
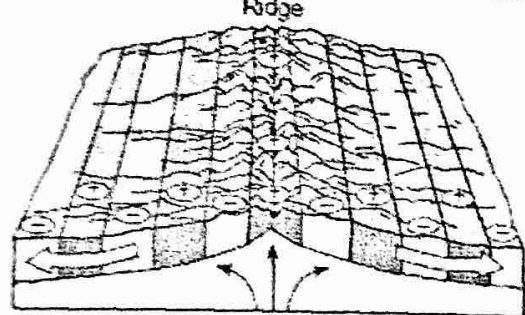

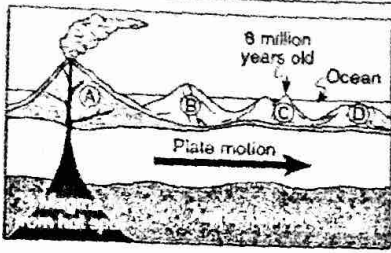


KEY

Really Important Diagrams & Concepts to understand for the Earth Science Regents Exam

GEOLOGY, GEOMORPHOLOGY, & GEOGRAPHY:

	<p>- Delta - watershed</p>
<p>1. What landform is found at point X, where the Mississippi River enters the Gulf of Mexico?</p>	
<p>2. Notice the Great Lakes are not part of the Mississippi Drainage Basin, what body of water do they drain into?</p>	<p>St. Lawrence River → Atlantic Ocean</p>
<p>3. Since the Ohio, Missouri, and Arkansas Rivers all flow into the Mississippi, they are considered</p>	<p>Tributaries</p>
 <p>4. How does the age of the seafloor compare on either side of the ridge?</p>	<p>Younger at the ridge; ↑ in age further away from center</p>
<p>5. What do the "+" and "-" signs refer to?</p>	<p>Polarity / magnetism + = normal polarity / - = reversed polarity</p>
 <p>6. What kind of landscape region is this?</p>	<p>Plateau: raised/elevated Sedimentary rock structures</p>



youngest

A
B
C
D

7. List the volcanic islands in order of increasing age.

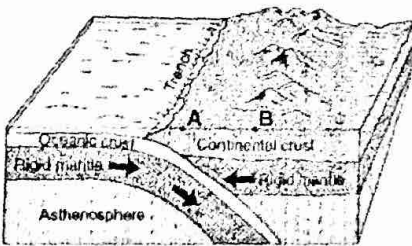
oldest

8. What is a possible age of island B?

blw D - 8 million years old

9. Name a chain of islands that has formed in a similar way.

Hawaii, Canary's or Galapagos



10. Compare the density of the oceanic crust to continental crust.

Oceanic = more dense

11. What kind of plate boundary is this?

subduction / convergent

12. Describe the relative motion of the tectonic plates here.

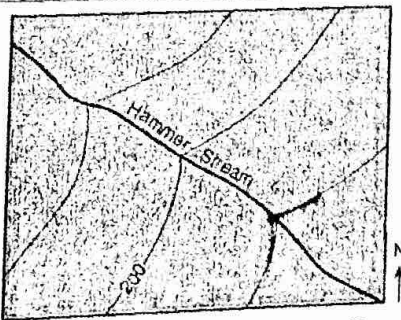
Moving towards one another

13. What kind of lava will be extruded from the volcanoes that form here? (felsic, mafic, or andesitic)

Andesitic

14. Where in the Americas is this happening?

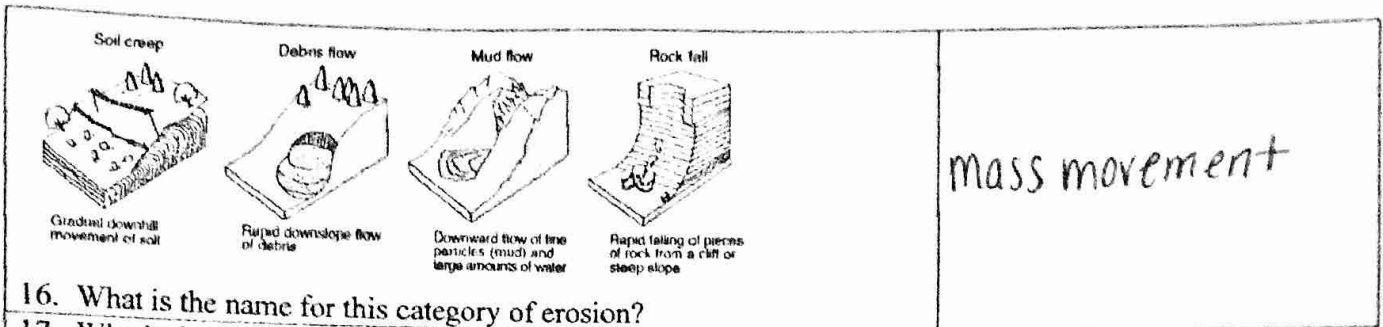
Peru Chile Trench (west coast of S. America - the Andes mountains)



15. Which way is Hammer Stream flowing? Explain.

point of the V is directed upstream
(SE → contour lines point uphill as they cross a stream)

then pushed under



mass movement

16. What is the name for this category of erosion?
 17. Why is this considered erosion & not weathering?

Sediment is being moved
 slope of the land

18. What controls the speed of the sediment?

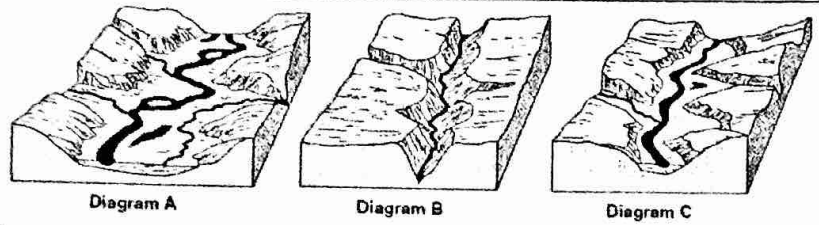


Diagram A: Old

Diagram B: Young

Diagram C: mature

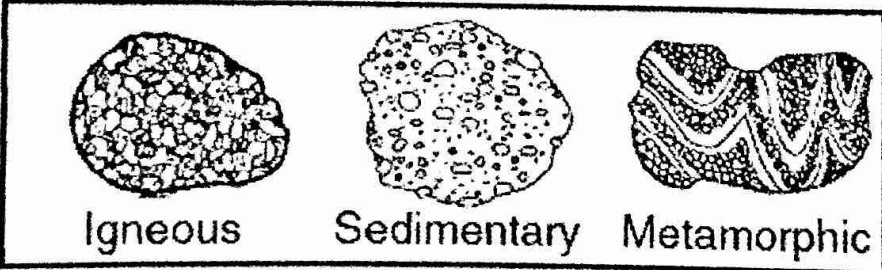
19. What are the names for the stages of this streams development?

20. Compare the velocity of the stream in diagram A to Diagram B?

A=fast B=slow
 slow fast

21. If a glacier were to advance into the valley of Diagram B, how would the shape of the change?

V → U



Ig: Solidification

Sed: Compaction/cementation

Meta: heat / pressure

22. What is the method (process) of formation for each type of rock?

23. If they were drawn to actual size, what is the texture of the Each rock?

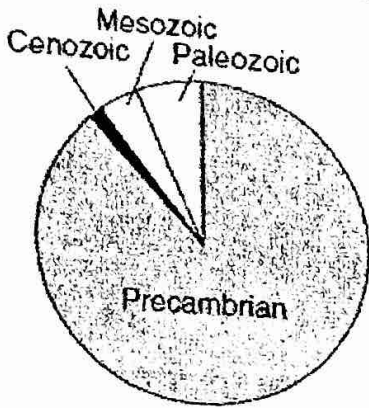
Ig: coarse/non-vesicular

Sed: clastic

Meta: foliated

24. If they were drawn actual size, is the igneous rock intrusive or extrusive? Explain.

intrusive, big crystals



4,600 mya

25. How long ago did the Precambrian Eon begin?
 26. How many millions of years ago did the Paleozoic Era begin?

542 mya

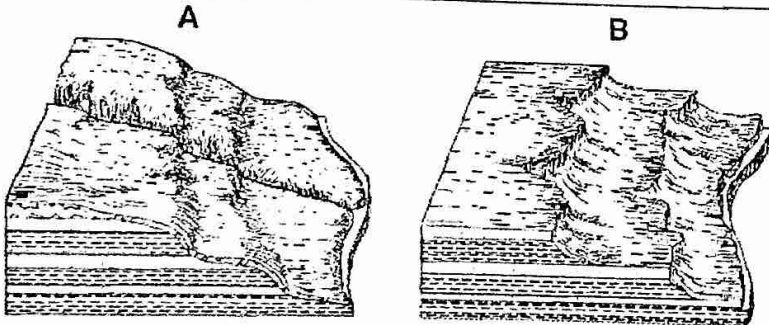
27. Approximately how long have humans been on Earth?

1.8 mya

28. What event marked the boundary between the Mesozoic and the Cenozoic?

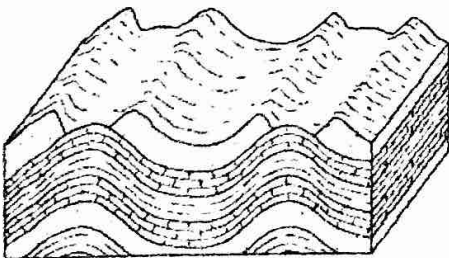
29. List the Periods that make up the Mesozoic from most recent to most ancient.

extinction of dinosaurs
 Cretaceous, Jurassic, Triassic



A rounded
 B was jagged
 like sides
 Sharp, jagged

30. What evidence in the diagram suggests that "A" is a humid region & "B" is an arid region?

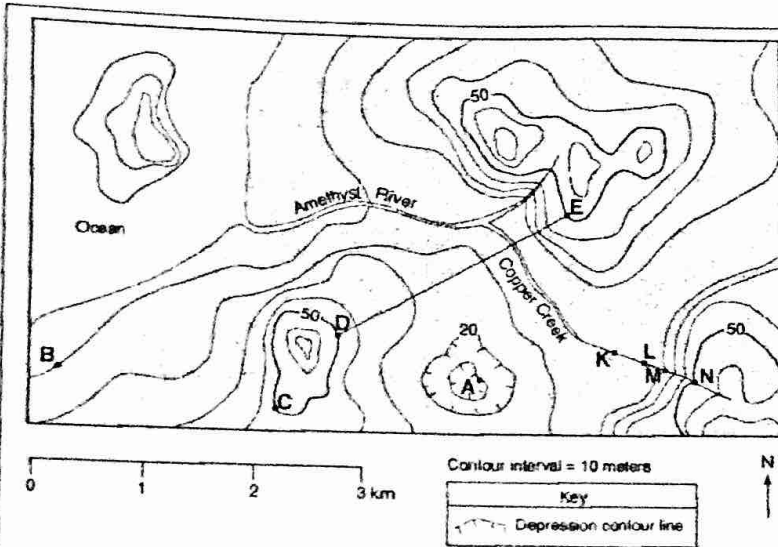


No, they were folded

31. Were the rock units formed in this pattern?
 32. What kind of tectonic forces could produce a landscape like this?
 33. Were these rock units folded, faulted, or tilted?

convergent boundaries

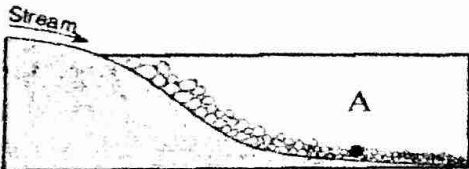
folded



lines closer together (steeper)

34. How do you know copper creek is flowing faster between points N & M, than between points L & K?
 35. What is the elevation for point A?
 36. What is the highest possible elevation for the island in the NW corner of the map?
 37. What is the distance between points D & E?
 38. Calculate the gradient between points B & C.

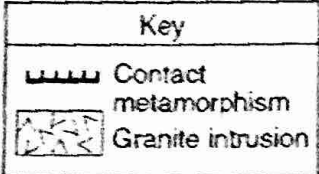
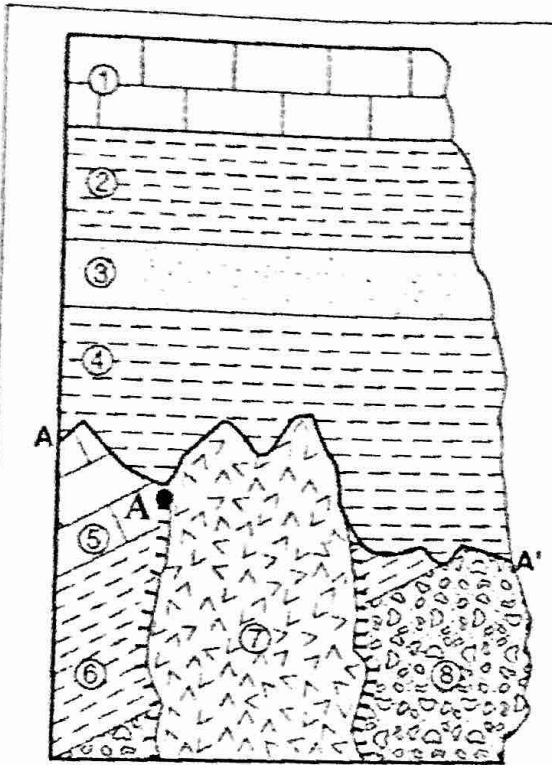
10 m
 29 m
 ~2.5 km
 $40\text{ m}/2\text{ km} = 20\text{ m}/\text{km}$



Velocity of the water slows down as it enters a lake

39. Why are the sediments sorted as shown in the diagram?
 40. If the size of the sediment at point "A" is 0.02 centimeters, how fast was the current there?

~1 cm/sec



Oldest:	8
	6
	5
	7
	4
	3
	2
Youngest:	1

41. List the eight rock units in order from oldest to youngest

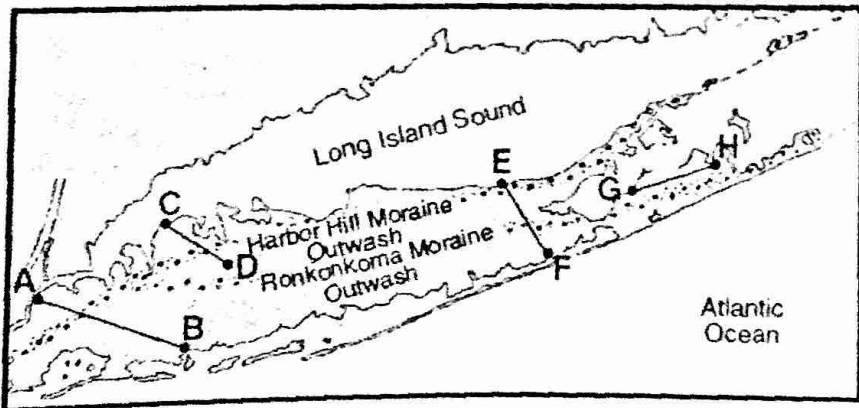
42. What is line A - A' called?

43. What kind of rock would be found at point A?

44. If layer #4 was formed during the Ordovician, which trilobite index fossil might be found within that rock unit?

unconformity
marble, hornfels
B - cryptolithus

Map



Moraine sediment:

unsorted,
angular

Outwash sediment:

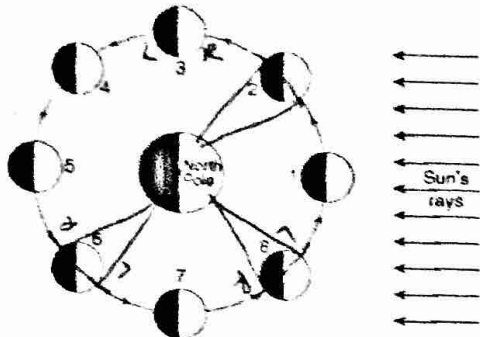
sorted, well
rounded

45. Describe the differences in sediment between the Moraines and the Outwash.

46. Approximately how long ago was the glaciation period that produced these moraines?

5,000 - 20,000 years

ASTRONOMY:



(Not drawn to scale)

47. Draw what an observer would see if the moon were at positions 3, 6, 8, & 2.

3		6	
	First Quarter		Waning Gibbous
8		2	
	Waning Crescent		Waxing Crescent

48. Which position is the new moon?

1

49. Which position is the full moon?

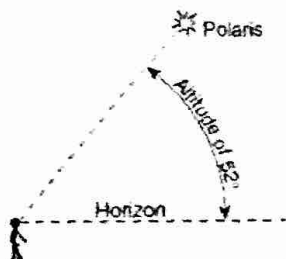
5

50. How long does it take for the moon to travel once around the Earth?

27.3 days

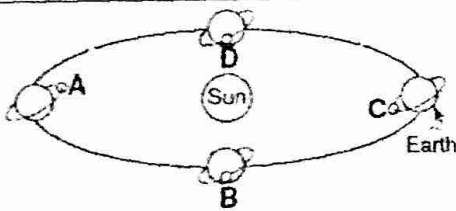
51. How long is a complete cycle of phases?

one month (29.5 days)



52. What is the latitude of this person?

52° N



(Not drawn to scale)

53. In which position could a lunar eclipse occur? Solar Eclipse?

Lunar:

B

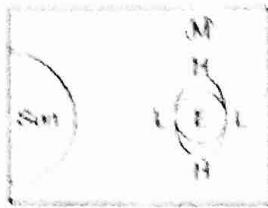
Solar:

D

REFERENCE TABLES



(1)



(3)



(2)



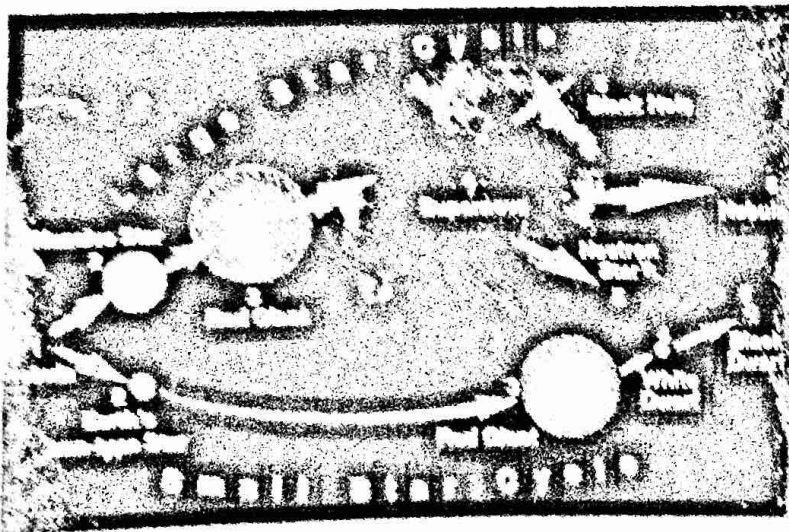
(4)

High tides are exceptionally high and low tides are exceptionally low (great tidal variation)
→ Spring Tide

- 54. Describe the tidal range for diagram 1.
- 55. What is the special name given for the tidal range in diagram 3?
- 56. Why does the moon have more influence on the tides than the sun?
- 57. Approximately how much time is there between consecutive high tides?

Neap Tide (smallest tidal range)
The moon is closer to Earth
~12.5 hours

The Life Cycles of Stars

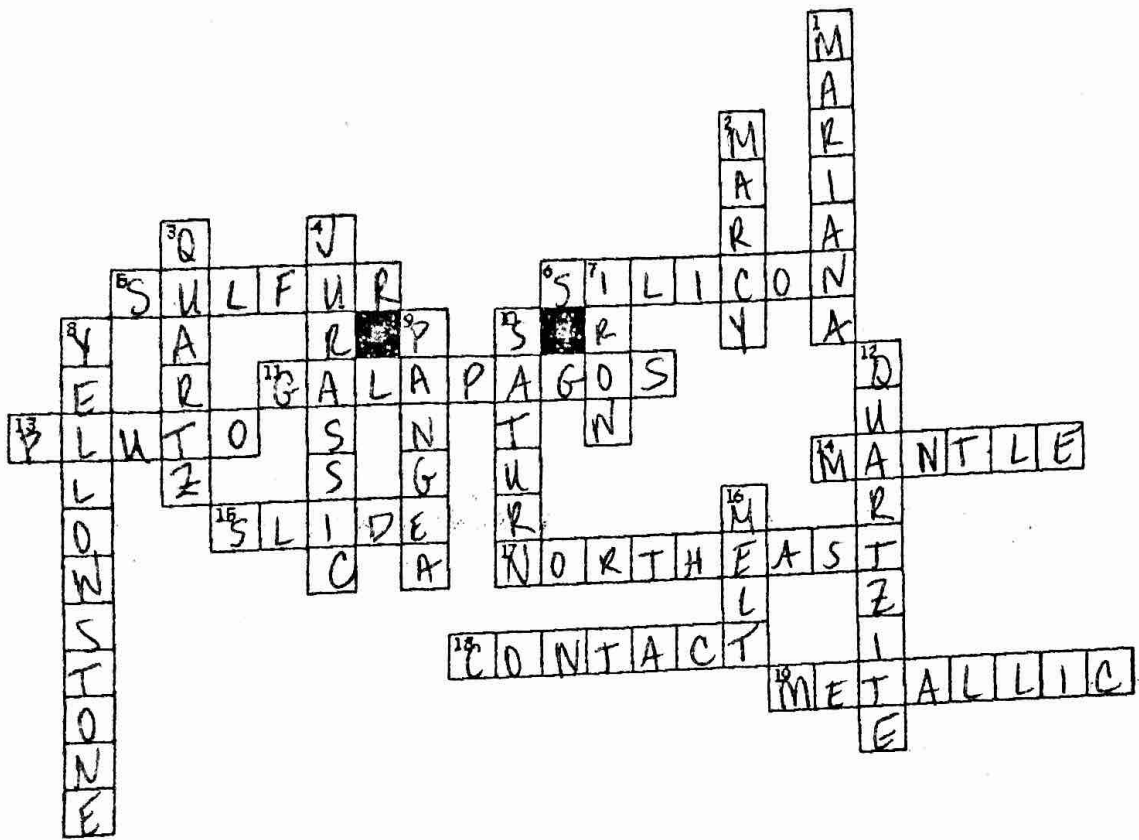


Red giant
↓
White dwarf
↓
black dwarf

- 58. What is the fate of our sun?
- 59. What property of a star determines which path it will follow?
- 60. Compare the temperature of a red giant to the temperature of a white dwarf.
- 61. Position #2 on the diagram represents what stage of a star's life?

Mass of Hydrogen gas condensing in the nebula
Red giants = cooler
White dwarf = hotter
main sequence

REFERENCE TABLES

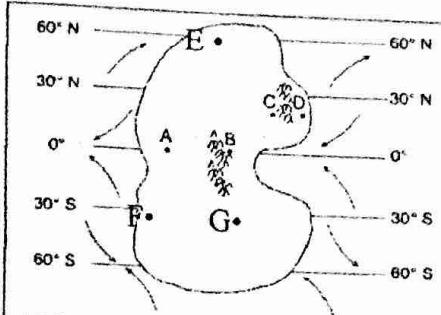


Across

- 5. A native mineral which is easily melted and may smell
- 8. Element comprising about 28% of the mass of the crust
- 11. Hot Spot on the Nazca Plate
- 12. The planet having the smallest equatorial diameter **NOT ON ESRT**
- 13. Earth "layer" having a temperature of about 4000 degrees Celsius
- 14. Mountain at 42 degrees North and 74 degrees 25 minutes West
- 15. Direction from Elmira to Massena
- 16. Type of metamorphism in which rocks are "baked" but not "compressed"
- 17. Describes the luster of the mineral Galena

Down

- 1. Trench formed by the collision of the Pacific Plate and the Philippine Plate
- 2. Mountain in the Adirondacks
- 3. Mineral with a hardness of 7 and a glassy luster; it is used in glass
- 4. Period between 206 and 142 million years ago
- 5. Metal believed to be found in both the Inner and Outer Core
- 6. Hot Spot in North America
- 7. Supercontinent formed during the Permian Period
- 8. The planet having an average density of 0.7 grams per cubic centimeter
- 9. Nonfoliated metamorphic rock made of the mineral Quartz
- 10. Before any rock can turn into an igneous rock it must



B has a higher elevation

109. Why would the average temperatures for B be lower than A?

110. Why would E have cooler average temperatures than A, B, C, D, F & G?

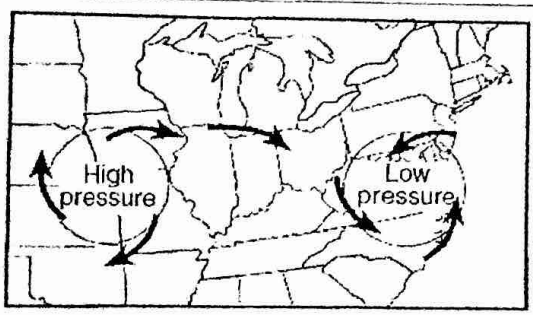
E has a higher latitude + is farther from the equator

111. Why would summers at F be cooler than summers at G? And, why would winters at F be warmer than the winters at G?

G is inland, F is coastal

112. When would G have its greatest duration of insolation?

December 21st (S. Hemisphere)



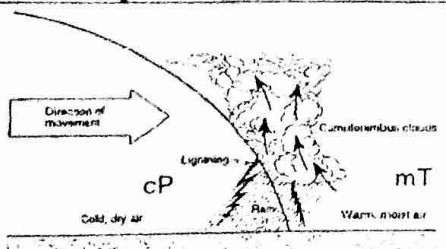
Low: counter-clockwise

inwards

High: clockwise

outwards

113. Describe the general circulation of winds around low pressure & high pressure systems in the N. Hemisphere.



Warm air is forced up in the frontal boundary

114. Why do the clouds form on the mT side instead of the cP side?

115. What process creates clouds?

Condensation

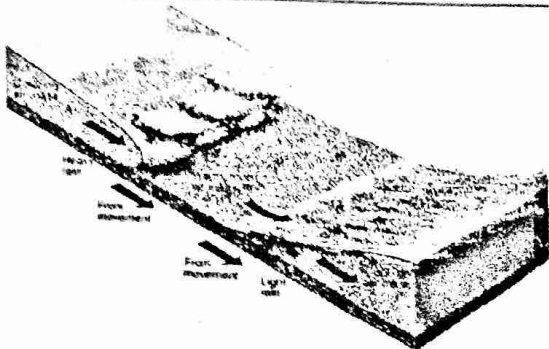
116. What is a possible source region for the cP and mT air masses?

cP: central Canada

mT: Gulf of Mexico

117. What type of front is this?

cold front



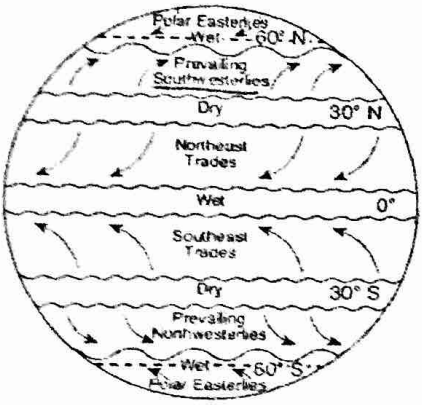
Upper left:
cold front

Lower right:
warm front

103. What kind of front is in the upper left? Lower right?

104. What kind of clouds and storm type is often occurs with the passing of a cold front?

Cumulus clouds



- Earth is rotating
- Coriolis effect

105. Why do the prevailing winds curve?

106. In which direction are the prevailing winds for NY?

SW

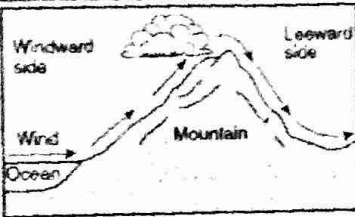
107. What about the circulation of air make the equator "wet" moisture belt?

air is warm & rising

108. What about the circulation of air makes the poles "dry"?

air is cold & sinking

CLIMATE & GROUNDWATER:



Windward = cool + humid

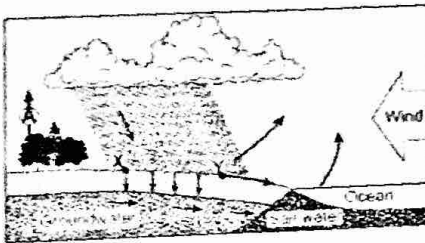
leeward = warm + and (dry)

84. Compare the climatic conditions on the windward and leeward sides of a mountain?

85. Explain why the clouds form on the windward side.

Air rises, expands & cools. Once the dew point is reached, condensation and cloud formation occurs.

Water Cycle



Transpiration

86. What is process "A"?

87. What is the name of the process for the arrow directly under "X"?

Infiltration

88. What is the name of the process for the arrow connected to point "Y"?

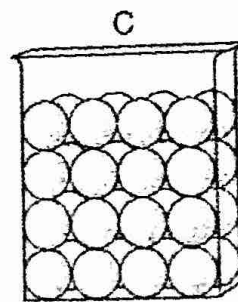
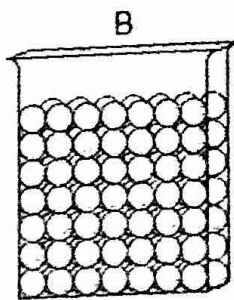
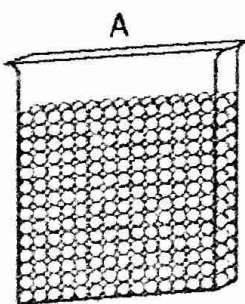
Runoff

89. What is the name for the process that created the clouds?

Condensation

90. What is the name for the arrow pointing upward from the ocean?

Evaporation



91. Compare the permeability of A, B, & C.

A = least C = greatest

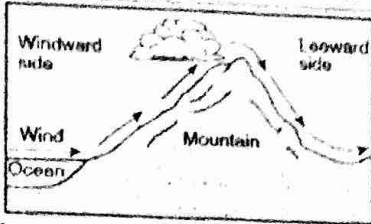
92. Compare the porosity of A, B, & C.

A = B = C (all same)

93. Compare the capillarity of A, B, & C.

A = greatest C = least

CLIMATE & GROUNDWATER:



Windward = cool + humid

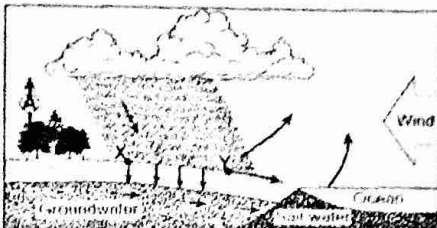
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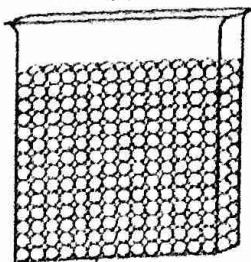
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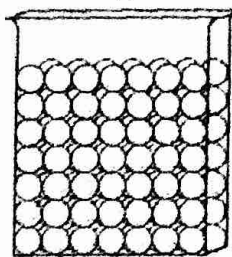
90. What is the name for the arrow pointing upward from the ocean?

Evaporation

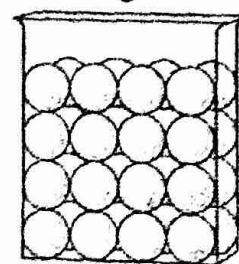
A



B



C



91. Compare the permeability of A, B, & C.

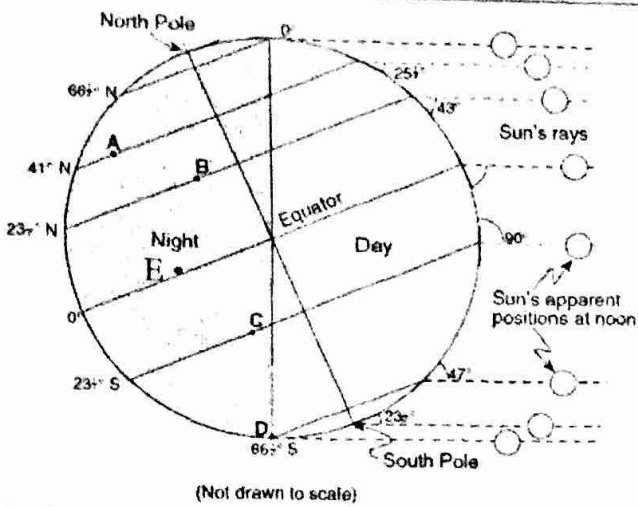
A = least C = greatest

92. Compare the porosity of A, B, & C.

A = B = C (all same)

93. Compare the capillarity of A, B, & C.

A = greatest C = least



A:

Shortest = less than 12 hours

E:

exactly 12 hours

C:

longest = more than 12 hours

77. Compare the length of day for points A, E, & C.

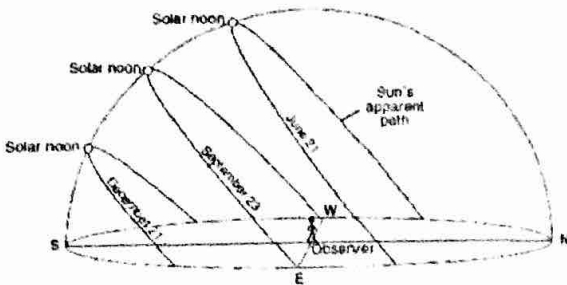
78. In 6 months what will the length of day be for location E?

12 hours (always 12 @ equator)

June 21 - most intense

September 23 - moderate

December 21 - least intense



79. Compare the intensity of insolation for all three sun's paths.

80. State the direction of sunrise and sunset for all three sun's paths.

June 21 NE

September 23 due E

December 21 SE

81. On which date would the observer cast the longest shadow at solar noon?

December 21

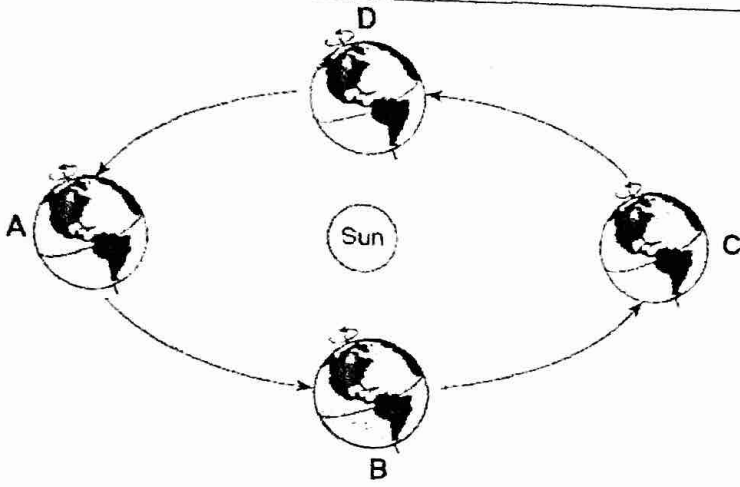
82. Which direction would the observer's shadow point just after sunrise on December 21st?

NW (opposite the sun)

83. If the person were to travel 10° of latitude closer to the equator, how would the sun's path change?

They would migrate towards the Zenith

SEASONS & INSOLATION:



(Not drawn to scale)

A: December 21st

B: March 21st

C: June 21st

D: September 21st

69. What are the dates for each position?

70. How many complete rotations does the earth make during one complete trip about the sun (orbit)?

365.25

71. In which position is Earth the greatest distance from the sun?

C

72. What is the approximate local time for New York City for all four positions?

A: 6 AM

B: 12 AM / midnight

C: 6 PM

D: 12 PM / noon

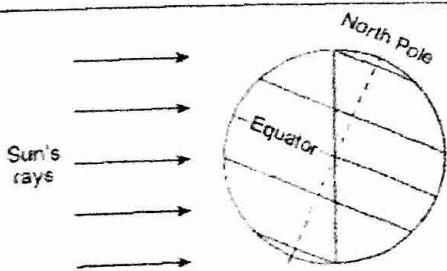
73. In what direction would an observer in NY have to look to see the sunrise for all four positions?

A: SE

B: E

C: NE

D: E



Date:

December 21st

Season in NY:

Winter

74. What is the date represented? What season is it in NY?

75. What latitude is receiving the most direct insolation?

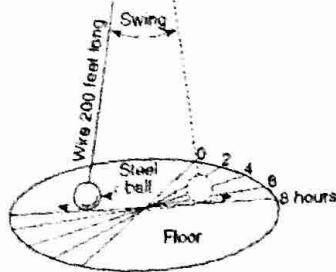
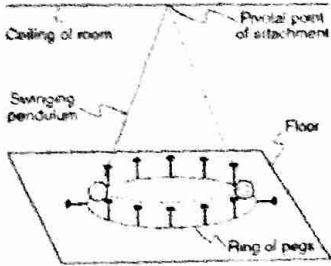
23.5°S / Tropic of Capricorn

76. In 3 months, how will the intensity of insolation change for NY?

Stronger

62. What is the name of the reaction that generates light & energy in all stars?

nuclear fusion



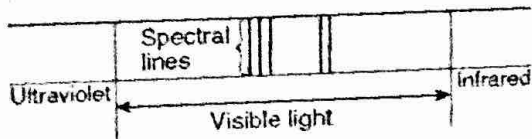
Rotation

63. The pendulum is used to prove which motion of the earth?

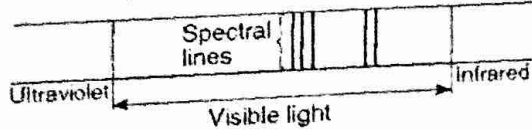
64. At the north pole what would be the rate at which the pendulum appears to change direction? At the Equator?

N. Pole: $15^\circ/\text{hour}$
Equator: None

Standard Spectrum



Spectrum from Distant Star



The star is moving away.

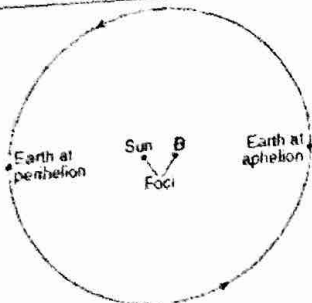
65. What was the relative motion of this star compared to the observer?

66. What was inferred when the same results were noticed by analyzing spectrum from galaxies?

The universe is expanding.

67. What is the name of our galaxy? What is its shape?

Name: Milky Way
Shape: Spiral



(Not drawn to scale)

68. Describe the gravitational force on Earth, orbital velocity of Earth and the apparent diameter of the Sun at perihelion & aphelion.

	Perihelion	Aphelion
Gravitational Force:	Strong	Weak
Orbital Velocity:	Fast	Slow
Apparent Diameter of the sun:	Big	Small