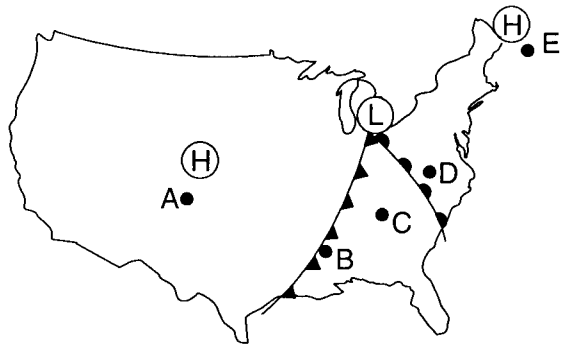


1. Which weather instrument has most improved the accuracy of weather forecasts over the past 40 years?

- 1) thermometer
- 2) sling psychrometer
- 3) weather satellite
- 4) weather balloon

2. The map below shows high-pressure and low-pressure weather systems in the United States.



Key	
(H)	High pressure
(L)	Low pressure

Which two lettered positions on the map are most likely receiving precipitation?

- 1) A and B
- 2) B and D
- 3) C and E
- 4) A and D

3. Weather-station measurements indicate that the dewpoint temperature and air temperature are getting farther apart and that air pressure is rising. Which type of weather is most likely arriving at the station?

- 1) a snowstorm
- 2) a warm front
- 3) cool, dry air
- 4) maritime tropical air

4. A temperature of 20°C is equal to a temperature of

- 1) -7°F
- 2) 36°F
- 3) 68°F
- 4) 293°F

5. An air pressure of 29.47 inches of mercury is equal to

- 1) 996 mb
- 2) 998 mb
- 3) 1,002 mb
- 4) 1,014 mb

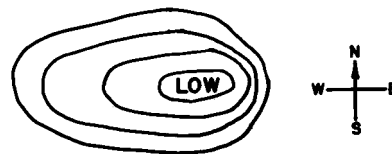
6. Wind velocity is most directly dependent on the

- 1) gradient of the air pressure field
- 2) value of the Coriolis effect
- 3) moisture content of the air
- 4) rotational velocity of the Earth

7. Which list correctly matches each instrument with the weather variable it measures?

- 1) wind vane—wind speed
thermometer—temperature
precipitation gauge—relative humidity
- 2) wind vane—wind direction
thermometer—dewpoint
psychrometer—air pressure
- 3) barometer—relative humidity
anemometer—cloud cover
precipitation gauge—probability of precipitation
- 4) barometer—air pressure
anemometer—wind speed
psychrometer—relative humidity

8. The diagram below shows the isolines of air pressure around a low-pressure center. On which side of the low-pressure center will the wind speed be greatest?



- 1) north
- 2) south
- 3) east
- 4) west

9. Which weather variable can be determined by using a psychrometer?

- 1) barometric pressure
- 2) cloud cover
- 3) relative humidity
- 4) wind speed

10. What is the relative humidity when the dry-bulb temperature is 16°C and the wet-bulb temperature is 14°C?

- 1) 90%
- 2) 80%
- 3) 14%
- 4) 13%

11. Daily weather forecasts are based primarily on
- 1) ocean currents
 - 2) seismic data
 - 3) phases of the Moon
 - 4) air-mass movements

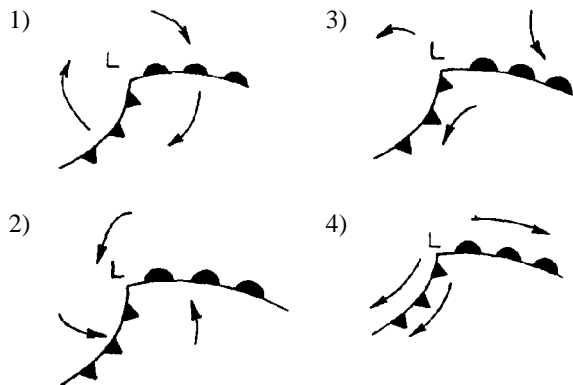
12. The chart below shows the air temperature and the dewpoint temperature near the ground at a given location for four consecutive days. All temperatures were recorded at noon.

Day	Air Temperature (°C)	Dewpoint Temperature (°C)
1	20	11
2	18	17
3	16	14
4	20	13

Which statement is best supported by the data?

- 1) Relative humidity was highest on day 1.
- 2) The greatest amount of water vapor was in the atmosphere on day 2.
- 3) The base level for cloud formation was highest on day 3.
- 4) The chance of precipitation was greatest on day 4.

13. Which diagram below best represents the air circulation around a Northern Hemisphere low-pressure center?



14. Tornadoes occur when a very cold, dry air mass meets a very warm, wet air mass. Which two air masses would most likely form a tornado when they meet?

- 1) cP and cA
- 2) cT and mP
- 3) cP and mT
- 4) mP and mT

15. Why do clouds usually form at the leading edge of a cold airmass?

- 1) Cold air flows over warm air, causing the warm air to descend and cool.
- 2) Cold air flows under warm air, causing the warm air to rise and cool.
- 3) Cold air contains more dust than warm air does.
- 4) Cold air contains more water vapor than warm air does.

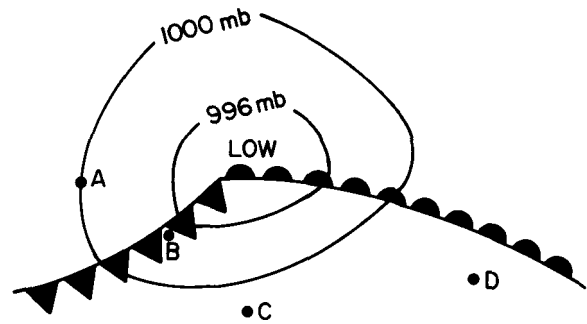
16. The properties of an airmass depend mainly on the

- 1) wind speed within the airmass
- 2) characteristics of the surface over which the airmass was formed
- 3) size of the airmass
- 4) rotation of the Earth

17. On a weather map, an airmass that is very warm and dry would be labeled

- 1) mP
- 2) mT
- 3) cP
- 4) cT

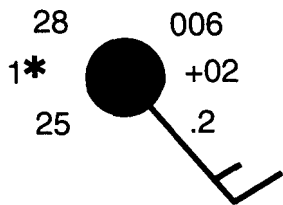
18. Cities A, B, C, and D on the weather map below are being affected by a low-pressure system (cyclone).



Which city would have the most unstable atmospheric conditions and the greatest chance of precipitation?

- 1) A
- 2) B
- 3) C
- 4) D

19. What is the air pressure indicated on the weather station model shown below?

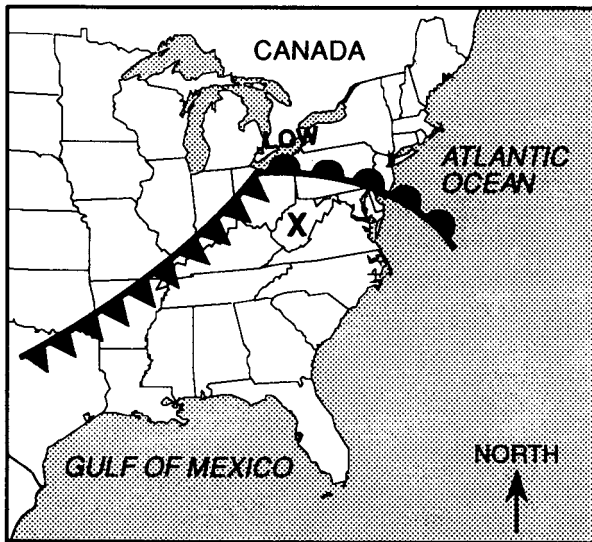


- 1) 900.6 mb
- 2) 960.0 mb
- 3) 1000.6 mb
- 4) 1006.0 mb

20. The rate of evaporation from the surface of a lake would be increased by

- 1) a decrease in wind velocity
- 2) a decrease in the amount of insolation
- 3) an increase in the surface area of the lake
- 4) an increase in the moisture content of the air

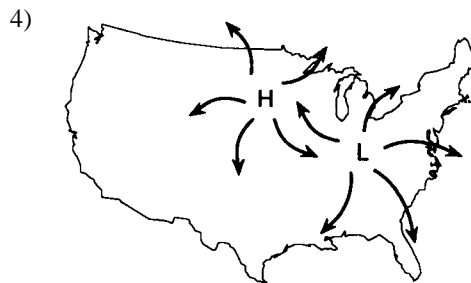
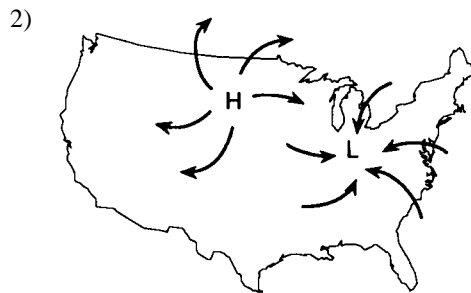
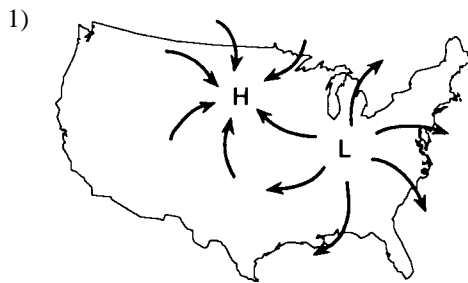
21. The weather map below shows a frontal system that has followed a typical storm track.



The air mass located over point X most likely originated over the

- 1) northern Atlantic Ocean
- 2) central part of Canada
- 3) Gulf of Mexico
- 4) Pacific Northwest

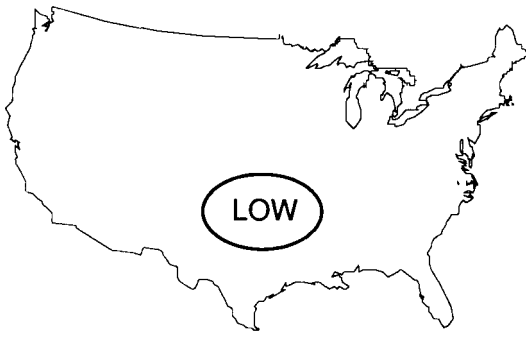
22. Which map correctly shows the wind directions of the high-pressure and low-pressure systems?



23. Which event is a direct result of transpiration and evaporation?

- 1) The atmosphere warms.
- 2) Cloud cover decreases.
- 3) Moisture enters the atmosphere.
- 4) Moisture leaves the atmosphere.

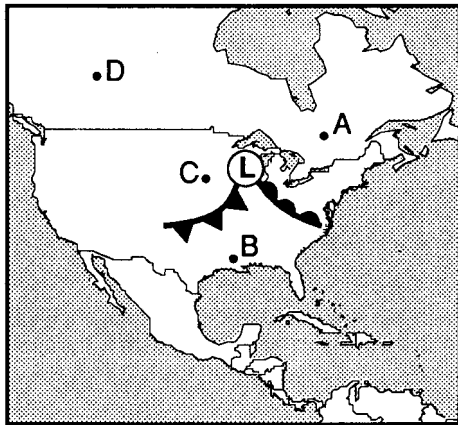
24. The map below shows a low-pressure system located over an area in the south-central United States.



In the next few days, because of the prevailing winds, the air mass will probably move toward the

- 1) southeast 3) southwest
2) northeast 4) northwest

25. The map of North America below shows a low-pressure center and its associated fronts. The letters A, B, C, and D represent weather stations.



If this weather system follows a typical path, at which station would the low-pressure center be located in about 24 hours?

- 1) station A 3) station C
2) station B 4) station D

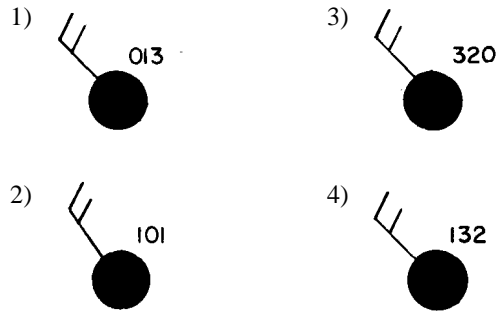
26. Large oceans moderate the climatic temperatures of surrounding coastal land areas because the temperature of ocean water changes

- 1) rapidly, due to water's low specific heat
2) rapidly, due to water's high specific heat
3) slowly, due to water's low specific heat
4) slowly, due to water's high specific heat

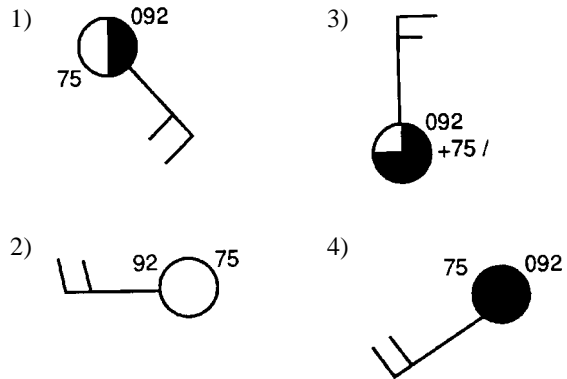
27. Which statement best explains how atmospheric dust particles influence the water cycle?

- 1) Dust particles are the main source of dissolved salts in the sea.
2) Dust particles increase the capacity of the atmosphere to hold water vapor.
3) Dust particles increase the amount of evaporation that takes place.
4) Dust particles provide surfaces on which water vapor can condense.

28. A weather station records a barometric pressure of 1013.2 millibars. Which diagram below would best represent this weather station on a weather map?



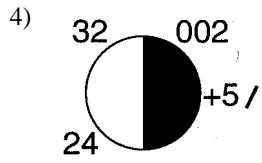
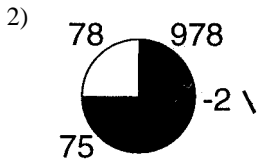
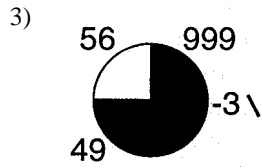
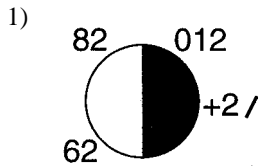
29. Which station model represents an atmospheric pressure of 1,009.2 millibars and a temperature of 75°F?



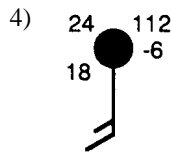
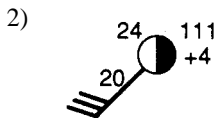
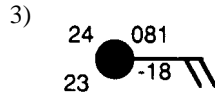
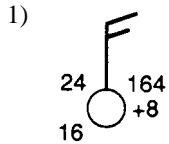
30. Compared to a coastal location of the same elevation and latitude, an inland location is likely to have

- 1) warmer summers and cooler winters
2) warmer summers and warmer winters
3) cooler summers and cooler winters
4) cooler summers and warmer winters

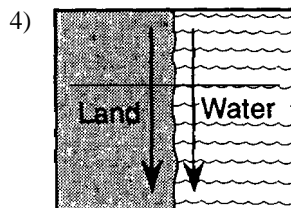
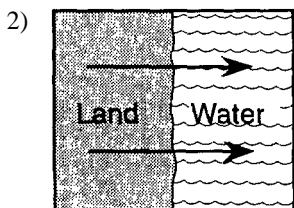
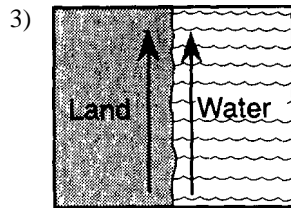
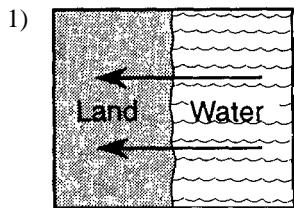
31. Which weather station model indicates the highest relative humidity?



32. Which weather station model indicates the greatest probability of precipitation?

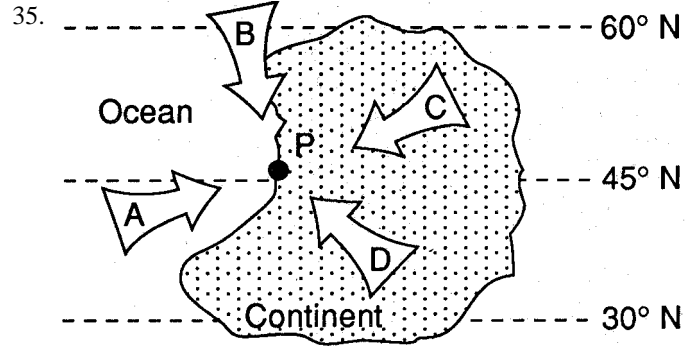


33. Adjacent water and land surfaces have the same temperature at sunrise on a clear, calm day. A surface wind develops after the water and land are heated by the Sun for a few hours. On which map do the arrows best represent the direction of this wind?



34. The Earth's planetary winds are deflected as a result of the Earth's

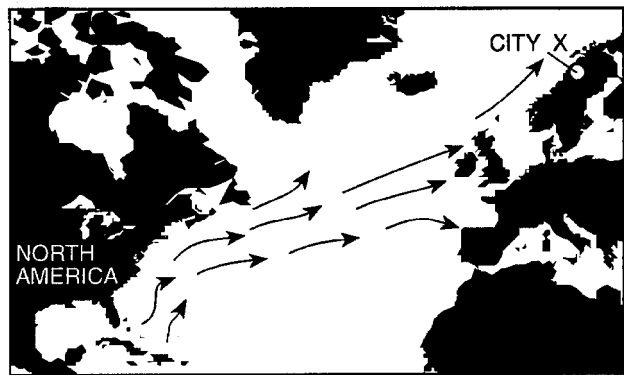
- 1) revolution around the Sun
- 2) seasonal changes
- 3) rotation on its axis
- 4) tilted axis



The map above shows an imaginary continent in the Earth's planetary wind belt between 30° and 60° North latitude. Location P is on the western edge of the continent. Location P has mild winters with much precipitation. Which arrow indicates the direction of the prevailing winds at this location?

- 1) A
- 2) B
- 3) C
- 4) D

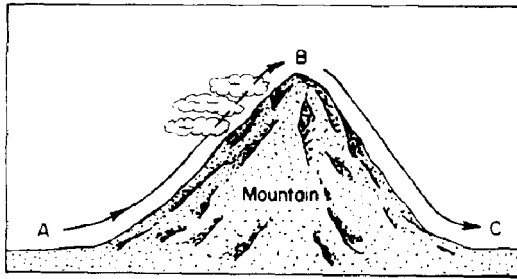
36. Arrows on the map represent ocean currents.



These ocean currents affect the climate pattern of city X by

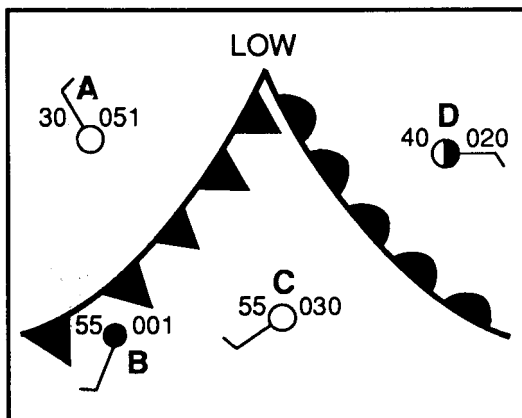
- 1) decreasing the average annual cloud cover
- 2) decreasing the average annual evapotranspiration
- 3) increasing the average annual temperature
- 4) increasing the average annual air pressure

37. The diagram below shows the flow of air over a mountain from point A to point C. Which graph best shows the approximate temperature change of the rising and descending air due to the adiabatic process?



- 1) 3)
- 2) 4)

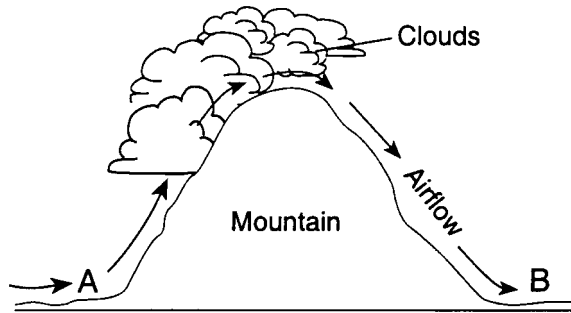
38. The map below represents a section of a weather map for locations in the eastern United States. The map shows a low-pressure system, fronts, and weather stations A, B, C, and D.



At which weather station are weather conditions probably most *unstable*?

- 1) A 3) C
2) B 4) D

Base your answers to questions 39 and 40 on the diagram of a mountain shown below. The arrows represent the direction of airflow over the mountain.



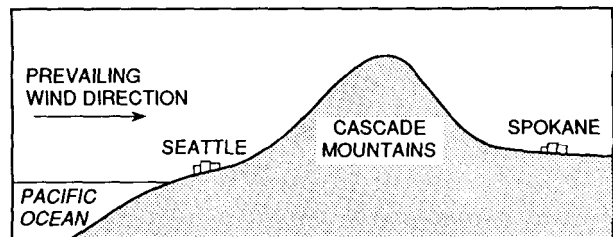
39. As the air moves up the windward side of the mountain, the air

- 1) compresses and warms 3) expands and warms
2) compresses and cools 4) expands and cools

40. Compared to the temperature and humidity conditions at location A, the conditions at location B are

- 1) warmer and less humid 3) cooler and less humid
2) warmer and more humid 4) cooler and more humid

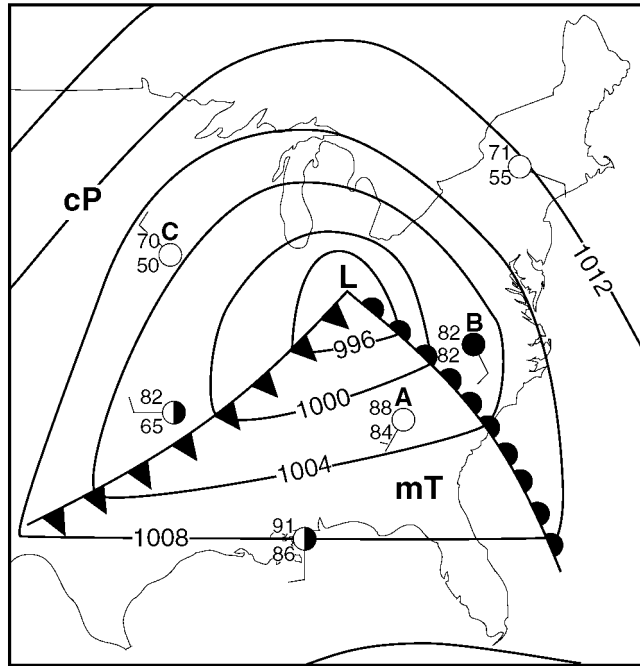
41. The diagram below shows the positions of the cities of Seattle and Spokane, Washington. Both cities are located at approximately 48° North latitude, and they are separated by the Cascade Mountains.



How does the climate of Seattle compare with the climate of Spokane?

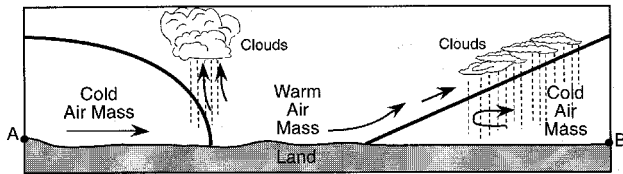
- 1) Seattle – hot and dry
Spokane – cool and humid
2) Seattle – hot and humid
Spokane – cool and dry
3) Seattle – cool and humid
Spokane – warm and dry
4) Seattle – cool and dry
Spokane – warm and humid

42. Base your answer to the following question on the weather map below. The map shows a low-pressure system and some atmospheric conditions at weather stations A, B, and C.



- If this weather system follows a normal storm track, the low-pressure center (L) will generally move toward the
- 1) northeast
 - 2) northwest
 - 3) southeast
 - 4) southwest

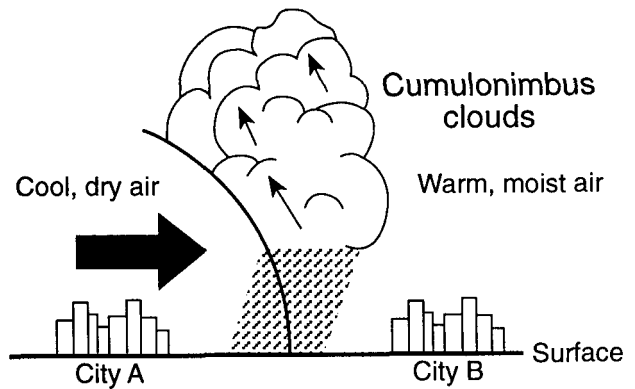
43. The diagram below represents a cross section of air masses and frontal surfaces along line AB. The dashed lines represent precipitation.



Which weather map best represents this frontal system?

- | | |
|----|----|
| 1) | 3) |
| 2) | 4) |

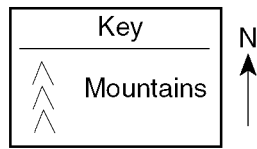
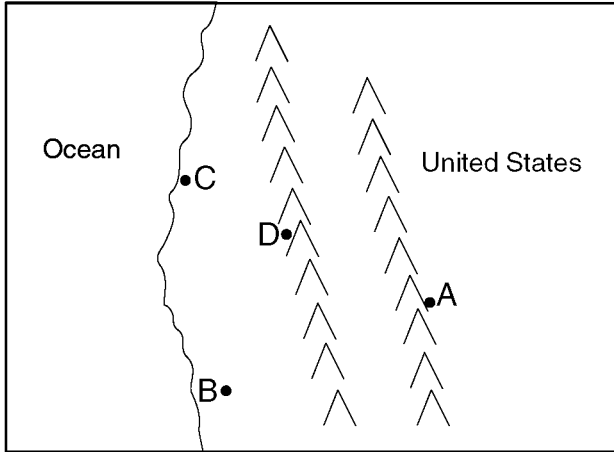
44. The cross section below shows a weather front. The large arrow shows the direction of the movement of the cool air mass.



Which type of weather front is shown?

- 1) warm front
- 2) cold front
- 3) occluded front
- 4) stationary front

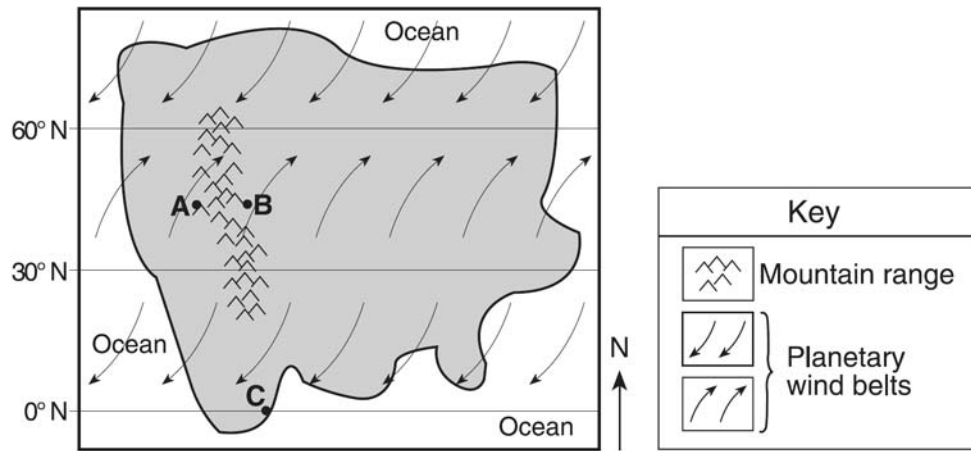
45. The map below shows the location of four cities, *A*, *B*, *C*, and *D*, in the western United States where prevailing winds are from the southwest.



Which city most likely receives the *least* amount of average yearly precipitation?

- | | |
|-------------|-------------|
| 1) <i>A</i> | 3) <i>C</i> |
| 2) <i>B</i> | 4) <i>D</i> |

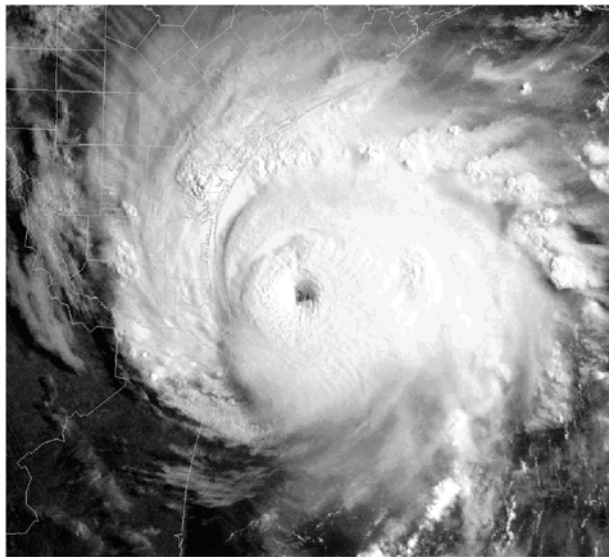
46. Base your answer to the following question on map below, which represents an imaginary continent. Locations *A* and *B* are on opposite sides of a mountain range on a planet similar to Earth. Location *C* is on the planet's equator.



Compared to the climate at location *A*, the climate at location *B* would most likely be

- 1) warmer and more humid 2) warmer and less humid 3) cooler and more humid 4) cooler and less humid

Base your answers to questions 47 through 50 on the satellite image below, which shows a Northern Hemisphere hurricane.



47. What is the usual surface wind pattern around the eye of Northern Hemisphere hurricanes?

- 1) clockwise and outward 2) clockwise and inward
 3) counterclockwise and outward 4) counterclockwise and inward

48. Which air mass is normally associated with the formation of hurricanes?

- 1) continental tropical 2) maritime tropical 3) continental polar 4) maritime polar

49. Clouds form in the hurricane because the air is

- 1) sinking, expanding, and cooling
- 2) sinking, compressing, and warming
- 3) rising, expanding, and cooling
- 4) rising, compressing, and warming

50. When the eye of this hurricane reaches 43° N latitude, this hurricane will most likely be pushed by planetary winds toward the

- 1) northwest
- 2) northeast
- 3) southwest
- 4) southeast
