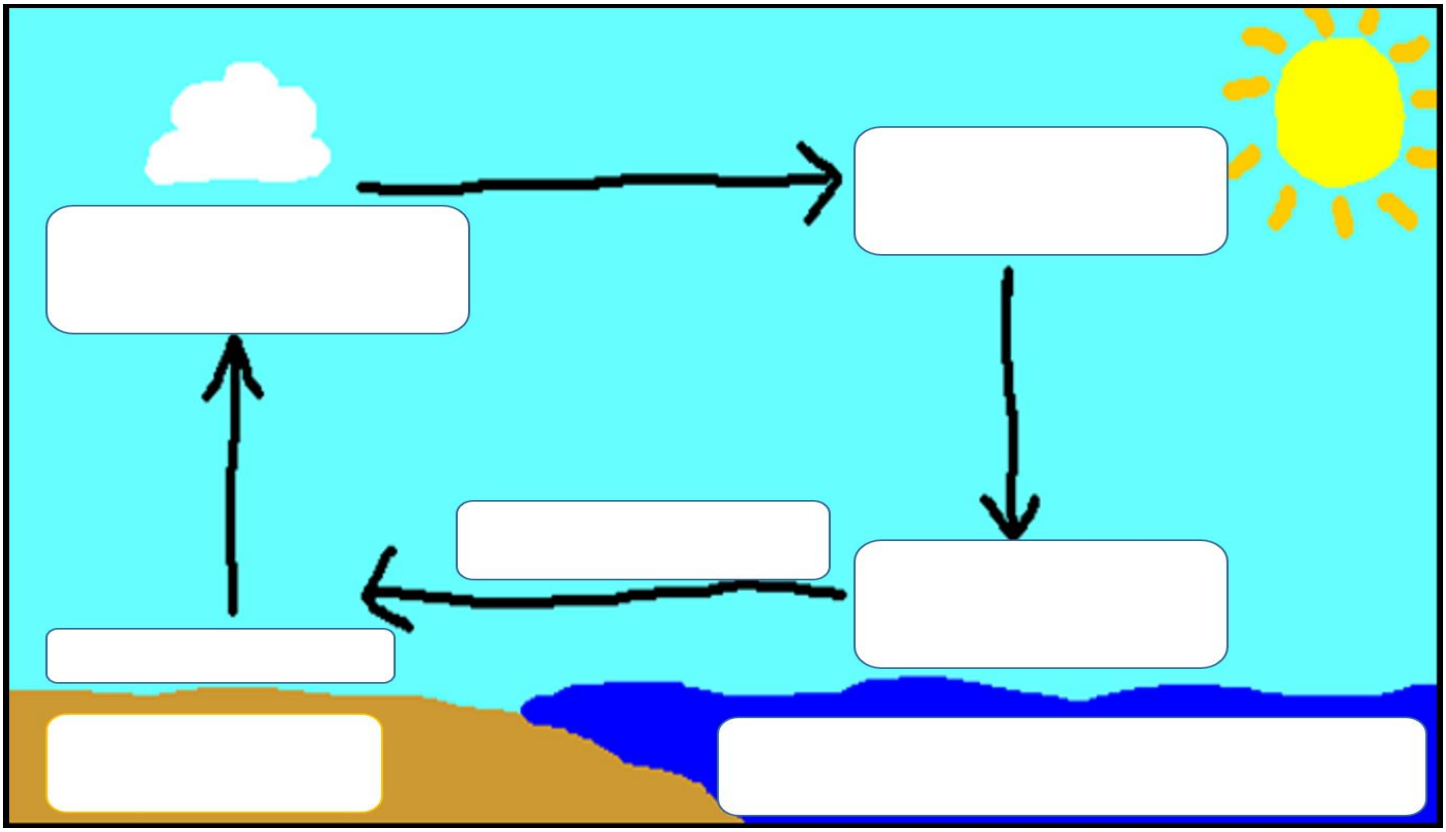


Review! Wind travels from areas of _____ pressure to areas of _____ pressure! The rotating earth/ Coriolis Force causes those winds to deflect / curve

The Jet Stream: Any of the _____-speed, high-_____ air currents that circle the earth in a westerly direction.

Sea Breeze (Day)- The breeze that blows from the ____ toward the _____ during the day,

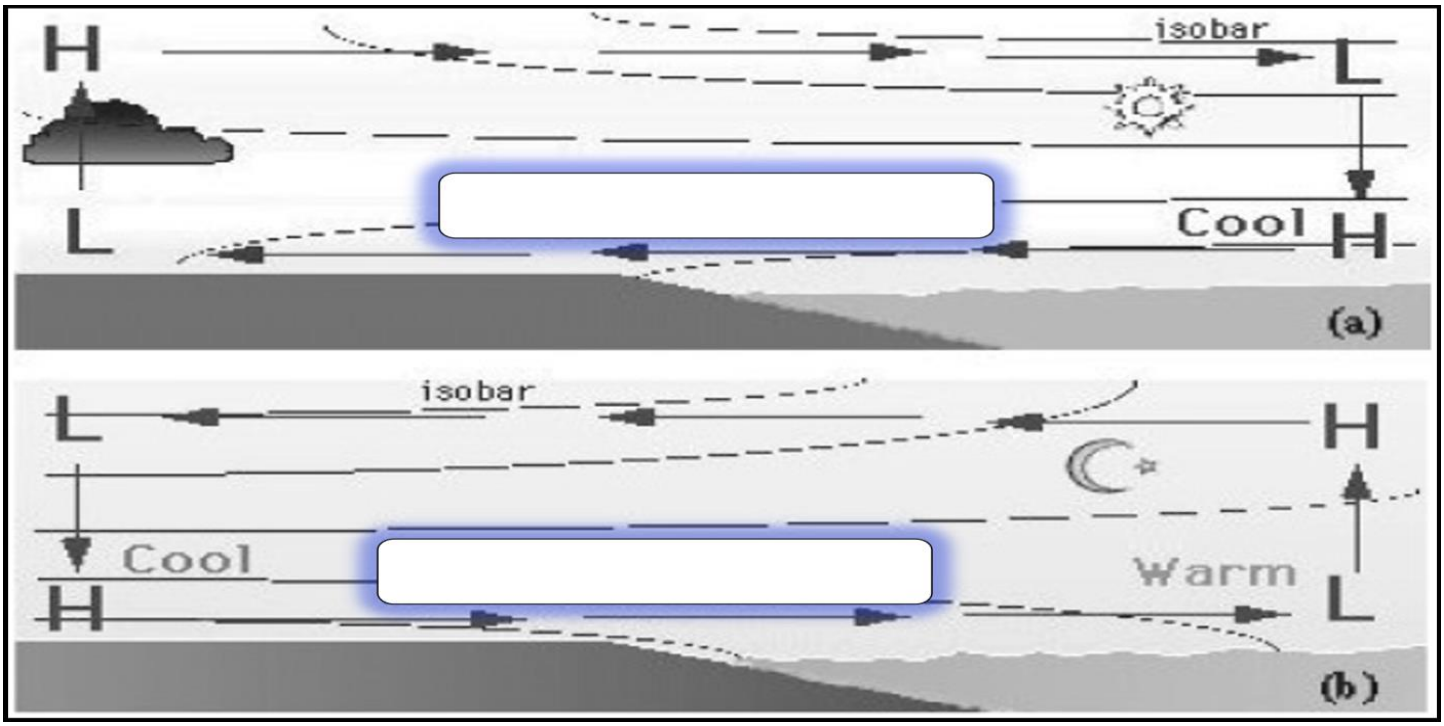
Describe a sea breeze below: Word Bank: Sea Breeze, Cooler Air Sinks, Rising Warm Air forms clouds, Land Heats Up, Warm Air Rises Over Land, Ocean is Cooler and Chills Air



Land Breeze (Night): The breeze that blows from the _____ toward the _____.

- High specific heat of water slowly releases stored energy from the _____ during the _____ making the water warmer than the land.

Which is a sea breeze? and which is a land breeze below?

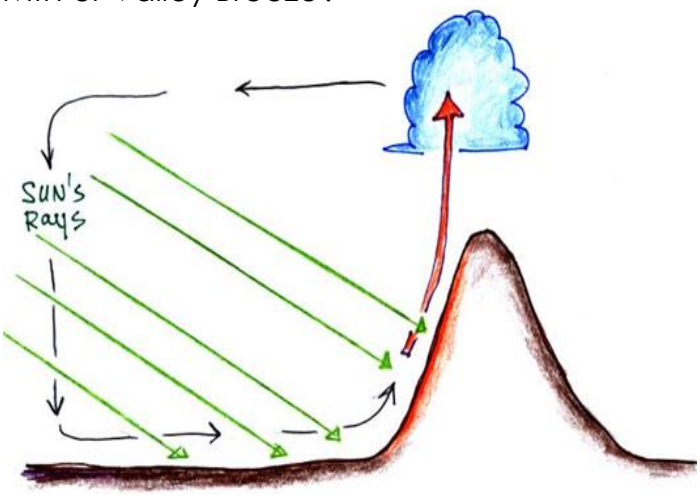


What is wind in more than 15 words?

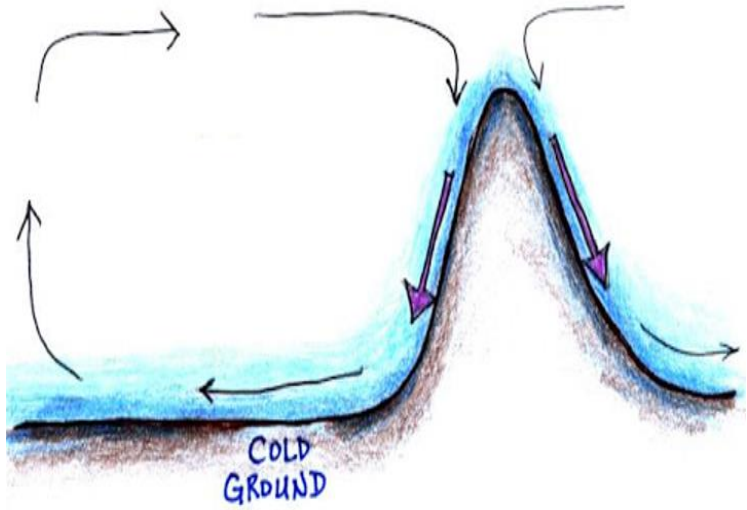
Part 3 Lesson 3 Mtn Winds, Wind Chill, Hypothermia, Hyperthermia

Valley Breeze: _____ can create strong winds. Warm air _____ Mtn. (day)
Mountain Breeze (cool _____ down at _____).

Mtn or Valley Breeze?



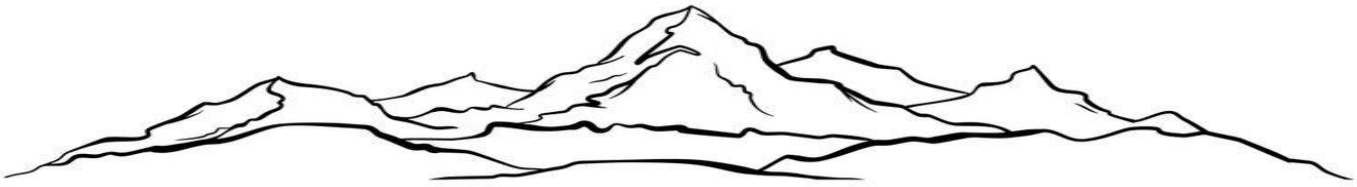
Mtn or Valley Breeze?



Mountain Rain Shadow Effect: A rain shadow is a _____ area on the leeward side of a mountainous area.

The mountains _____ the passage of rain-producing weather systems and cast a "shadow" of dryness behind them.

Use the mountains below to draw Mtn Rain Shadow Effect? Use some color to represent the vegetation.



Wind Chill: The cooling effect of _____ and _____ combined. The higher the wind, the cooler it gets.

Use the chart below to answer the following questions.

Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times 30 minutes 10 minutes 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Use the chart on the prior page to answer the questions below.

What is the wind chill if the temperature is zero degrees and the wind is 20 mph?_____

What is the wind chill if the temperature is 20 degrees and the wind is 40 mph?_____

What is the wind chill if the temperature is 40 degrees and the wind is 60 mph?_____

What is the wind chill if the temperature is -45 degrees and the wind is 15 mph?_____

How fast will frostbite occur if its -15 degrees F˚ and the winds are moving at 25 mph? _____

How fast will frostbite occur if its -45 degrees F˚ and the winds are moving at 25 mph? _____

How fast will frostbite occur if its 5 degrees F˚ and the winds are moving at 30 mph? _____

What is frostbite? And why should you care about it?

Hypothermia: A _____ in the core body temperature to a level at which normal muscular and brain functions are impaired.

What are some causes of Hypothermia? Provide me some safety tips.

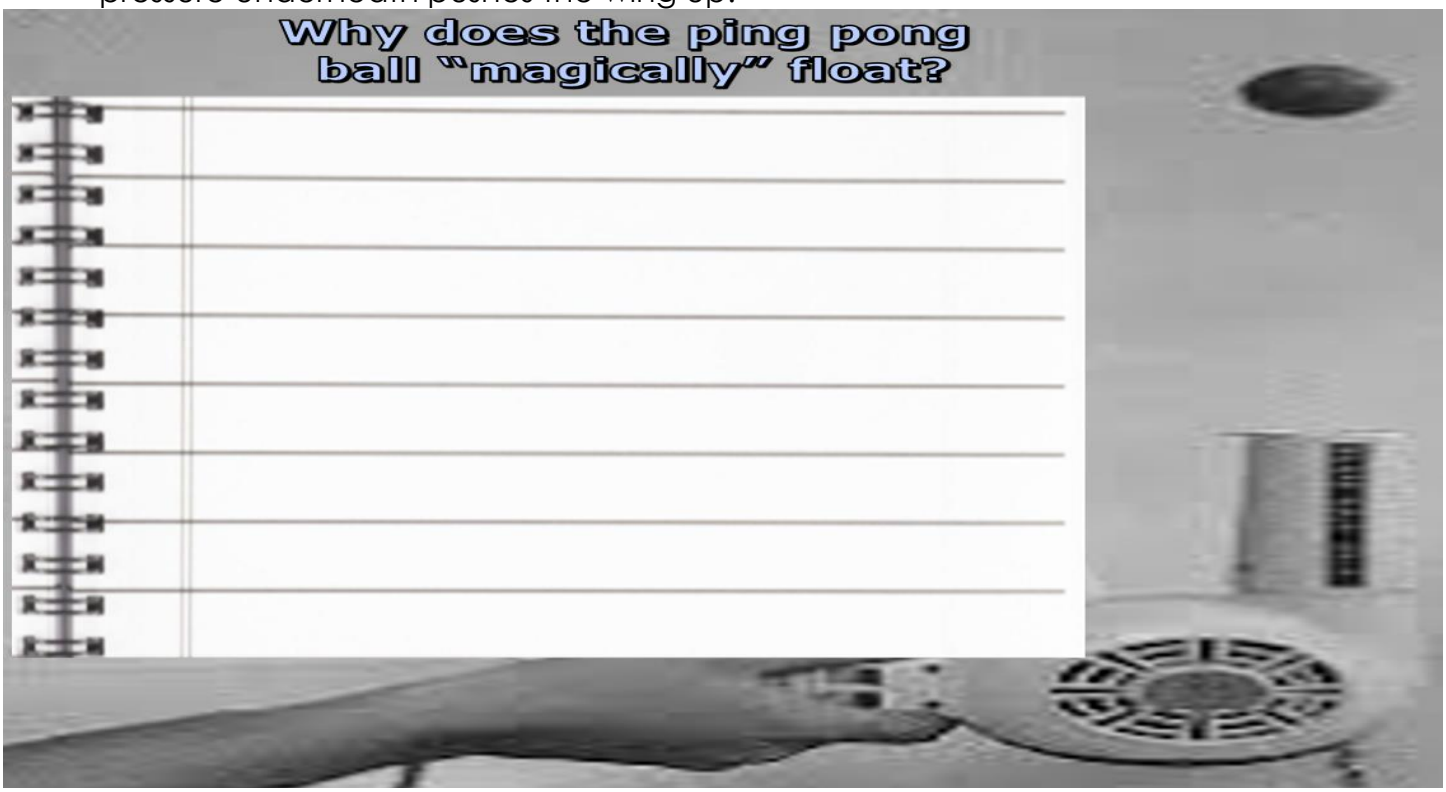
Hyperthermia: Having a body temperature that is too _____, causes heart failure, among other problems and death.

What are some ways to recognize and avoid hyperthermia?

Part 3 Lesson 4 Severe Weather Systems Project.

Flight: A Simple combination of Bernoulli's Principle and Newtons 1st Law of Motion. 😊

Air flows faster over the top of the wing than the bottom making less pressure, higher pressure underneath pushes the wing up.



Name of your groups weather disaster / dangerous weather system? _____

Weather System PowerPoint requirements.

A. Information about how your weather disaster is formed.

B. Precautionary measures and Safety procedures that should be taken.

C. Weather during and after the storm / disaster passes.

D. What types of weather symbols do we see on weather maps when one is here? How are they predicted?

E. Case Study- This means you have to find an example of when one of these disasters hit. You need to include information about where it occurred, what year, what were the effects / damages, and what people did or learned from the experience.

Cite Your Source.

Author Last Name, First initial. (Year, Month Date Published). *Title of web page*. Name of Website. URL

How is your weather disaster formed? Time to research.

What are the effects / dangers / during the weather system and after? Weather Symbols?

What the precautionary measures and safety procedures to should be taken before, during, and after the dangerous weather system?

Case Study- This means you have to find an example of when one of these disasters hit. You need to include information about where it occurred, what year, what were the effects, and what people did or learned from the experience.

Part 3 Lesson 5 Dangerous Weather Systems

Describe two severe weather patterns. Please include air pressure in both responses. A strong answer will include how the severe weather forms, dangers / destructive forces, and safety concerns.

Name of Dangerous Weather Pattern and Visuals…	Information of a Dangerous Weather Pattern
Information of Dangerous Weather Pattern	Name of Dangerous Weather Pattern and Visuals…

Name of Dangerous Weather Pattern and Visuals…	Information of a Dangerous Weather Pattern

Information of Dangerous Weather Pattern	Name of Dangerous Weather Pattern and Visuals…

Part 3 Lesson 6 Light and Temperature

Light: An _____ wave.

Black _____ all colors of the spectrum while _____ reflects.

Thermometer	Starting Temp	5 min	10 min	15 min	20 min
White					
Black					

Which color will absorb more light and thus have a higher temperature? Use data in your response.

Which color will reflect more light and thus have a cooler temperature. Use data in your response.

Albedo: The _____ of a surface.

Dark colored materials heat up _____ than light colored materials. So air above dark colored surfaces heats up quicker. Dark absorbs more light.

Rather than thinking of black as absorbers of heat, darker colors are better absorbers of _____ and thereby become better _____ of heat.

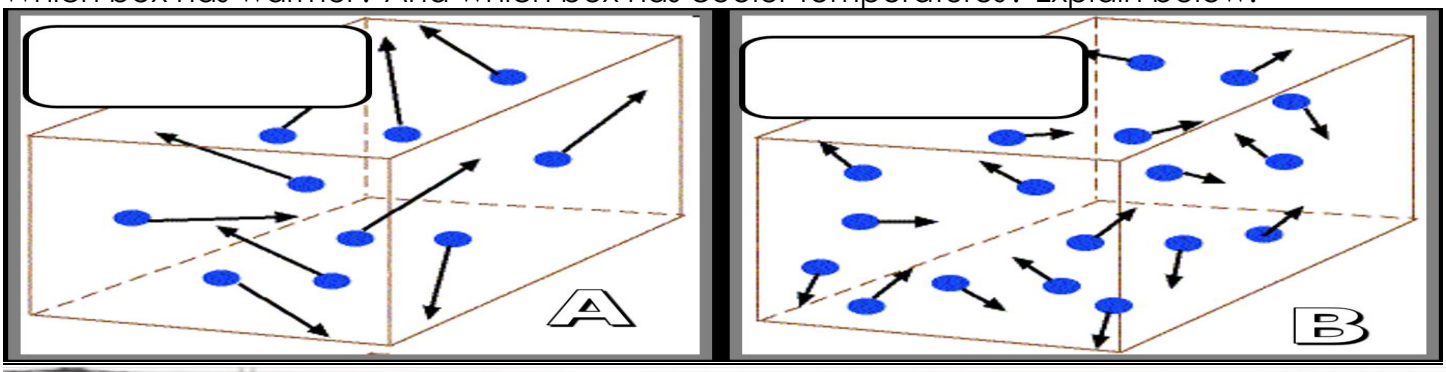
Temperature: A measure of the average _____ (motion) of individual molecules in matter.

Thermometer: A measure of the heat from _____and _____ liquids or coils.

Temperature: A measure of the average _____(_____) of individual molecules in matter.

- 100 degrees Celsius = Water _____
- 0 degrees Celsius = Water _____

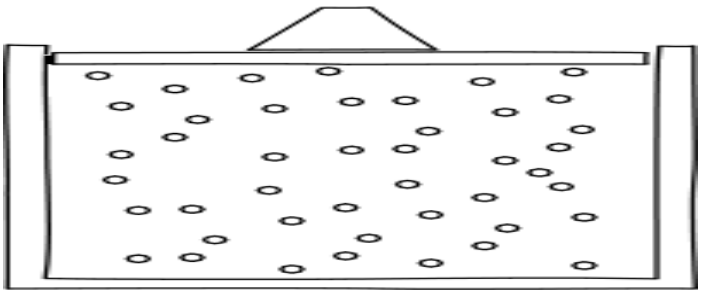
Which box has warmer? And which box has cooler temperatures? Explain below.



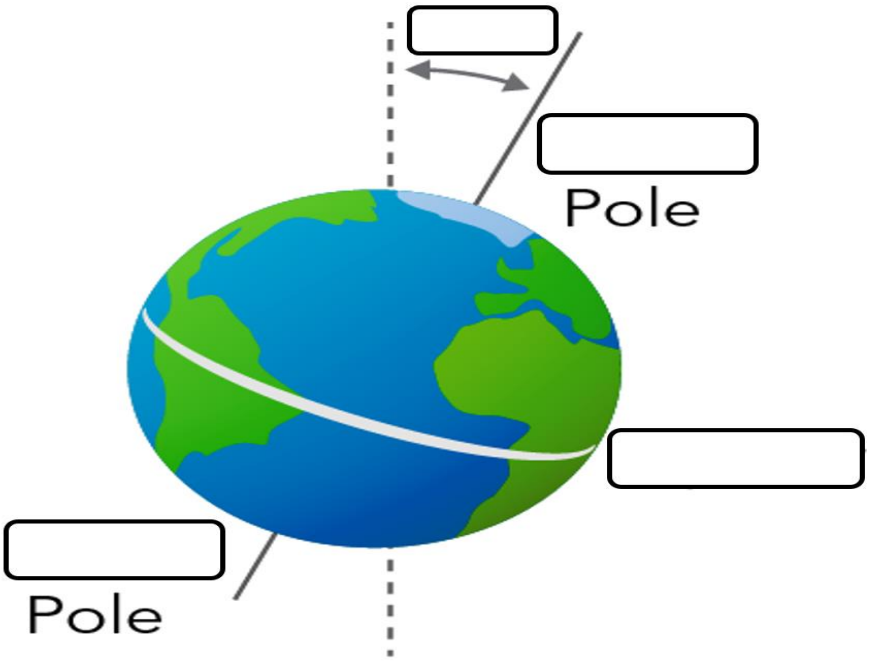
To convert 95 degrees Fahrenheit temperatures into Celsius: – Begin by subtracting 32 from the Fahrenheit number. – Divide the answer by 9. – Then multiply that answer by 5. Show Work below, Answer=	Convert 55 degrees Fahrenheit into degrees Celsius. – Begin by subtracting 32 from the Fahrenheit number. – Divide the answer by 9. – Then multiply that answer by 5. Show work below, Answer=
Because many people have never learned the metric system. Please convert 20 Degrees Celsius into Fahrenheit: – Begin by multiplying the Celsius temperature by 9. – Divide the answer by 5. – Now add 32. Show Work below, Answer=	Please convert 30 degrees Celsius into degrees Fahrenheit. – Begin by multiplying the Celsius temperature by 9. – Divide the answer by 5. – Now add 32. Show Work below, Answer=

Kelvin Scale: Zero Kelvin is absolute _____ where molecular motion _____. That is the coldest something can be. (Never been reached.)

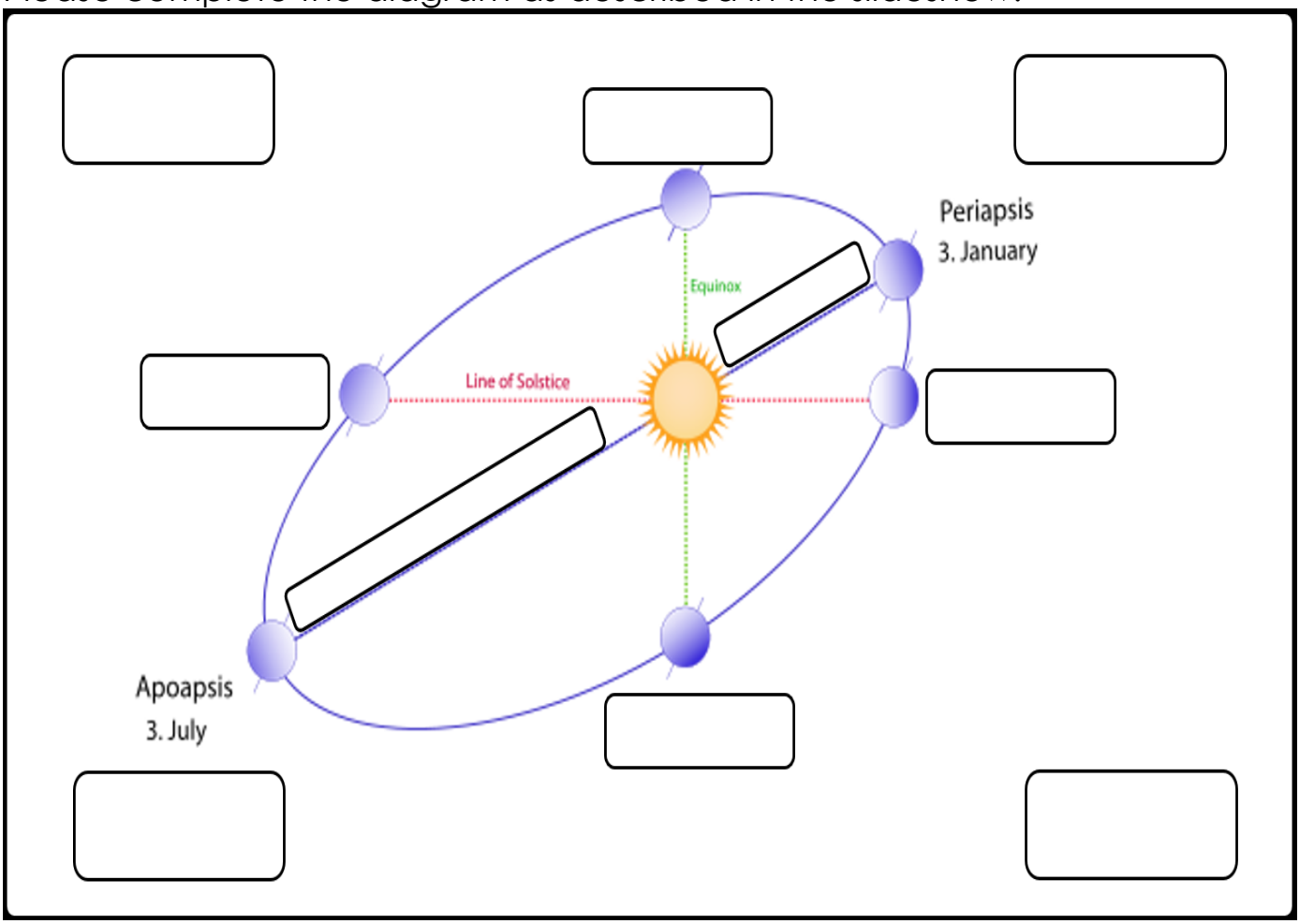
- Water freezes at 273.16K; water boils at 373.16K. K = C + 273.16°

What is temperature? 	What reflects light below, and what absorbs light? 

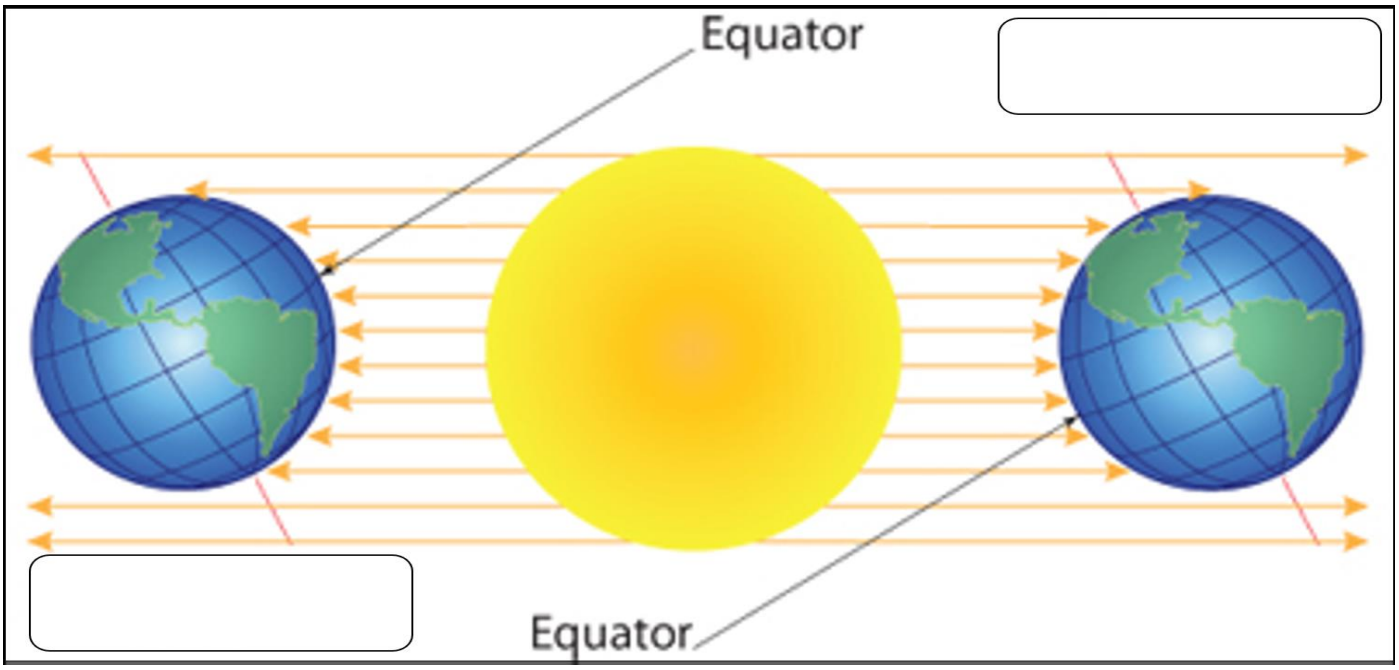
Part 3 Lesson 7 Axial Tilt



Please complete the diagram as described in the slideshow.



Which is the Northern and Southern Hemispheres? Which is winter? And Which is Summer?



The tilt of the earth's axis _____ degrees

- Summer = Northern Hemisphere is tilted into _____ direct light.
- Winter = Northern Hemisphere tilts _____ from the direct light.

Part 3 Lesson 8 Solstice / Equinox

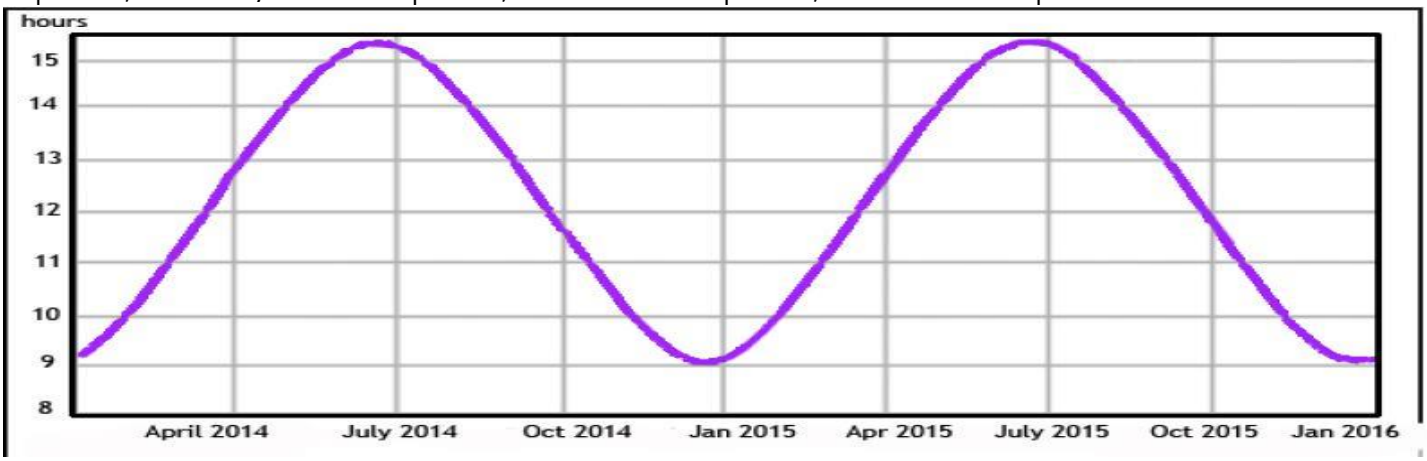
Solstice: Either the _____ day of the year (winter solstice) or the _____ day of the year (summer solstice-June 20, Winter solstice Dec 21st)

When is the summer and winter solstice, and the March/Vernal and Fall/Autumnal equinox below. The line represents the length of the day in New York City. There's two for each so cross off from the word bank below.

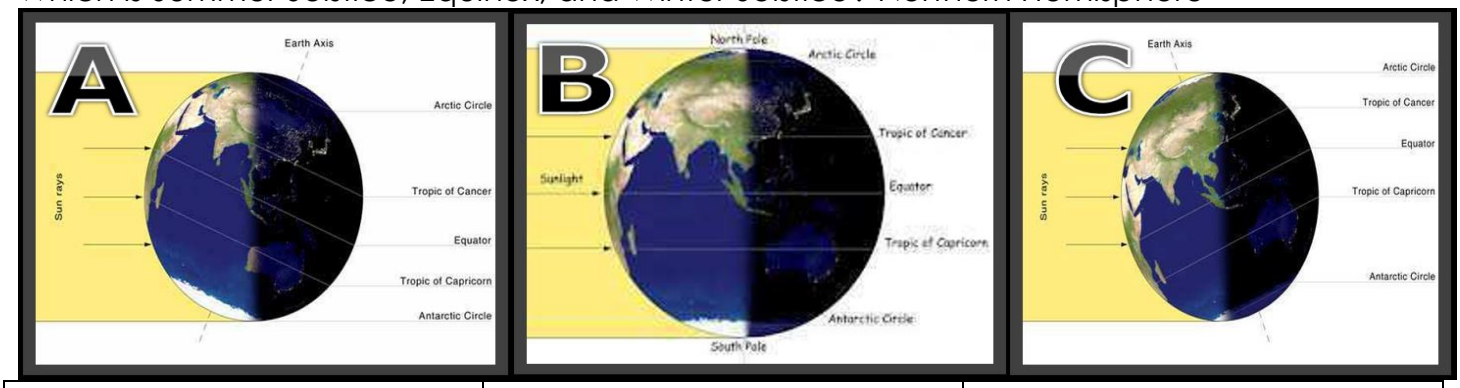
Equinox: Either of the two times each year (about March ____ and September ___) when the sun crosses the equator.

- Day and night are everywhere on earth _____ in length.

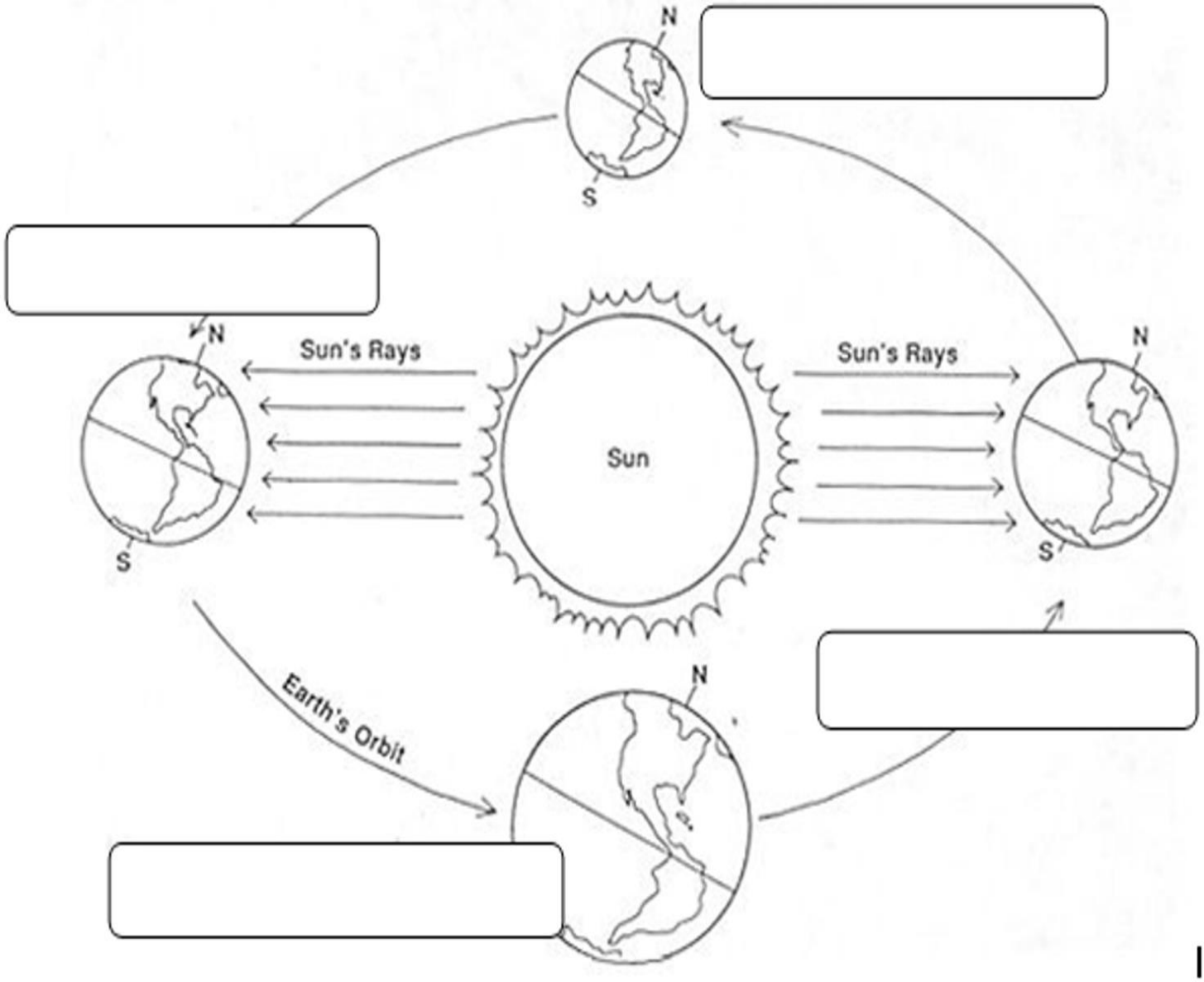
☼Summer Solstice, ☼Summer Solstice, ☼Winter Solstice, ☼Winter Solstice, *March/Vernal Equinox, *March/Vernal Equinox, *Autumnal Equinox, *Autumnal Equinox

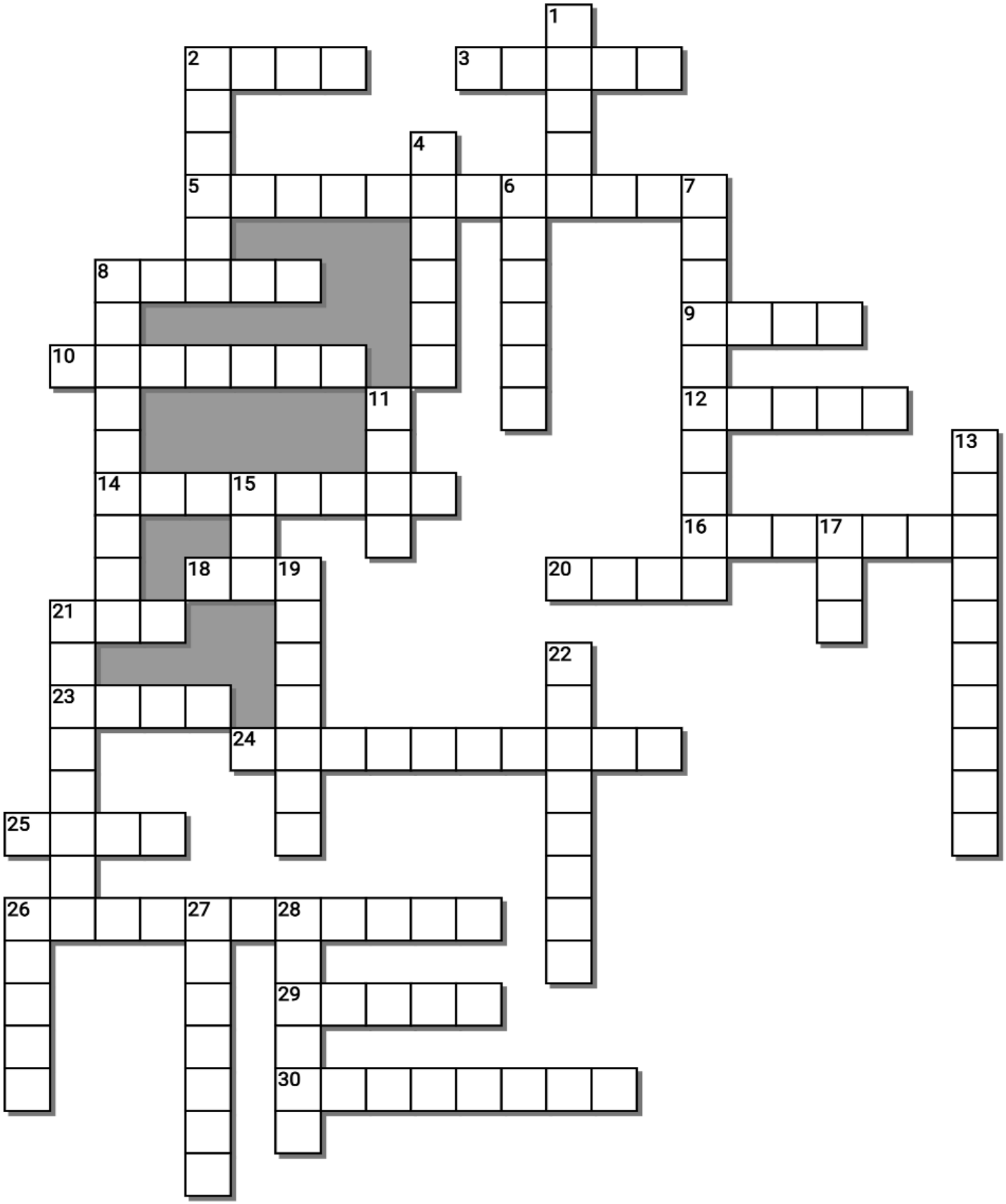


Which is Summer Solstice, Equinox, and Winter Solstice? Northern Hemisphere



Please label the diagram below. Word Bank (Summer Solstice, Equinox, Winter Solstice, Equinox) for the Northern Hemisphere. Also use some crayons to tell me which hemisphere has summer and winter (orange = summer, blue = winter) for the winter and summer solstice.





Teacher can remove work bank to make more difficult.

Possible Answers

ALBEDO, BLACK, BLIZZARD, BOILS, CORIOLIS, DOLDRUMS, EQUINOX, FREEZES, HAIL, HORSE, HURRICANE, ICE, JET, KELVIN, LAND, LIGHT, MICROBURST, RAIN, SEA, SEASONS, SOLSTICE, SOLSTICE, SUMMER, SUN, TEMPERATURE, THUNDERSTORM, TILT, TORNADO, TRADE, WESTERLIES, WHITE, WIND, WIND, WINTER, EASTERLIES

Note- Cross off "Black" for number 3 ACROSS

Across

2. The movement of air, from high pressure to low pressure.
3. This color Black reflects all colors of the spectrum
5. A storm with thunder and lightning as well as heavy rain or hail
8. _____ Latitudes: the subtropical latitudes between 30 and 35 degrees both north and south where Earth's atmosphere is dominated by the subtropical high, an area of high pressure, which suppresses precipitation and cloud formation, and has variable winds mixed with calm winds.
9. Mountain _____ Shadow Effect: A dry area on the leeward side of a mountainous area. The mountains block the passage of rain-producing weather systems and cast a "shadow" of dryness behind them
10. 0 degrees Celsius = Water _____
12. This color absorbs all colors of the spectrum .
14. The _____ Force: An apparent force, relative to the earth's surface, that causes deflection of moving objects.
16. These are caused are caused by the tilt of the Earth's rotational axis away or toward the sun as it travels through its year-long path around the sun.
18. The _____ Stream: Any of the high-speed, high-altitude air currents that circle the Earth in a westerly direction.
20. The _____ of the earth's axis 23.5 degrees
21. _____ Breeze (Day)- The breeze that blows from the sea toward the land during the day
23. _____ Breeze (Night): The breeze that blows from the land toward the sea.
24. The polar _____ are the dry, cold prevailing winds that blow from the high-pressure areas of the polar highs at the north and south poles towards low-pressure areas within the Westerlies at high latitudes.
25. _____ Chill: The cooling effect of wind and temperature combined. The higher the wind, the cooler it gets.
26. A measure of the average kinetic energy (motion) of individual molecules in matter.
29. 100 degrees Celsius = Water _____
30. The "_____" is a popular nautical term that refers to the belt around the Earth near the equator where sailing ships sometimes get stuck on windless waters.

Down

1. An Energy Wave
2. Northern Hemisphere tilts away from the direct light.
4. _____ Scale: O K is absolute zero where molecular motion stops. That is the coldest something can be. (Never been reached.)
6. Northern Hemisphere is tilted into more direct light.
7. A small, very intense downdraft that descends to the ground resulting in a strong wind divergence
8. A rotating tropical storm with severe winds.
11. Pellets of frozen rain which fall in showers from cumulonimbus clouds.
13. Prevailing _____:Are prevailing winds from the west toward the east in the middle latitudes between 30 and 60 degrees latitude. They originate from the high-pressure areas in the horse latitudes and trend towards the poles and steer extratropical cyclones in this general manner.
17. The wind is caused by the different temperatures (and therefore air pressure differences) around a planet - this is caused by the _____.
19. A mobile, destructive vortex of violently rotating winds having the appearance of a funnel-shaped cloud and advancing beneath a large storm system.
21. The _____ that marks the onset of winter, at the time of the shortest day, about December 22 in the northern hemisphere and June 21 in the southern hemisphere.
22. A severe snowstorm with high winds and low visibility.
26. _____ Winds: a wind blowing steadily towards the equator from the northeast in the northern hemisphere or the southeast in the southern hemisphere, especially at sea. Two belts of trade winds encircle the earth, blowing from the tropical high-pressure belts to the low-pressure zone at the equator
27. There are only two times of the year when the Earth's axis is tilted neither toward nor away from the sun, resulting in a "nearly" equal amount of daylight and darkness at all latitudes. These events are referred to as _____.
28. _____: The reflectiveness of a surface.

Part 3 REVIEW GAME

Name:

1-20 = 5 pts Part 3 Lesson 9

Due: Today

*20-*25 * = Bonus + 1 pt,

(Secretly write owl in correct space +1 pt)

Score ____ / 100

Final Question = 5 pt wager

MY DEAR WINDY	SPINORAMA	A CHILL IN THE AIR	HOT TAMALE	FLY BYE Bonus round 1pt each
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

Final Question Wager ___ /5 Answer: _____

Part 3 Winds

Name:

Due:

Part 3 Lesson 1 Global Winds

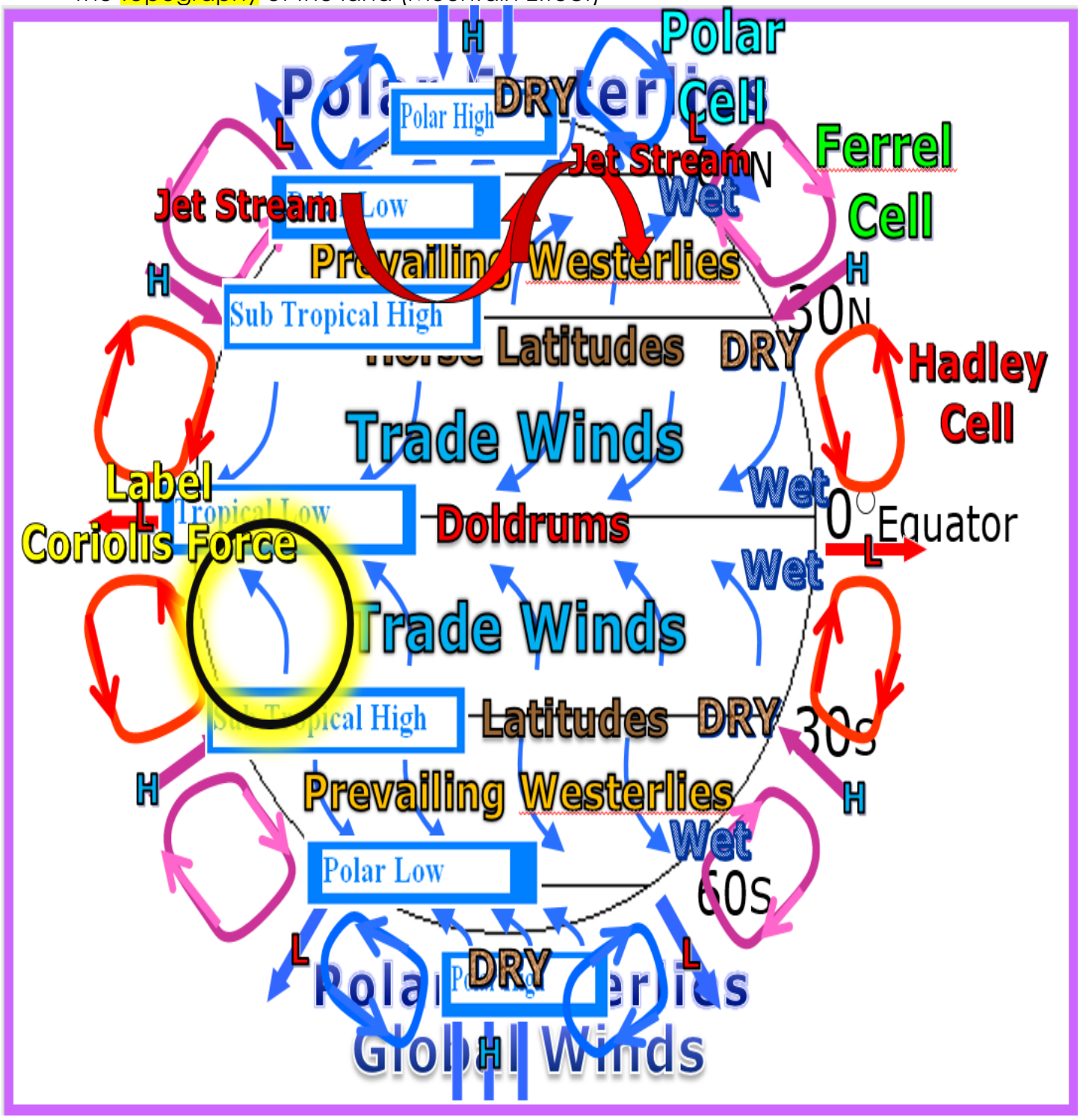
Wind

The movement of air, from high pressure to low pressure.

The wind is caused by the different temperatures (and therefore air pressure differences) around a planet - this is caused by the Sun.

Temperature differences over the land and over the sea.

The topography of the land (Mountain Effect)

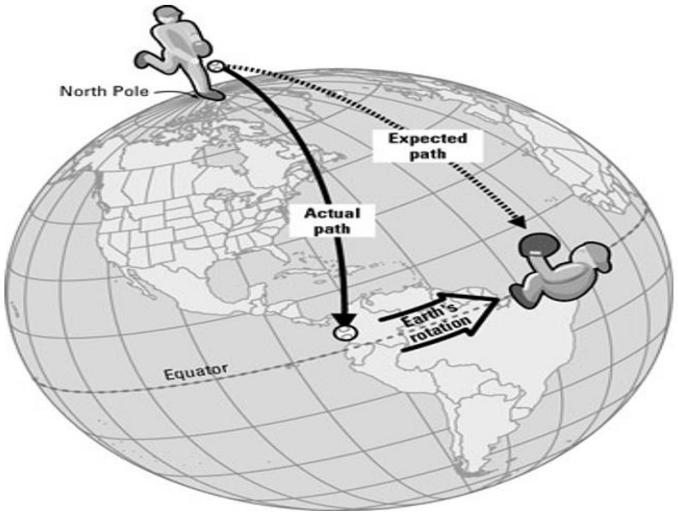


Part 3 Lesson2 Coriolis Force, Jet Stream, Sea Breeze, Land Breeze

The Coriolis Force: An apparent force, relative to the earth's surface, that causes deflection of moving objects. A rotating body deflects.

- Right in the Northern Hemisphere and to the left in the southern hemisphere.

Explain the Coriolis Force as if you were a giant playing catch on a rotating earth?
Why is the actual path of the ball different than the expected path?
The Coriolis Force is an invisible force that appears to deflect the wind is the Coriolis force. The Coriolis force applies to movement on rotating objects. It is determined by the mass of the object and the object's rate of rotation. The Coriolis force is perpendicular to the object's axis. The Earth spins on its axis from west to east. If you were to throw a ball from the North Pole to the Equator, the actual path would be a long and curved path to the West.

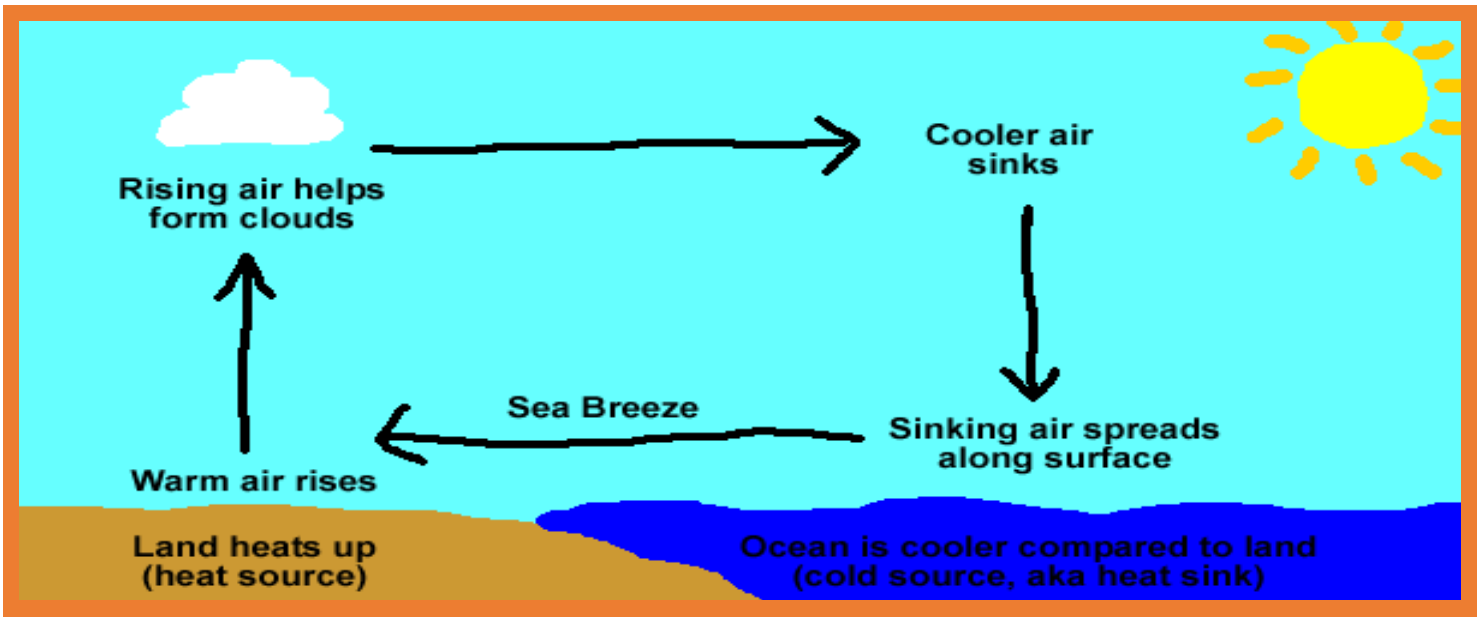


Review! Wind travels from areas of high pressure to areas of low pressure! The rotating earth/ Coriolis Force causes those winds to deflect / curve

The Jet Stream: Any of the high-speed, high-altitude air currents that circle the earth in a westerly direction.

Sea Breeze (Day)- The breeze that blows from the sea toward the land during the day,

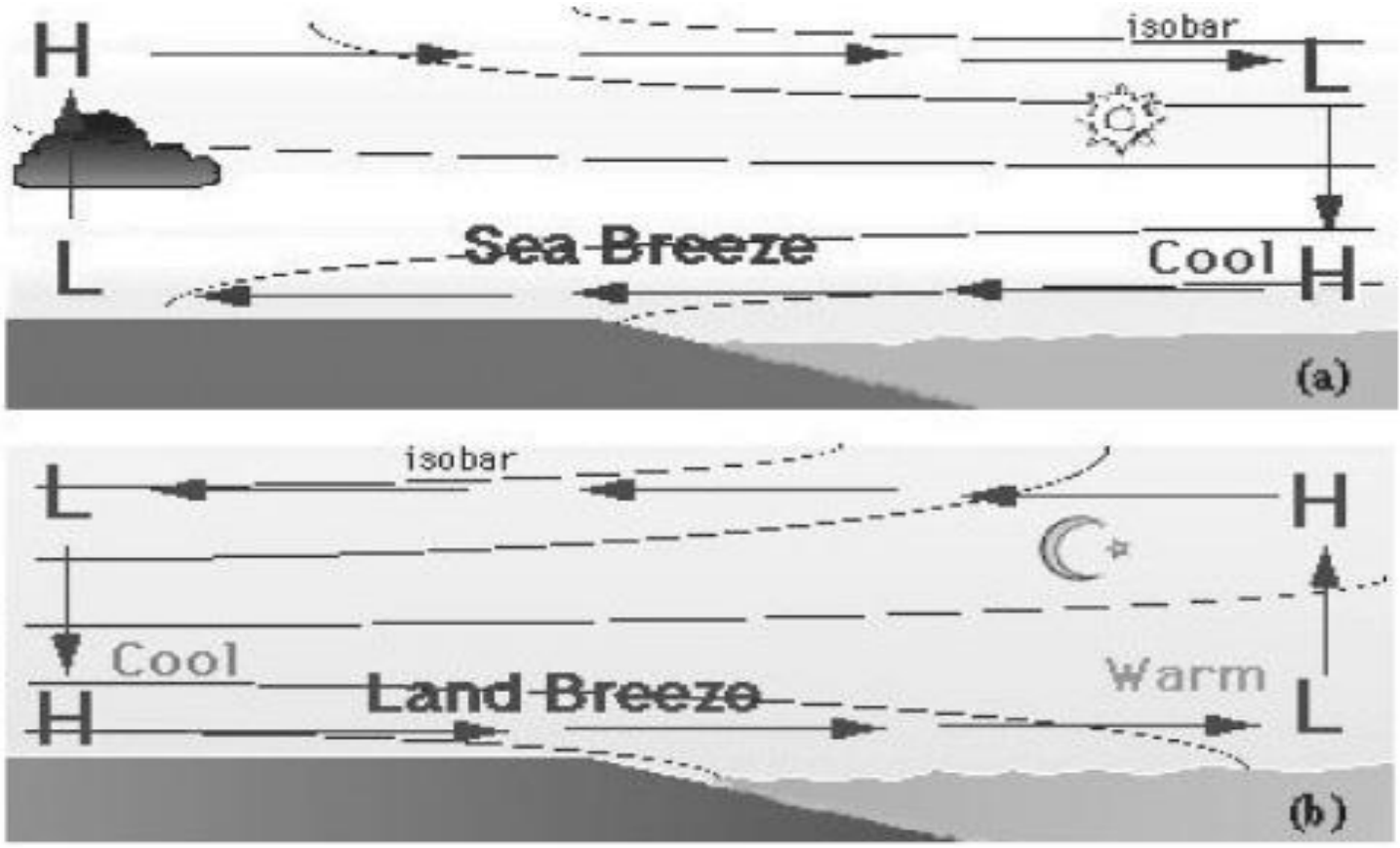
Describe a sea breeze below: Word Bank: Sea Breeze, Cooler Air Sinks, Rising Warm Air forms clouds, Land Heats Up, Warm Air Rises Over Land, Ocean is Cooler and Chills Air



Land Breeze (Night): The breeze that blows from the land toward the land.

- High specific heat of water slowly releases stored energy from the day during the night making the water warmer than the land.

Which is a sea breeze? and which is a land breeze below?



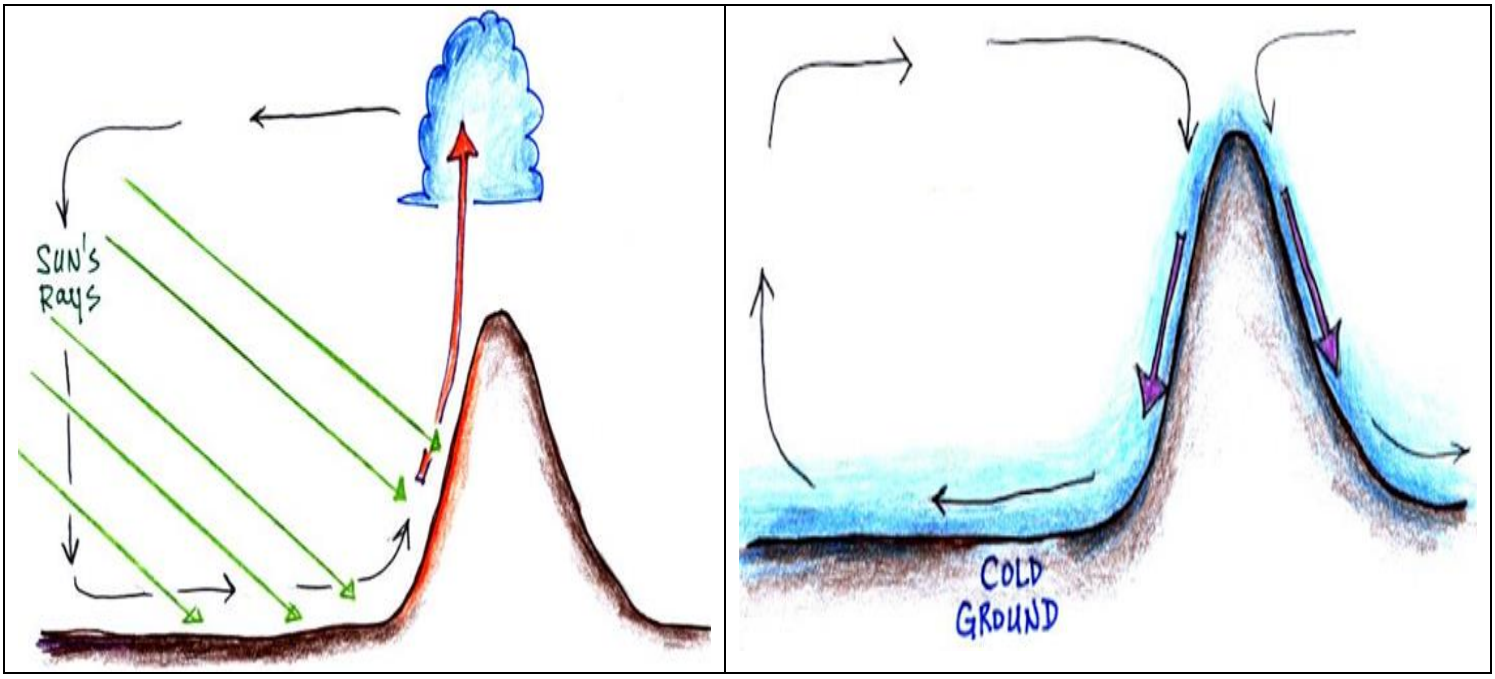
What is wind in more than 15 words?

The wind is nothing but moving air. The air movement is always from high pressure to low-pressure areas.

Part 3 Lesson 3 Mtn Winds, Wind Chill, Hypothermia, Hyperthermia

Valley Breeze: Mountains can create strong winds. Warm air rises up Mtn. (day)
Mountain Breeze (cool sinks down at night).

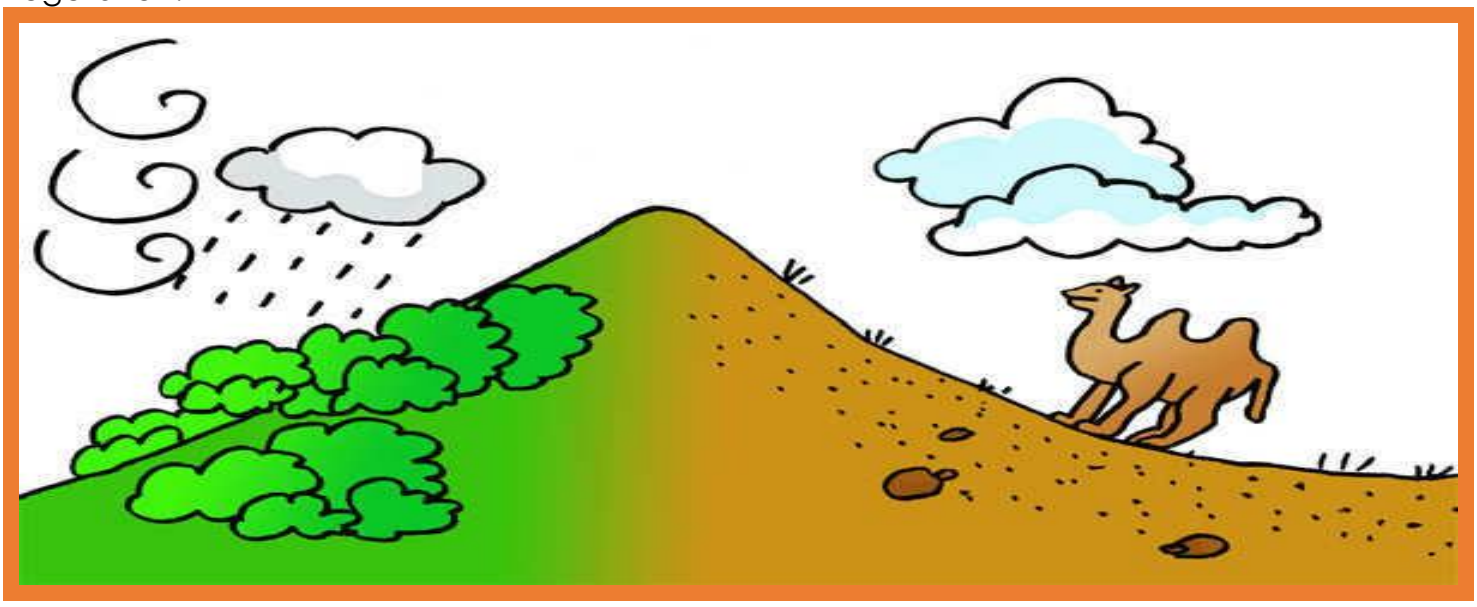
Mtn or Valley Breeze?	Mtn or Valley Breeze?



Mountain Rain Shadow Effect: A rain shadow is a dry area on the leeward side of a mountainous area.

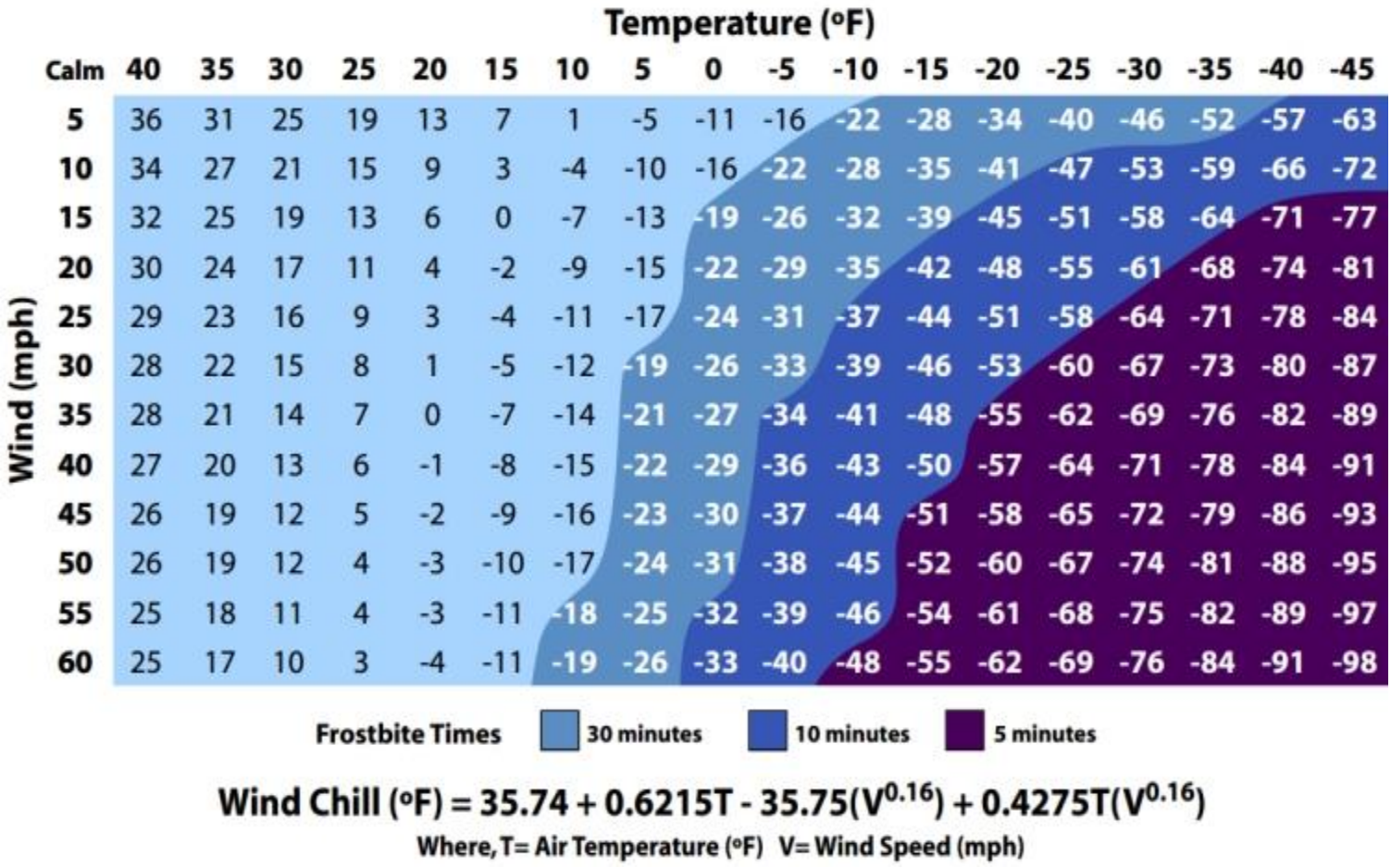
The mountains block the passage of rain-producing weather systems and cast a "shadow" of dryness behind them.

Use the mountains below to draw Mtn Rain Shadow Effect? Use some color to represent the vegetation.



Wind Chill: The cooling effect of the wind and temperature combined. The higher the wind, the cooler it gets.

Use the chart below to answer the following questions.



Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes; 10 minutes; 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Use the chart on the prior page to answer the questions below.
What is the wind chill if the temperature is zero degrees and the wind is 20 mph? -22 F
What is the wind chill if the temperature is 20 degrees and the wind is 40 mph? -1 F
What is the wind chill if the temperature is 40 degrees and the wind is 60 mph? 25 Degrees F
What is the wind chill if the temperature is -45 degrees and the wind is 15 mph? -77 F
How fast will wind chill occur if its -15 degrees F˚ and the winds are moving at 25 mph? -44F
How fast will wind chill occur if its -45 degrees F˚ and the winds are moving at 25 mph? -84F
How fast will wind chill occur if its 5 degrees F˚ and the winds are moving at 30 mph? -19F

What is frostbite? And why should you care about it?
Frostbite is an injury caused by freezing of the skin and underlying tissues. First your skin becomes very cold and red, then numb, hard and pale. Frostbite is most common on the fingers, toes, nose, ears, cheeks and chin. Exposed skin in cold, windy weather is most vulnerable to frostbite. But frostbite can occur on skin covered by gloves or other clothing.

Hypothermia: A decrease in the core body temperature to a level at which normal muscular and brain functions are impaired.

What are some causes of Hypothermia? Provide me some safety tips.

- **Conditions Leading to Hypothermia**
  - Cold temperatures + wind chills.

- Improper clothing and equipment.
- Wetness.
- Fatigue, exhaustion.
- Dehydration.
- Poor food intake.
- No knowledge of hypothermia.
- Alcohol intake - causes blood flow problems leading to increased heat loss.

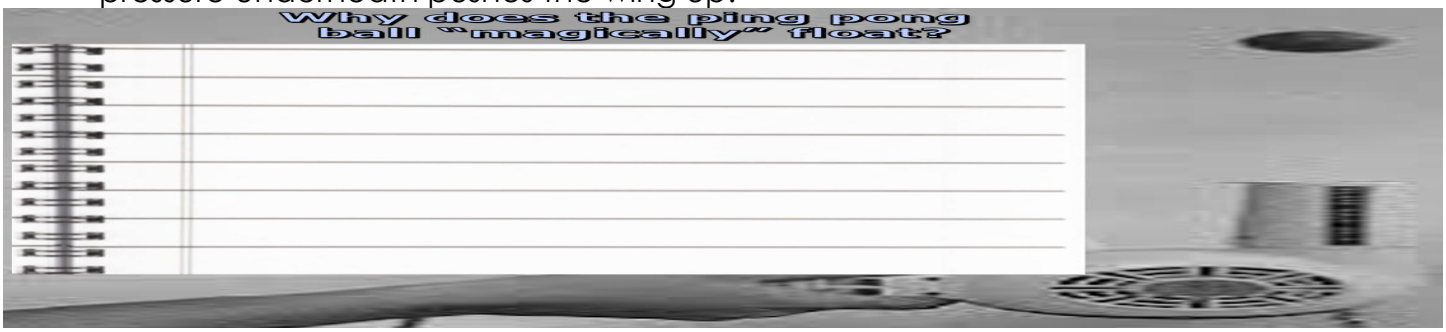
Hyperthermia: Having a body temperature that is too high, causes heart failure, among other problems and death.

What are some ways to recognize and avoid hyperthermia?
Profuse Seating, hard manual labor in hot conditions with many layers of clothing, skin is warm to the touch, headaches.

- Tips to avoid heat exhaustion and heat stroke, aka hyperthermia.
  - Be smart about when you are going to be active, high noon on the hottest day ☹.
  - Know the weather and heat index.
  - Drink lots of water / rehydrating fluids.
  - Seek shade, and wear loose fitting clothing.
  - Take rest breaks (rehydrate)
  - Place cool damp towels on forehead.
  - Don't drink alcohol.

Part 3 Lesson 4 Severe Weather Systems Project.

Flight: A Simple combination of Bernoulli's Principle and Newtons 1st Law of Motion. 😊
Air flows faster over the top of the wing than the bottom making less pressure, higher pressure underneath pushes the wing up.



The airflow from the hair dryer speeds up as it slips by the floating sphere, which creates an area of low pressure around the ball. The high pressure from the dryer surrounds the low around the ball and keeps the ball trapped in midair.

Name of your groups weather disaster / dangerous weather system? _____
How is your weather disaster formed? Time to research.

What are the effects / dangers / during the weather system and after? Weather Symbols?

What the precautionary measures and safety procedures to should be taken before, during, and after the dangerous weather system?

Case Study- This means you have to find an example of when one of these disasters hit. You need to include information about where it occurred, what year, what were the effects, and what people did or learned from the experience.

Part 3 Lesson 5 Dangerous Weather Systems

Describe two severe weather patterns. Please include air pressure in both responses. A strong answer will include how the severe weather forms, dangers / destructive forces, and safety concerns.

Name of Dangerous Weather Pattern and Visuals…	Information of a Dangerous Weather Pattern

Information of Dangerous Weather Pattern	Name of Dangerous Weather Pattern and Visuals…
_____ _____ _____ _____ _____	

Name of Dangerous Weather Pattern and Visuals…	Information of a Dangerous Weather Pattern
	_____ _____ _____ _____ _____ _____
Information of Dangerous Weather Pattern	Name of Dangerous Weather Pattern and Visuals…
_____ _____ _____ _____ _____	

Part 3 Lesson 6 Light and Temperature

Light: An energy wave.

Black absorbs all colors of the spectrum while white reflects.

Thermometer	Starting Temp	5 min	10 min	15 min	20 min
White					
Black					

Which color will absorb more light and thus have a higher temperature? Use data in your response.
The black colored paper absorbed more light and thus had a higher temperature. The final temperature of the thermometer in the black paper was ____ greater than the white.

Which color will reflect more light and thus have a cooler temperature. Use data in your response.
The white colored paper reflected more light and thus had a lower temperature. The final temperature of the thermometer in the white paper was ____ less than the black.

Albedo: The reflectiveness of a surface.

Dark colored materials heat up quicker than light colored materials. So air above dark colored surfaces heats up quicker. Dark absorbs more light.

Rather than thinking of black as absorbers of heat, darker colors are better absorbers of light and thereby become better radiators of heat.

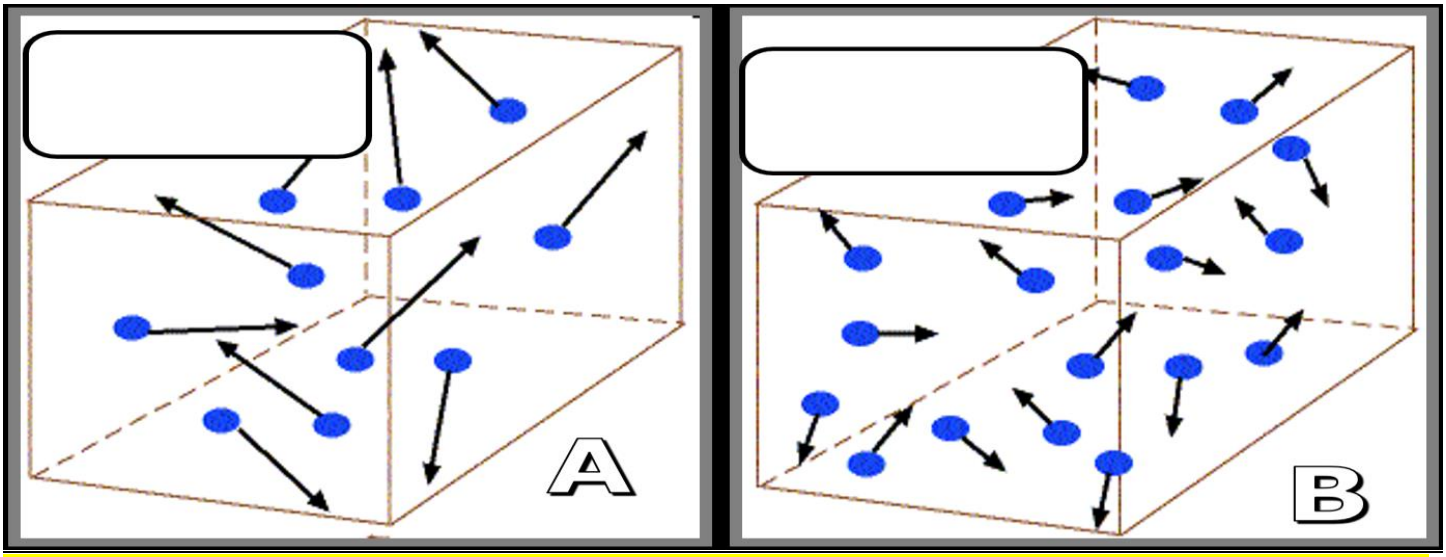
Temperature: A measure of the average kinetic energy (motion) of individual molecules in matter.

Thermometer: A measure of the heat from expanding and contracting liquids or coils.

Temperature: A measure of the average kinetic energy (motion) of individual molecules in matter.

- 100 degrees Celsius = Water boils
- 0 degrees Celsius = Water freezes

Which box has warmer? And which box has cooler temperatures? Explain below.



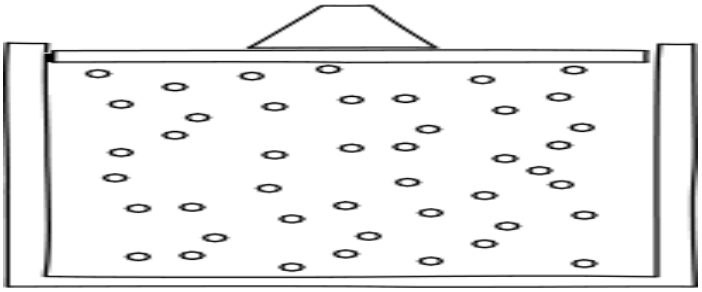
The molecules in box A seem to be moving faster and must have a higher temperature than box B. Atoms and molecules (particles) are in constant motion.

- The higher the temperature - the higher the speed.
- Increased heat energy make atoms and molecules move faster.

To convert 95 degrees Fahrenheit temperatures into Celsius: – Begin by subtracting 32 from the Fahrenheit number. – Divide the answer by 9. – Then multiply that answer by 5. Show Work below, Answer= 95 - 32 = 63. Then, 63 divided by 9 = 7 Finally, 7 times 5 is 35 degrees Celsius.	Convert 55 degrees Fahrenheit into degrees Celsius. – Begin by subtracting 32 from the Fahrenheit number. – Divide the answer by 9. – Then multiply that answer by 5. Show work below, Answer= 55-32=23, 23/9 =2.5, 2.5 x 5=12.5 degrees C.
Because many people have never learned the metric system. Please convert 20 Degrees Celsius into Fahrenheit: – Begin by multiplying the Celsius temperature by 9. – Divide the answer by 5. – Now add 32. Show Work below, Answer= 20 X 9 = 180 180 / 5 = 36 36 +32 = 68 F	Please convert 30 degrees Celsius into degrees Fahrenheit. – Begin by multiplying the Celsius temperature by 9. – Divide the answer by 5. – Now add 32. Show Work below, Answer= 30 x 9 / 5 + 32 = 86

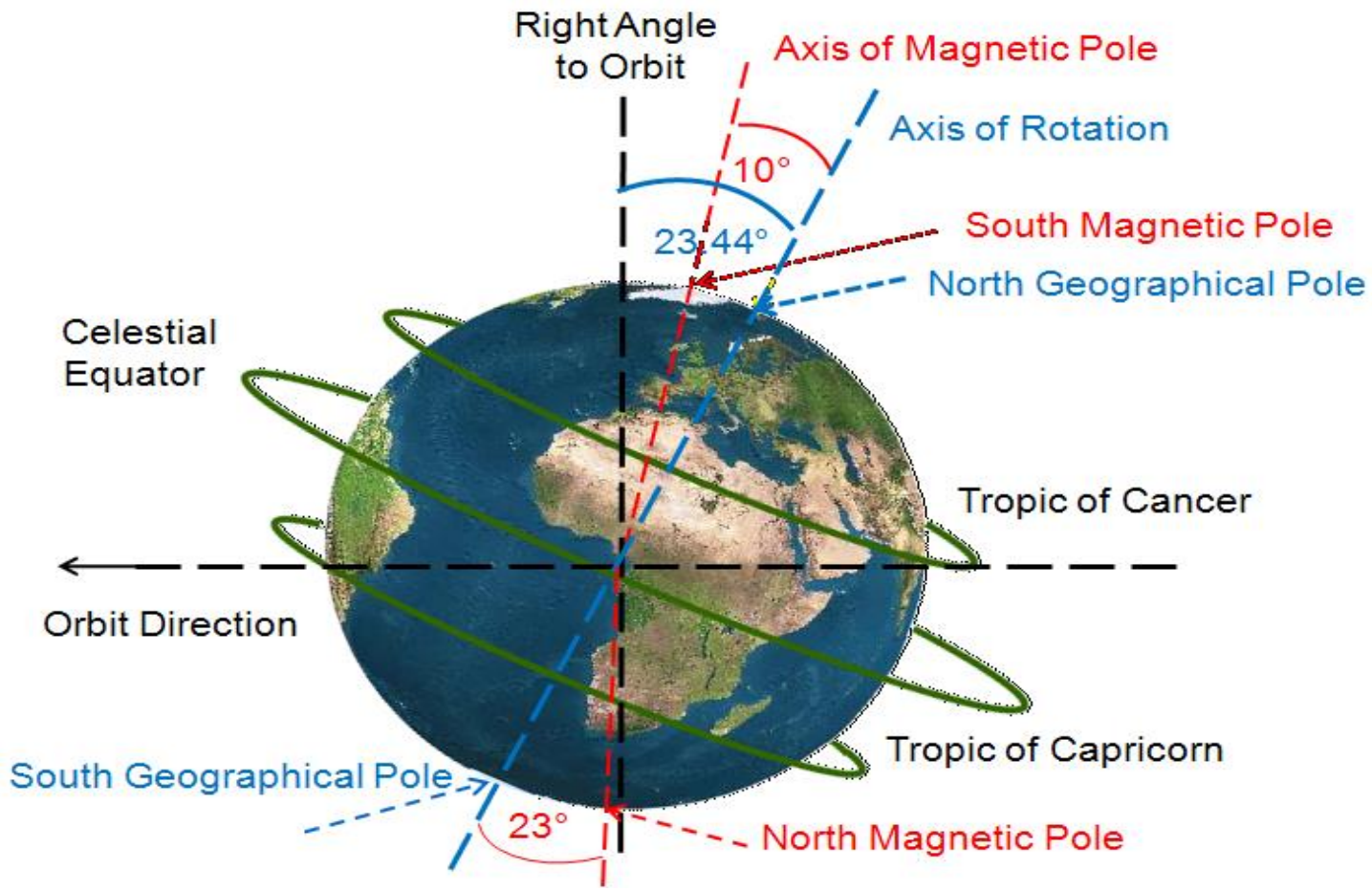
Kelvin Scale: Zero Kelvin is absolute zero where molecular motion stops. That is the coldest something can be. (Never been reached.)

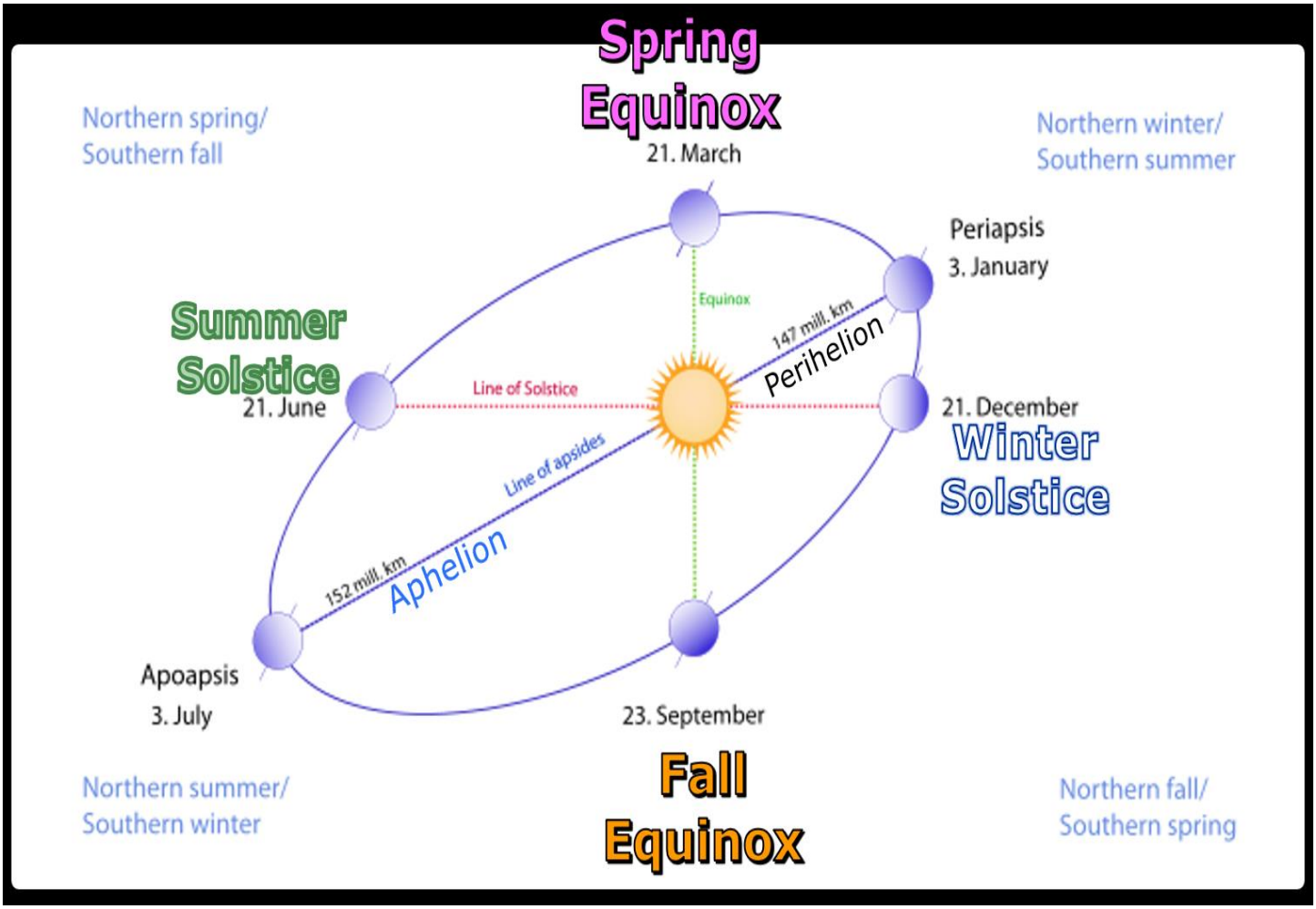
- Water freezes at 273.16K; water boils at 373.16K. K = C + 273.16°

What is temperature?	What reflects light below, and what absorbs light?
	
Temperature is a measure of the average kinetic energy of the particles in an object. When temperature increases, the motion of these particles also increases.	The darker colored leaf will be absorbing more light than the snow. The snow will be reflecting most of its light.

Part 3 Lesson 7 Axial Tilt

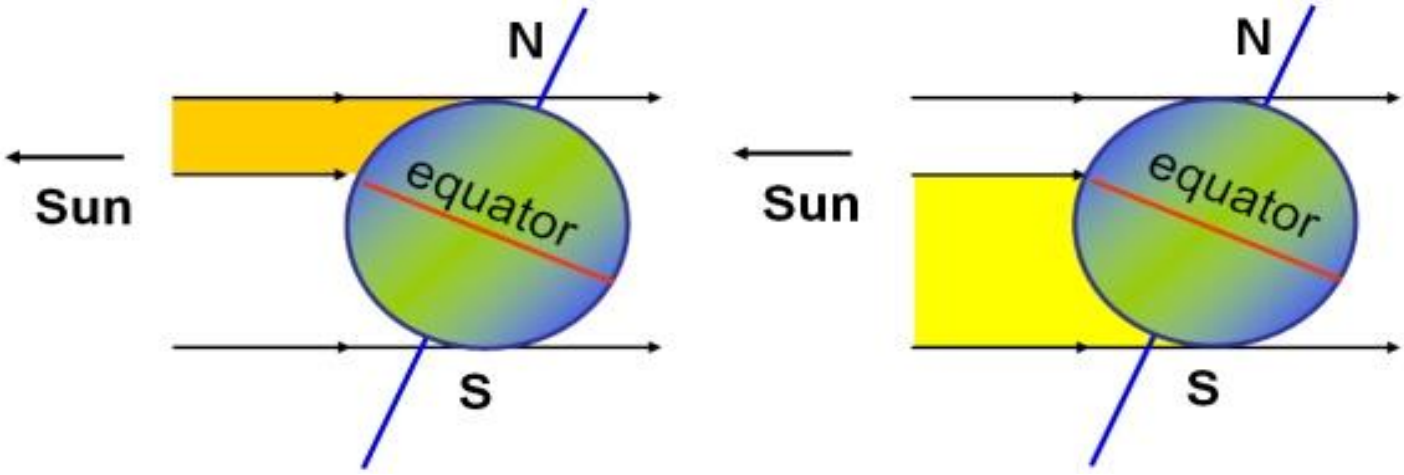
Please complete the diagram as described in the slideshow.





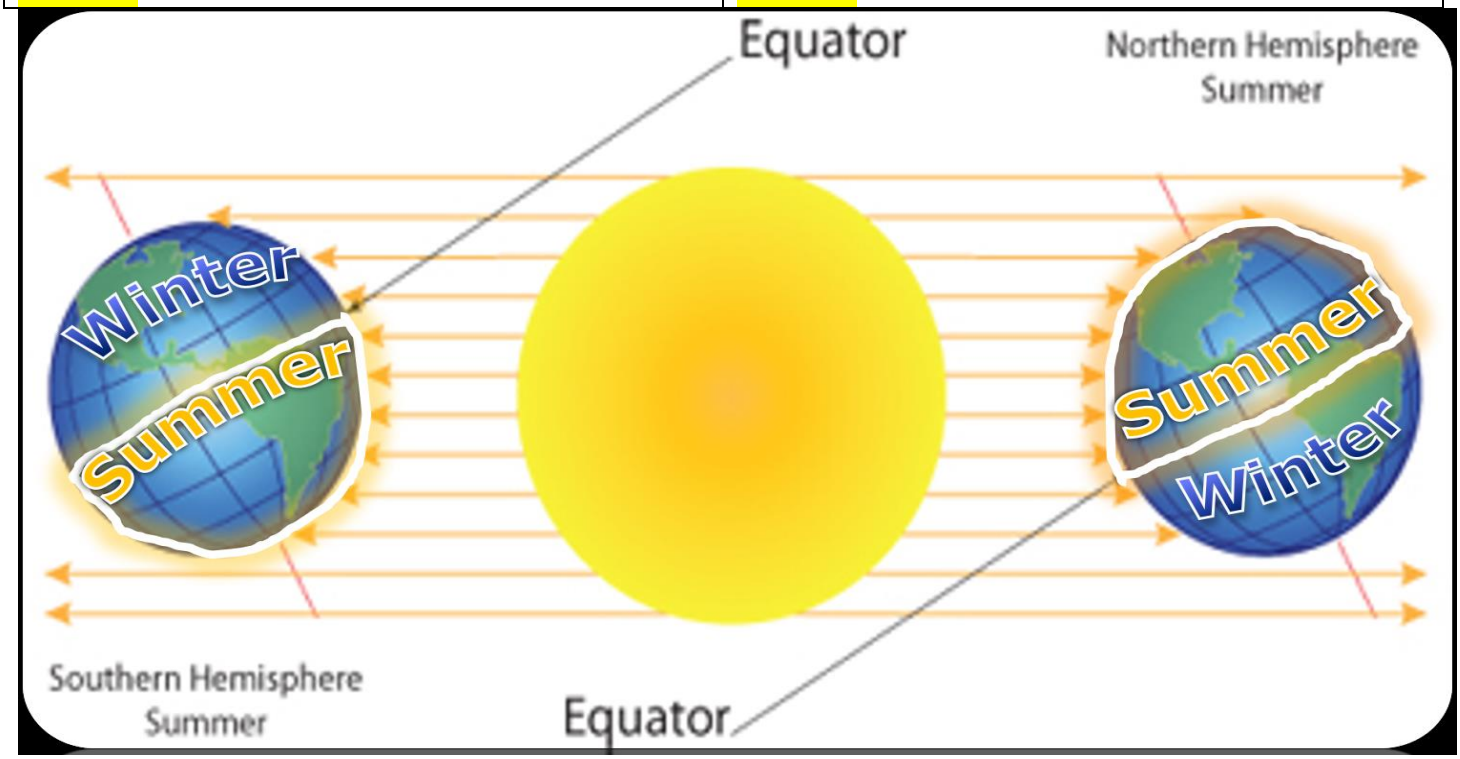
Which is the Northern and Southern Hemispheres? Which is winter? And Which is Summer?

Answer= This is winter in the Northern hemisphere and summer in the summer hemisphere. The northern hemisphere is more angled and not getting direct light.	Answer= This is summer in the in the southern hemisphere as its getting more direct light. This is winter in the northern hemisphere



Which is the Northern and Southern Hemispheres? Which is winter? And Which is Summer?

The southern hemisphere is experiencing summer while the norther hemisphere is experiencing winter.	The Norther hemisphere is experiencing summer and the Southern hemisphere is experiencing winter.



The tilt of the earth's axis 23.5 degrees

- Summer = Northern Hemisphere is tilted into more direct light.
- Winter = Northern Hemisphere tilts away from the direct light.

Part 3 Lesson 6 Solstice / Equinox

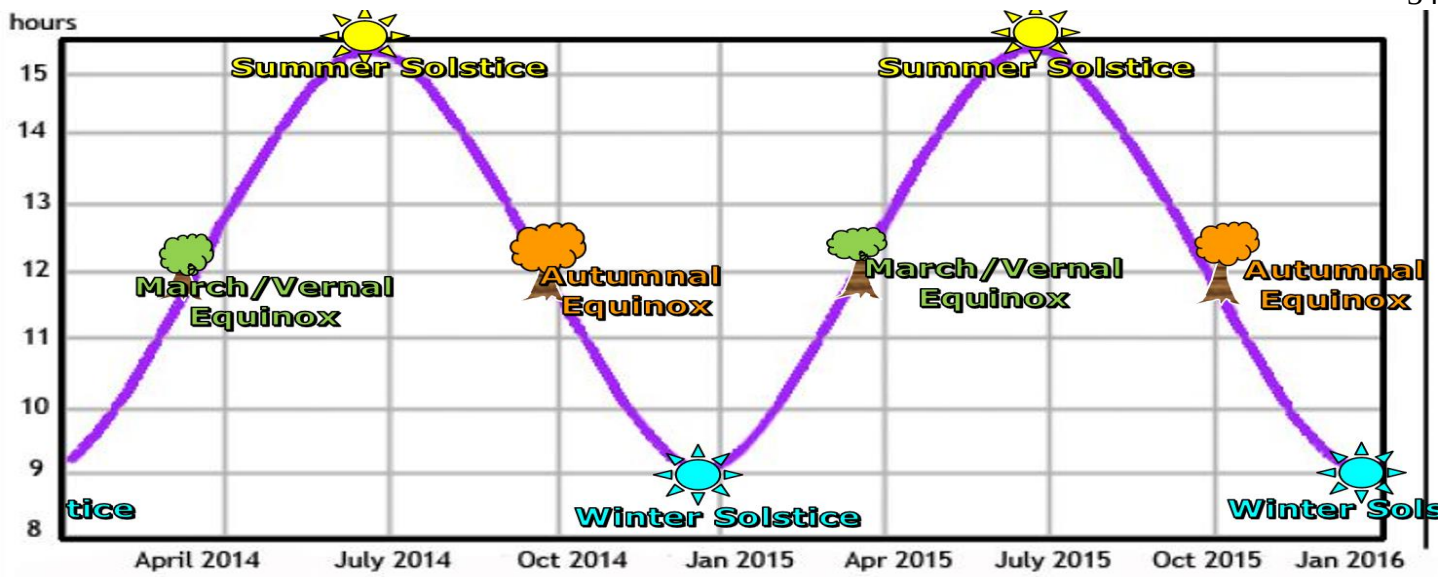
Solstice: Either the shortest day of the year (winter solstice) or the longest day of the year (summer solstice-June 20, Winter solstice Dec 21st)

When is the summer and winter solstice, and the March/Vernal and Fall/Autumnal equinox below. The line represents the length of the day in New York City. There's two for each so cross off from the word bank below.

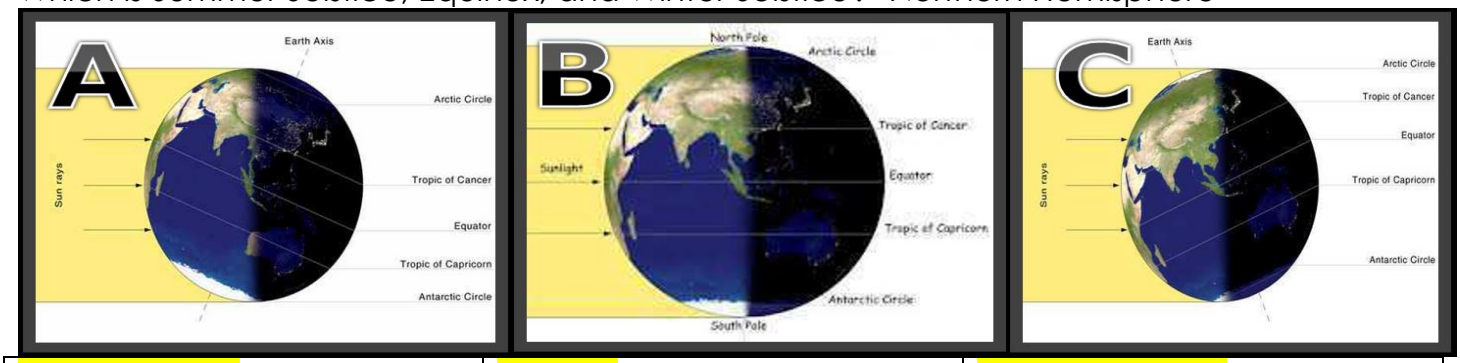
Equinox: Either of the two times each year (about March 21 and September 23) when the sun crosses the equator.

- Day and night are everywhere on earth equal in length.

☼Summer Solstice, ☼Summer Solstice, ☼Winter Solstice, ☼Winter Solstice, *March/Vernal Equinox, *March/Vernal Equinox, *Autumnal Equinox, *Autumnal Equinox



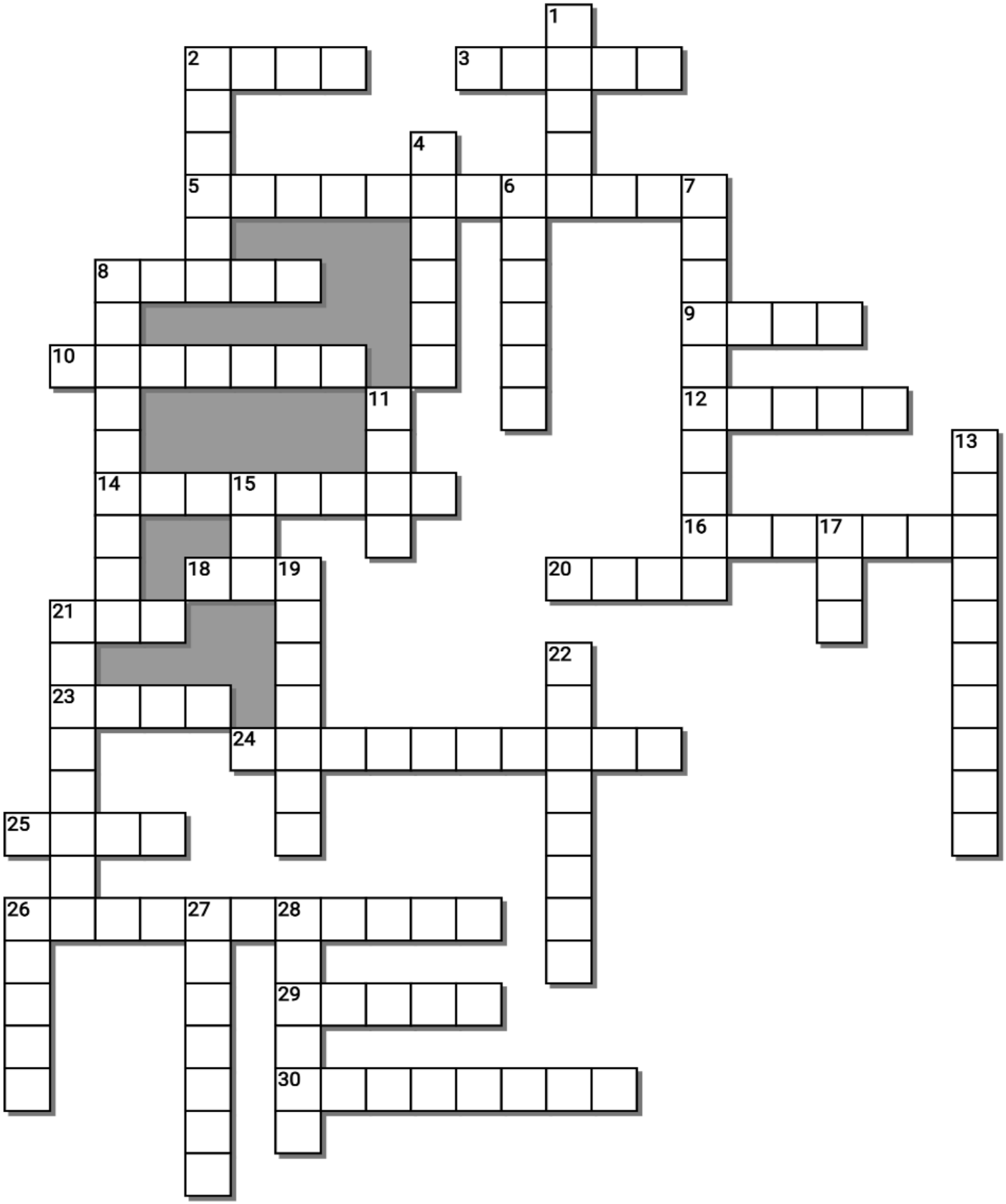
Which is Summer Solstice, Equinox, and Winter Solstice? -Northern Hemisphere



Winter Solstice	Equinox	Summer Solstice

Please label the diagram below. Word Bank (Summer Solstice, Equinox, Winter Solstice, Equinox) for the Northern Hemisphere. Also use some crayons to tell me which hemisphere has summer and winter (orange = summer, blue = winter) for the winter and summer solstice.

Please label the diagram below. Word Bank (Summer Solstice, Equinox, Winter Solstice, Equinox) for the Northern Hemisphere. Also use some crayons to tell me which hemisphere has summer and winter (orange = summer, blue = winter) for the winter and summer solstice.



Teacher can remove work bank to make more difficult.

Possible Answers

ALBEDO, BLACK, BLIZZARD, BOILS, CORIOLIS, DOLDRUMS, EQUINOX, FREEZES, HAIL, HORSE, HURRICANE, ICE, JET, KELVIN, LAND, LIGHT, MICROBURST, RAIN, SEA, SEASONS, SOLSTICE, SOLSTICE, SUMMER, SUN, TEMPERATURE, THUNDERSTORM, TILT, TORNADO, TRADE, WESTERLIES, WHITE, WIND, WIND, WINTER, EASTERLIES

Across

2. The movement of air, from high pressure to low pressure.
3. This color Black reflects all colors of the spectrum
5. A storm with thunder and lightning as well as heavy rain or hail
8. _____ Latitudes: the subtropical latitudes between 30 and 35 degrees both north and south where Earth's atmosphere is dominated by the subtropical high, an area of high pressure, which suppresses precipitation and cloud formation, and has variable winds mixed with calm winds.
9. Mountain _____ Shadow Effect: A dry area on the leeward side of a mountainous area. The mountains block the passage of rain-producing weather systems and cast a "shadow" of dryness behind them
10. 0 degrees Celsius = Water _____
12. This color absorbs all colors of the spectrum .
14. The _____ Force: An apparent force, relative to the earth's surface, that causes deflection of moving objects.
16. These are caused are caused by the tilt of the Earth's rotational axis away or toward the sun as it travels through its year-long path around the sun.
18. The _____ Stream: Any of the high-speed, high-altitude air currents that circle the Earth in a westerly direction.
20. The _____ of the earth's axis 23.5 degrees
21. _____ Breeze (Day)- The breeze that blows from the sea toward the land during the day
23. _____ Breeze (Night): The breeze that blows from the land toward the sea.
24. The polar _____ are the dry, cold prevailing winds that blow from the high-pressure areas of the polar highs at the north and south poles towards low-pressure areas within the Westerlies at high latitudes.
25. _____ Chill: The cooling effect of wind and temperature combined. The higher the wind, the cooler it gets.
26. A measure of the average kinetic energy (motion) of individual molecules in matter.
29. 100 degrees Celsius = Water _____
30. The "_____" is a popular nautical term that refers to the belt around the Earth near the equator where sailing ships sometimes get stuck on windless waters.

Down

1. An Energy Wave
2. Northern Hemisphere tilts away from the direct light.
4. _____ Scale: O K is absolute zero where molecular motion stops. That is the coldest something can be. (Never been reached.)
6. Northern Hemisphere is tilted into more direct light.
7. A small, very intense downdraft that descends to the ground resulting in a strong wind divergence
8. A rotating tropical storm with severe winds.
11. Pellets of frozen rain which fall in showers from cumulonimbus clouds.
13. Prevailing _____:Are prevailing winds from the west toward the east in the middle latitudes between 30 and 60 degrees latitude. They originate from the high-pressure areas in the horse latitudes and trend towards the poles and steer extratropical cyclones in this general manner.
17. The wind is caused by the different temperatures (and therefore air pressure differences) around a planet - this is caused by the _____.
19. A mobile, destructive vortex of violently rotating winds having the appearance of a funnel-shaped cloud and advancing beneath a large storm system.
21. The _____ that marks the onset of winter, at the time of the shortest day, about December 22 in the northern hemisphere and June 21 in the southern hemisphere.
22. A severe snowstorm with high winds and low visibility.
26. _____ Winds: a wind blowing steadily towards the equator from the northeast in the northern hemisphere or the southeast in the southern hemisphere, especially at sea. Two belts of trade winds encircle the earth, blowing from the tropical high-pressure belts to the low-pressure zone at the equator
27. There are only two times of the year when the Earth's axis is tilted neither toward nor away from the sun, resulting in a "nearly" equal amount of daylight and darkness at all latitudes. These events are referred to as _____.
28. _____: The reflectiveness of a surface.

Part 3 REVIEW GAME

Name:

1-20 = 5 pts Part 3 Lesson 9

Due: Today

*20-*25 * = Bonus + 1 pt,

(Secretly write owl in correct space +1 pt)

Score ____ / 100

Final Question = 5 pt wager

MY DEAR WINDY	SPINORAMA	A CHILL IN THE AIR	HOT TAMALE	FLY BYE Bonus round 1pt each
1) LETTER D	6) Coriolis Force	11) LAND BREEZE	16) Box A is warmer Then box B	*21) TOP GUN
2) A=Wind B=Insects	7) THE BLUE ARROW	12) LETTER B	17) Thermometer	*22) FLIGHT OF THE NAVIGATOR
3) Doldrums	8) THE JET STREAM	13) 5 Minutes (Owl +1pt)	18) 40-32=8, 8/9 =.888, .88 x 5=4.44 degrees C	*23) JAIME FOXX
4) HORSE LATITUDES	9) HIGH PRESSURE TO LOW PRESSURE	14) Hurricane	19) KELVIN	*24) 80 DAYS
5) A=Easterlies B=Trades C=Westerlies	10) RISES SINKS SEA	15) Albedo 15a- Black Absorbs all colors	20) TORNADO	*25) TIN TIN

Final Question Wager ____ /5 Answer: HURRIANCE, TROPICAL, LOW, EYE