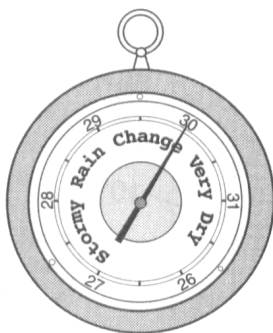
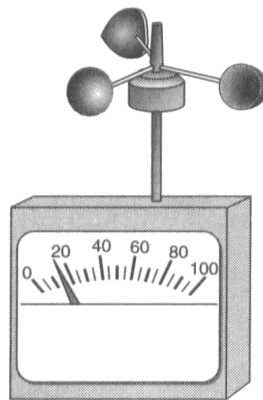


1. The diagram below shows weather instruments *A* and *B*.



A



B

Which table correctly indicates the name of the weather instrument and the weather variable that it measures?

A)

Instrument		Weather Variable Measured
Letter	Name	
A	thermometer	humidity
B	wind vane	wind direction

B)

Instrument		Weather Variable Measured
Letter	Name	
A	thermometer	wind direction
B	wind vane	humidity

C)

Instrument		Weather Variable Measured
Letter	Name	
A	barometer	wind speed
B	anemometer	air pressure

D)

Instrument		Weather Variable Measured
Letter	Name	
A	barometer	air pressure
B	anemometer	wind speed

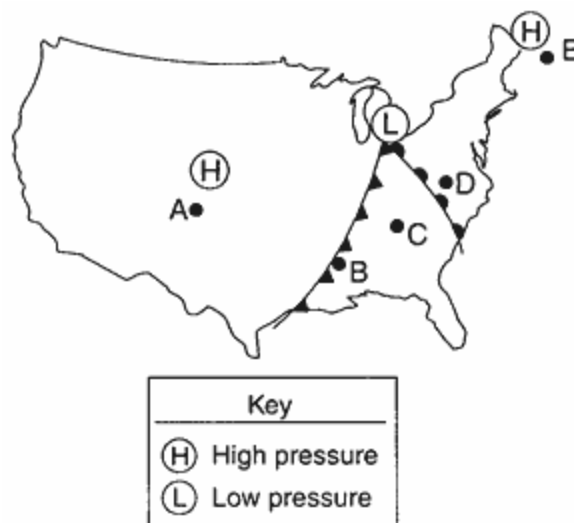
2. Which weather change is most likely indicated by rapidly falling air pressure?

- A) Humidity is decreasing.
- B) Temperature is decreasing.
- C) Skies are clearing.
- D) A storm is approaching.**

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?

- A) a snowstorm
- B) a warm front
- C) cool, dry air**
- D) maritime tropical air

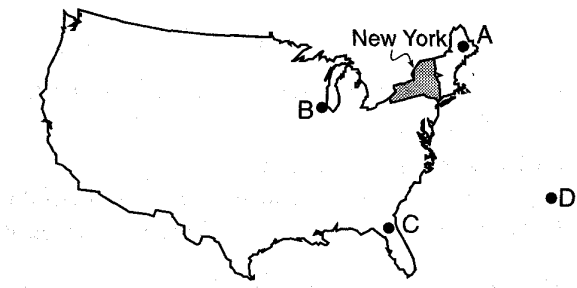
4. The map below shows high-pressure and low-pressure weather systems in the United States.



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

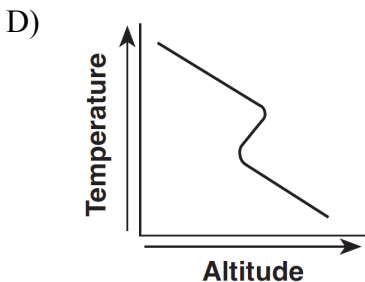
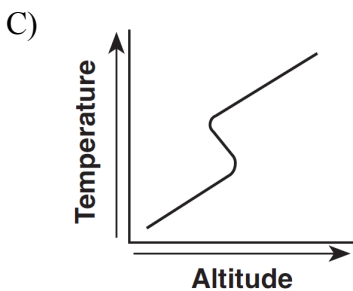
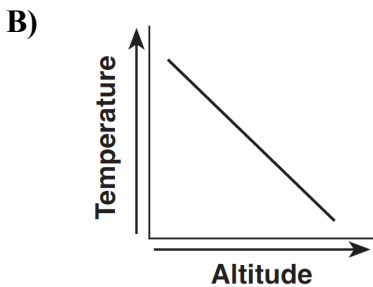
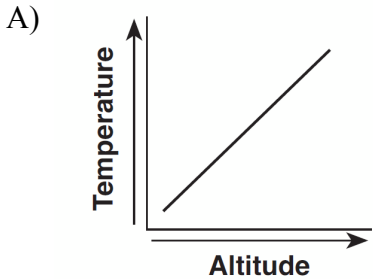
- A) *A* and *B*
- B) *B* and *D***
- C) *C* and *E*
- D) *A* and *D*

5. A map of the United States is shown below.



Weather conditions in which location would be of most interest to a person predicting the next day's weather for New York State?

- A) *A* **B) *B*** C) *C* D) *D*
6. Which graph best shows the general relationship between altitude and temperature in the troposphere?



7. A temperature of 104°F is approximately equal to

A) 220°C B) 214°C C) 43°C **D) 40°C**

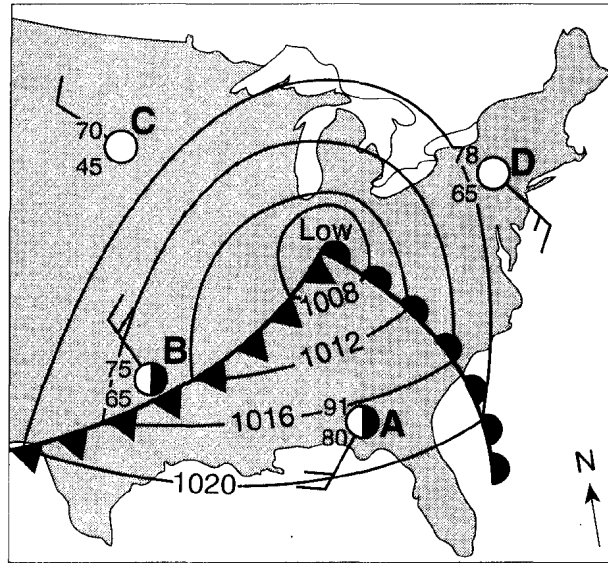
8. A temperature of 73° Fahrenheit is approximately equal to a temperature of

A) 17° Celsius **B) 23° Celsius**
C) 26° Celsius D) 162° Celsius

9. Air pressure is usually highest when the air is

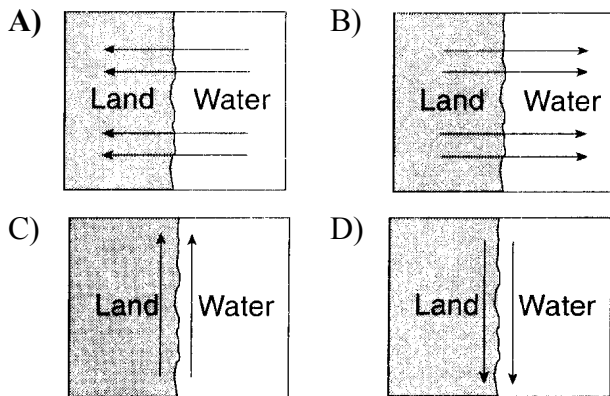
A) cool and humid **B) cool and dry**
C) warm and humid D) warm and dry

Base your answers to questions **10** and **11** on the weather map below, which shows a low-pressure system over the eastern United States. Letters *A* through *D* represent weather stations.



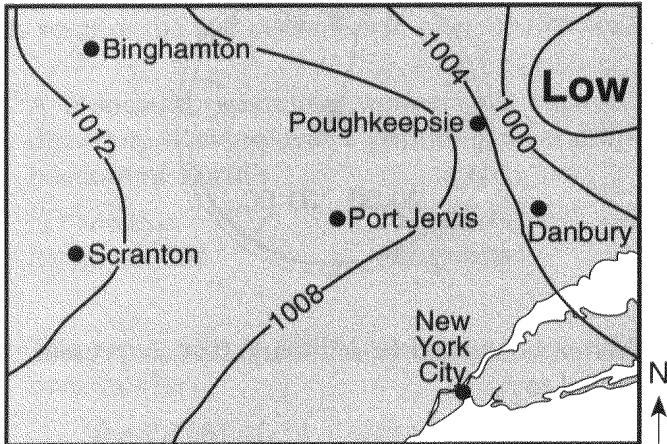
10. Surface winds within this low-pressure system most likely are flowing
- A) toward the center in a clockwise pattern
 - B) toward the center in a counterclockwise pattern**
 - C) away from the center in a clockwise pattern
 - D) away from the center in a counterclockwise pattern
11. Which weather instrument was used to measure wind speed at station *D*?
- A) barometer
 - B) thermometer
 - C) psychrometer
 - D) anemometer**

12. Adjacent water and landmasses are heated by the morning Sun on a clear, calm day. After a few hours, a surface wind develops. Which map best represents this wind's direction?

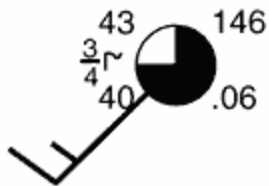


13. A barometric pressure of 1021.0 millibars is equal to how many inches of mercury?
- A) 29.88
 - B) 30.15**
 - C) 30.25
 - D) 30.50

Base your answers to questions 14 and 15 on the weather map below, which shows a low-pressure system centered near Poughkeepsie, New York. Isobars shown are measured in millibars.



14. Surface winds are most likely blowing from
- Danbury toward New York City
 - Poughkeepsie toward Scranton
 - Binghamton toward Danbury**
 - Port Jervis toward Binghamton
15. Which city is most likely experiencing winds of the greatest velocity?
- New York City
 - Binghamton
 - Poughkeepsie**
 - Scranton
-
16. Various weather conditions at LAX Airport in Los Angeles are shown on the station model below.

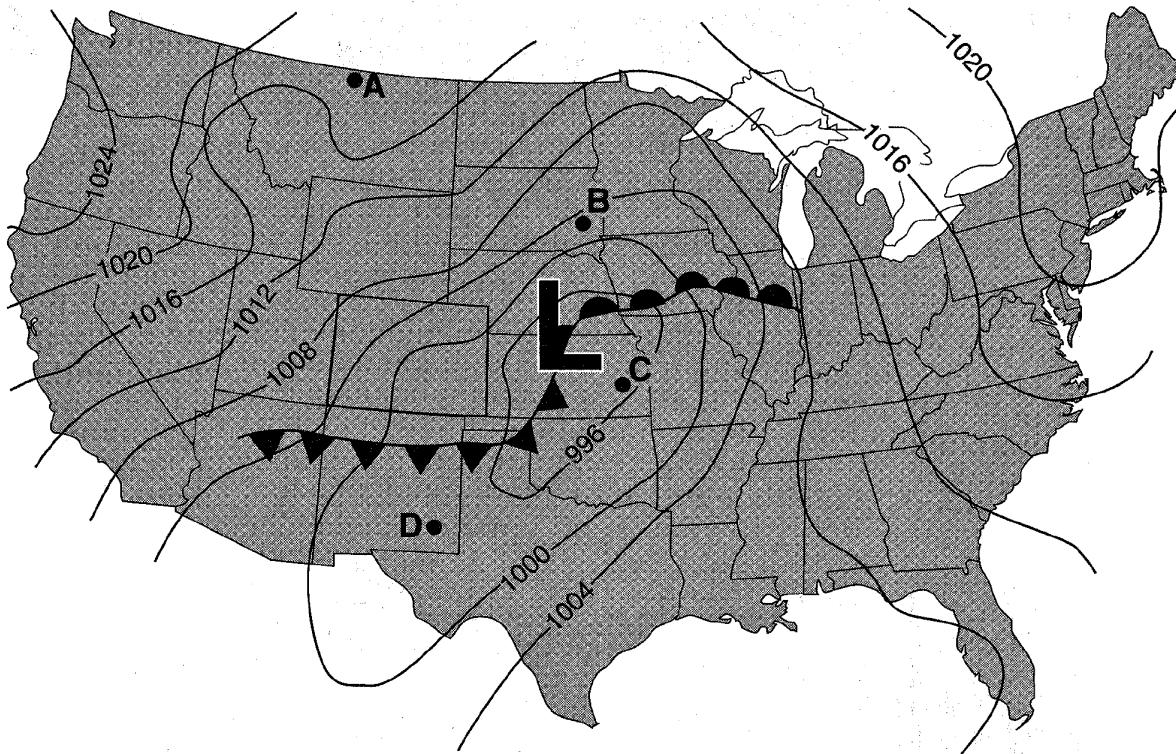


What were the barometric pressure and weather conditions at the airport at the time of the observation?

- 914.6 mb of pressure and smog
 - 914.6 mb of pressure and a clear sky
 - 1014.6 mb of pressure and smog**
 - 1014.6 mb of pressure and a clear sky
17. What is the relative humidity when the dry-bulb temperature is 16°C and the wet-bulb temperature is 14°C?
- 90%
 - 80%**
 - 14%
 - 13%

18. Which weather variable can be determined by using a psychrometer?
- barometric pressure
 - cloud cover
 - relative humidity**
 - wind speed
19. As the dewpoint temperature of a sample of air decreases, the amount of moisture in that sample of air
- decreases**
 - increases
 - remains the same

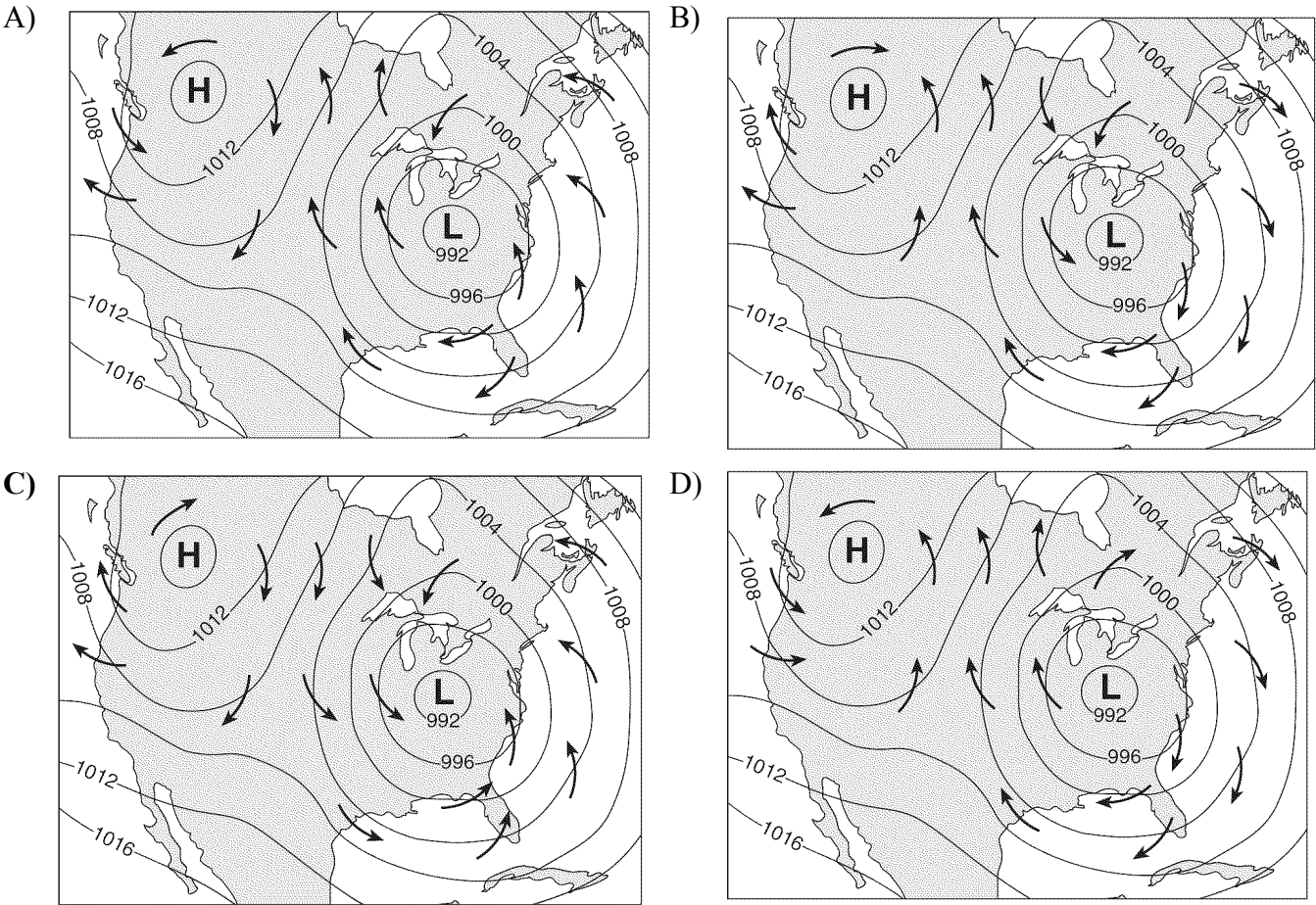
20. Base your answer to the following question on the weather map below, which shows a low-pressure system over the central United States. Isobars are labeled in millibars. Points *A*, *B*, *C*, and *D* represent locations on Earth's surface.



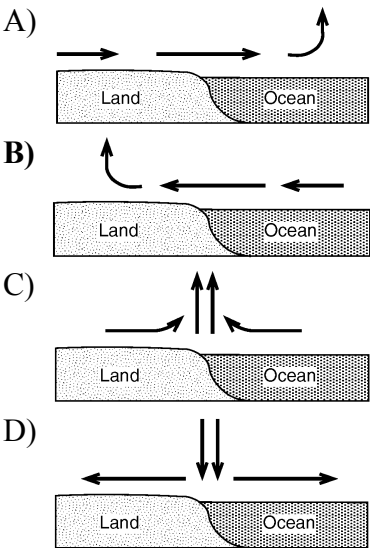
The circulation of surface winds associated with this low-pressure system is

- A) clockwise and toward the center of the low
 - B) clockwise and away from the center of the low
 - C) **counterclockwise and toward the center of the low**
 - D) counterclockwise and away from the center of the low
-
21. The surface winds in a typical Northern Hemisphere high-pressure system are generally moving
- A) counterclockwise away from the high-pressure center
 - B) counterclockwise toward the high-pressure center
 - C) **clockwise away from the high-pressure center**
 - D) clockwise toward the high-pressure center
-

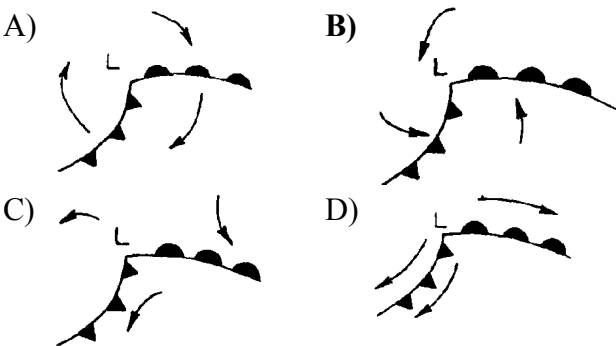
22. Which map best represents the direction of surface winds associated with the high-pressure and low-pressure systems?



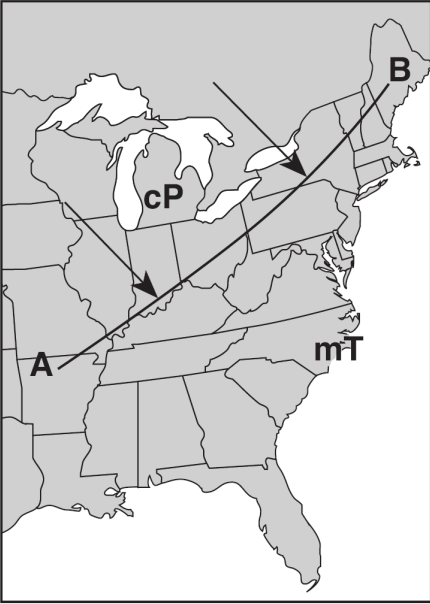
23. Adjacent land and ocean surfaces have the same temperature at sunrise on a clear, calm, summer day. Then the land and water are heated by the Sun for several hours. Which cross section shows the most likely direction of surface winds that will develop at this ocean shore?



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



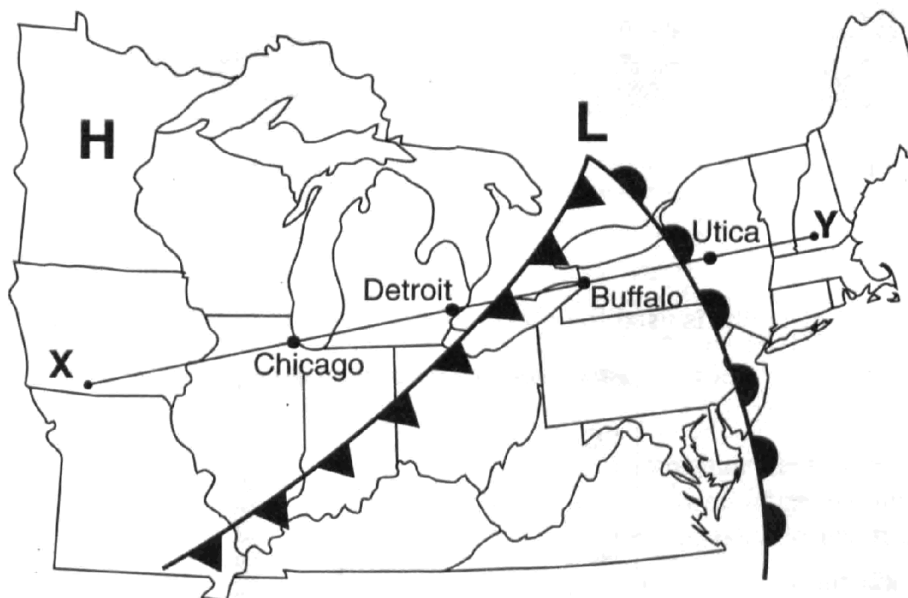
25. The weather map below shows a portion of the United States. Line AB represents a frontal boundary between two air masses. The two large arrows indicate the direction that a cP air mass is moving.



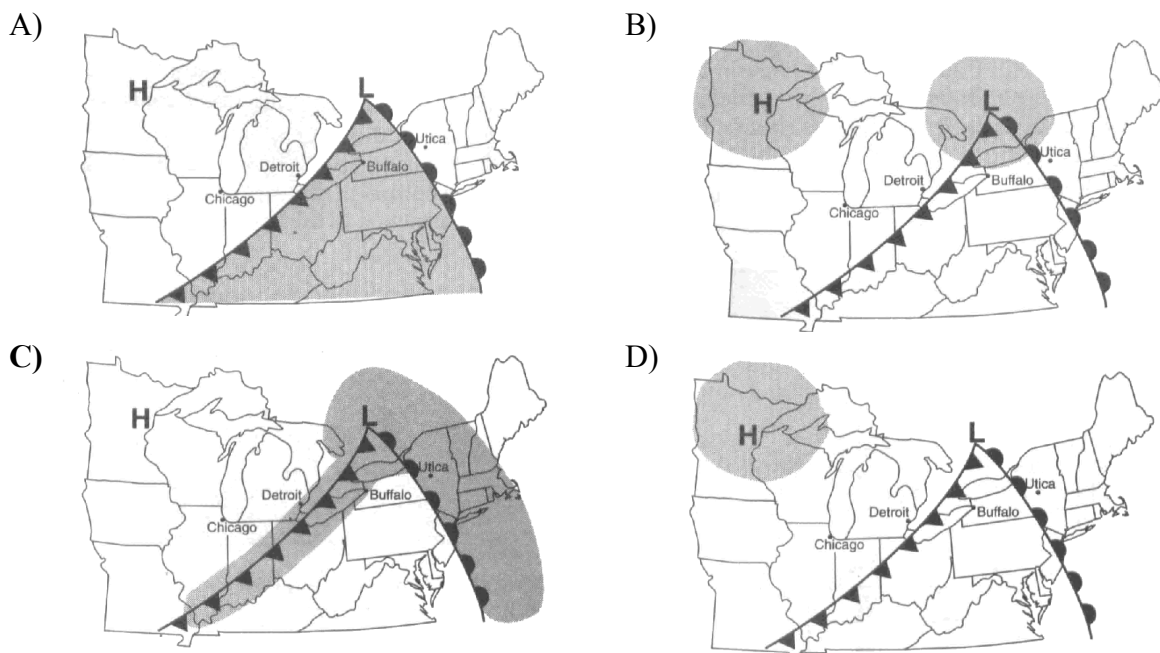
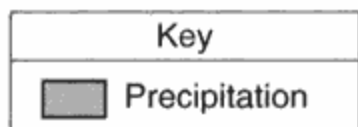
Which symbol correctly represents the frontal boundary at line AB ?

- A)
- B)
- C)
- D)

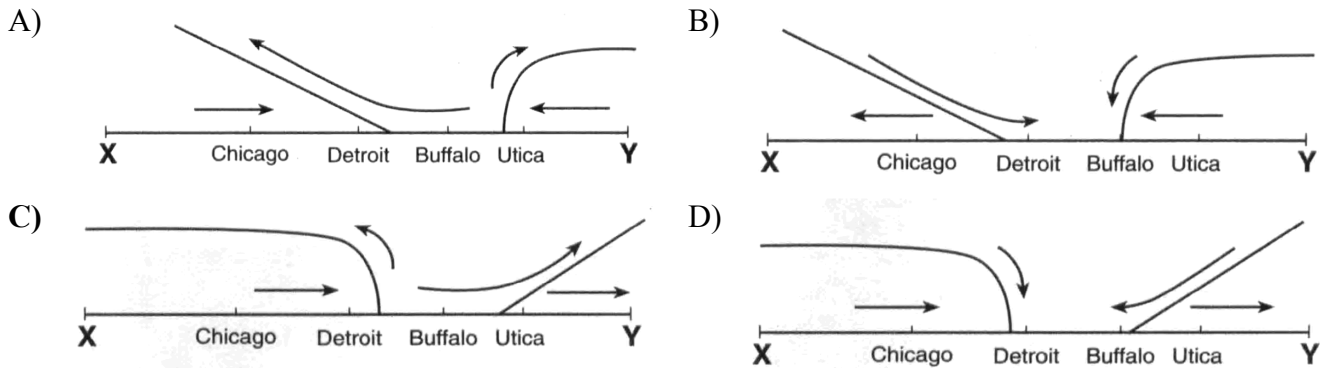
Base your answers to questions 26 through 28 on the weather map below, which shows a high-pressure center (H) and a low-pressure center (L), with two fronts extending from the low-pressure center. Points *X* and *Y* are locations on the map connected by a reference line.



26. Which map best shows the most probable areas of precipitation associated with these weather systems?



27. Which cross section best represents the fronts and air movements in the lower atmosphere along line *XY*?



28. Which type of front is located between Buffalo and Detroit?

- A) stationary B) warm C) occluded **D) cold**

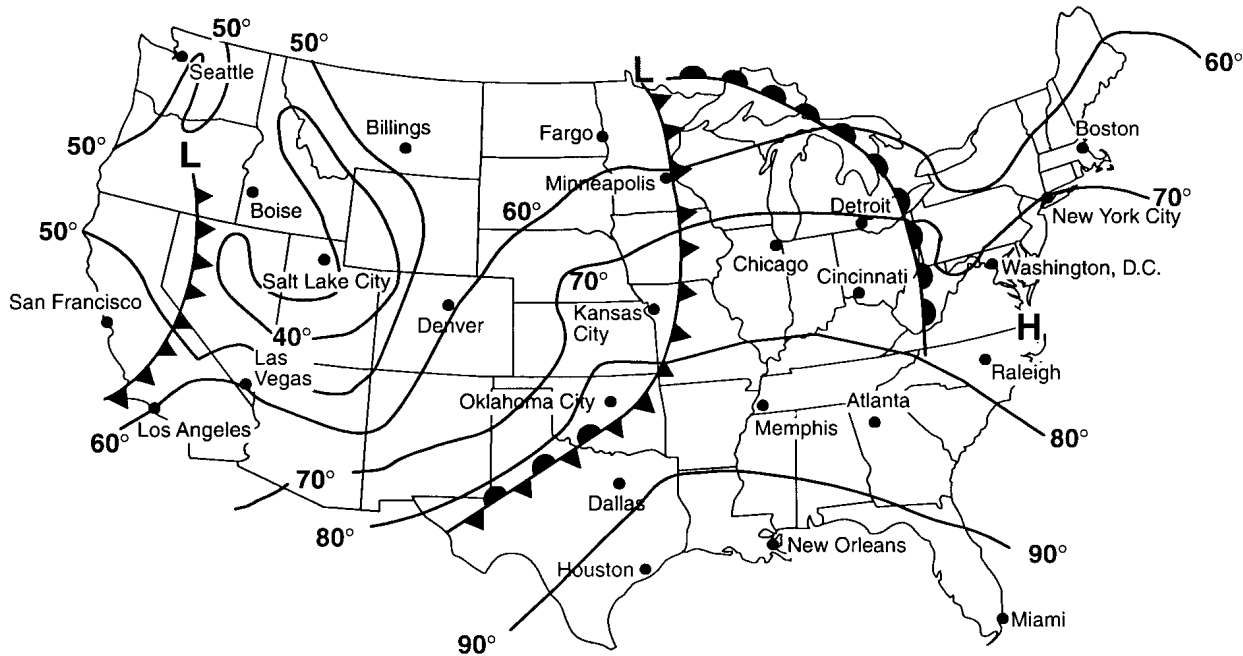
29. Which type of air mass is associated with warm, dry atmospheric conditions?

- A) cP **B) cT** C) mP D) mT

30. Weather along most fronts is usually cloudy with precipitation because the warm air along most fronts is usually

- A) sinking and cooling, causing water to evaporate
B) sinking and warming, causing water to evaporate
C) rising and cooling, causing water vapor to condense
D) rising and warming, causing water vapor to condense

Base your answers to questions 31 and 32 on the weather map below, which shows the location of fronts and the temperature field on a given day in the United States.



31. Which two cities most likely have an air temperature closest to 75°F?
- A) Chicago and Detroit
B) Los Angeles and Denver
C) Oklahoma City and Memphis
D) Cincinnati and Kansas City
32. The passage of a cold front most recently influenced the weather of which two cities?
- A) Chicago and Boise
B) Las Vegas and Salt Lake City
C) Kansas City and Minneapolis
D) Detroit and Cincinnati
33. Which statement best explains why precipitation occurs at frontal boundaries?
- A) Cold fronts move slower than warm fronts.
B) Cold fronts move faster than warm fronts.
C) Warm, moist air sinks when it meets cold, dry air.
D) Warm, moist air rises when it meets cold, dry air.
34. 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?
- A) cP and cA
B) cT and mP
C) cP and mT
D) mP and mT
35. The diagram below represents a cross-sectional view of airmasses associated with a low-pressure system. The cold frontal interface is moving faster than the warm frontal interface. What usually happens to the warm air that is between the two frontal surfaces?
-
- A) The warm air is forced over both frontal interfaces.**
B) The warm air is forced under both frontal interfaces.
C) The warm air is forced over the cold frontal interface but under the warm frontal interface.
D) The warm air is forced under the cold frontal interface but over the warm frontal interface.

36. An Earth science student observed the following weather conditions in Albany, New York, for 2 days: The first day was warm and humid with southerly winds. The second day, the temperature was 15 degrees cooler, the relative humidity had decreased, and wind direction was northwest. Which type of air mass most likely had moved into the area on the second day?

- A) continental tropical **B) continental polar**
 C) maritime tropical D) maritime polar

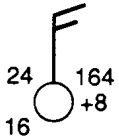
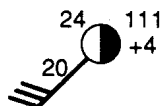
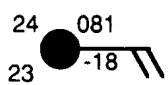
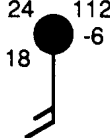
37. In Connecticut, dry, cool air masses (cP) often interact with moist, warm air masses (mT). Which statement correctly matches each air mass with its usual geographic source region?

- A) cP is from the North Atlantic Ocean and mT is from the deserts of the southwestern United States.
 B) cP is from northern Canada and mT is from the deserts of the southwestern United States.
C) cP is from northern Canada and mT is from the Gulf of Mexico.
 D) cP is from the North Atlantic Ocean and mT is from the Gulf of Mexico.

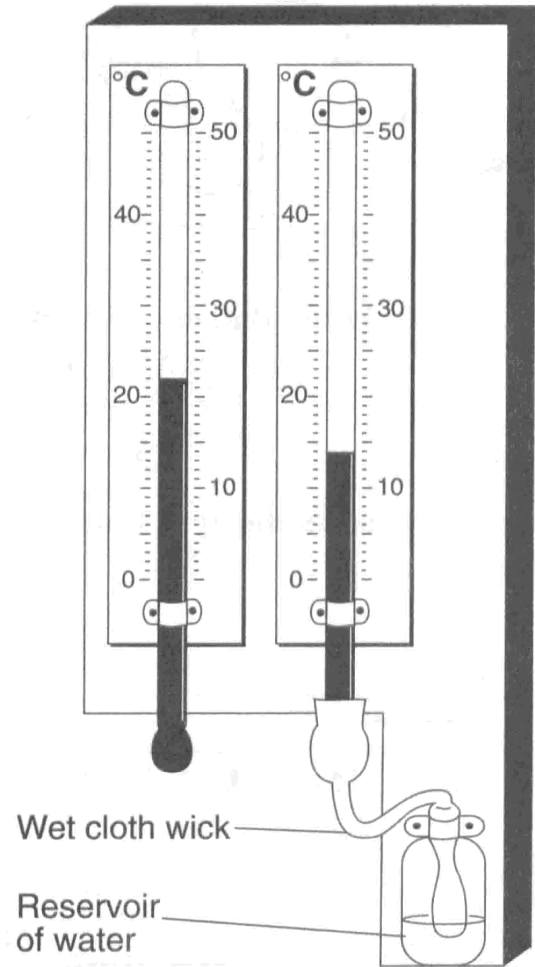
38. If a low-pressure system follows a typical storm track across New York State, it will move toward the

- A) southeast B) southwest
C) northeast D) northwest

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

- A)  B) 
 C)  D) 

40. The weather instrument below is used to determine dewpoint and relative humidity.



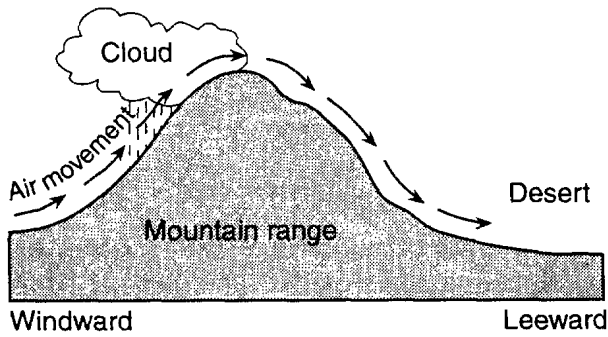
Based on the temperature shown, the approximate dewpoint and relative humidity are

- A) -19°C and 4% B) -5°C and 25%
C) 8°C and 40% D) 12°C and 53%

41. A parcel of air has a dry-bulb temperature of 24°C and a relative humidity of 55%. What is the dewpoint of this parcel of air?

- A) 6°C **B) 14°C** C) 24°C D) 29°C

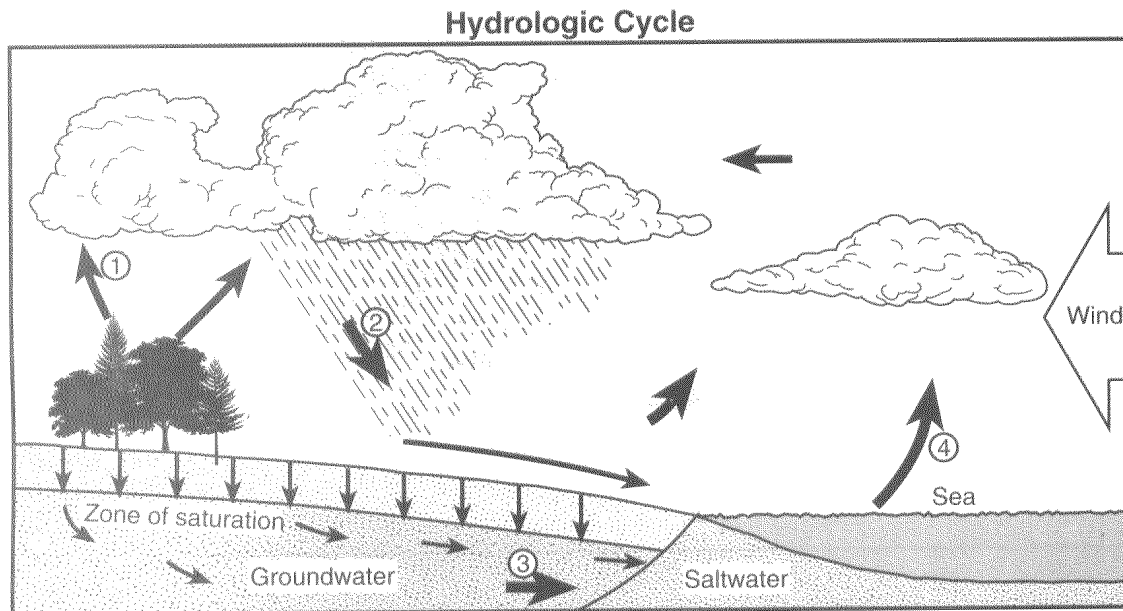
42. A desert often forms on the leeward side of a mountain range, as shown in the cross section below.



After most of the moisture is removed from the air on the windward side, deserts form on the leeward side because the sinking air

- A) **compresses and warms**
- B) compresses and cools
- C) expands and warms
- D) expands and cools

Base your answers to questions 43 and 44 on the water cycle diagram shown below. Some arrows are numbered 1 through 4 and represent various processes.



43. Which atmospheric condition is most likely responsible for the wind blowing the clouds from the sea toward the land?
- A) high air temperature over the sea and low air temperature over the land
 - B) **high air pressure over the sea and low air pressure over the land**
 - C) low air density over the sea and high air density over the land
 - D) low visibility over the sea and high visibility over the land
44. The clouds have formed primarily because moist air
- A) **rises, expands, and cools**
 - B) rises, expands, and warms
 - C) sinks, compresses, and cools
 - D) sinks, compresses, and warms

45. In order for clouds to form, cooling air must be

- A) saturated and have no condensation nuclei
- B) saturated and have condensation nuclei**
- C) unsaturated and have no condensation nuclei
- D) unsaturated and have condensation nuclei

46. Which substance is a form of precipitation?

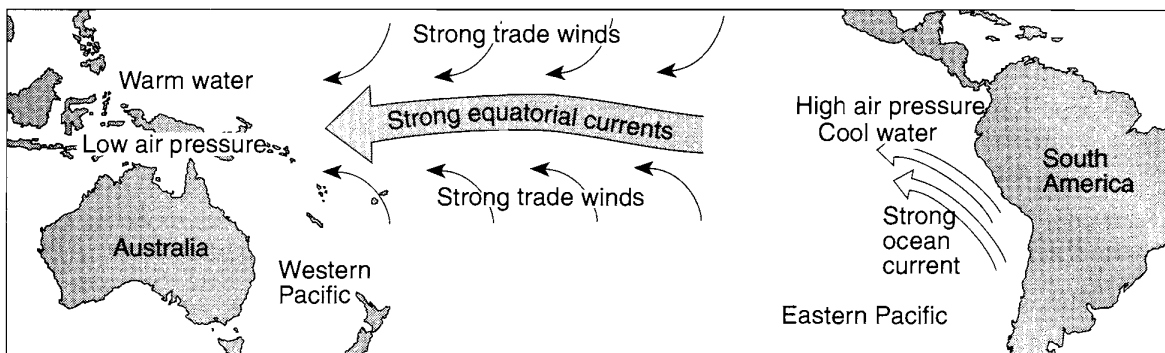
- A) frost
- B) hail**
- C) fog
- D) dew

47. Base your answer to the following question on the maps and the passage below. The maps show differences in trade wind strength, ocean current direction, and water temperature associated with air-pressure changes from normal climate conditions to El Niño conditions.

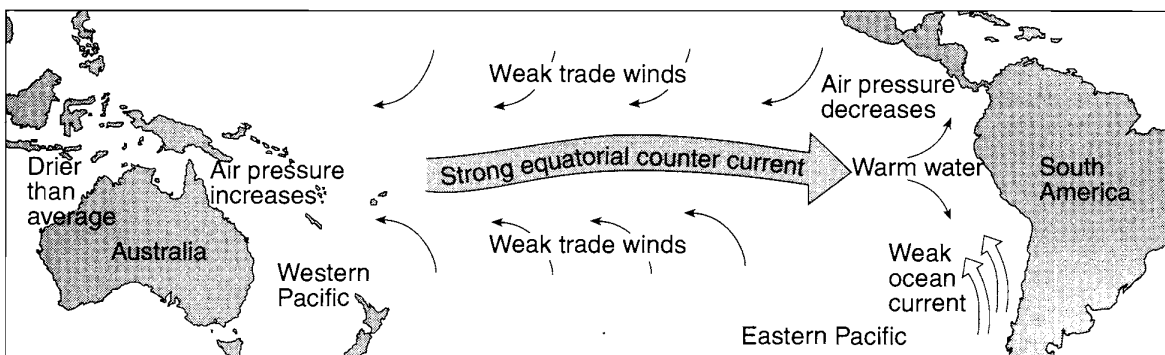
El Niño Conditions

El Niño conditions occur with a buildup of warm water in the equatorial Pacific Ocean off the coast of South America. The immediate cause of this buildup is a change in air pressure that weakens the southern trade winds. These are the planetary winds that move air from 30° S to the equator. Normally, these strong, steady winds, with the help of their counterparts in the Northern Hemisphere, push equatorial water westward away from South America. But, at intervals of two to seven years, these winds weaken, causing the westward water flow to reverse. This results in an accumulation of unusually warm water on the east side of the equatorial Pacific Ocean. This warm water not only changes the characteristics of the air above it, but also is thought to be the cause of weather changes around the world. El Niño conditions may last only a few months, but often last a year or two.

Normal Climate Conditions



El Niño Conditions



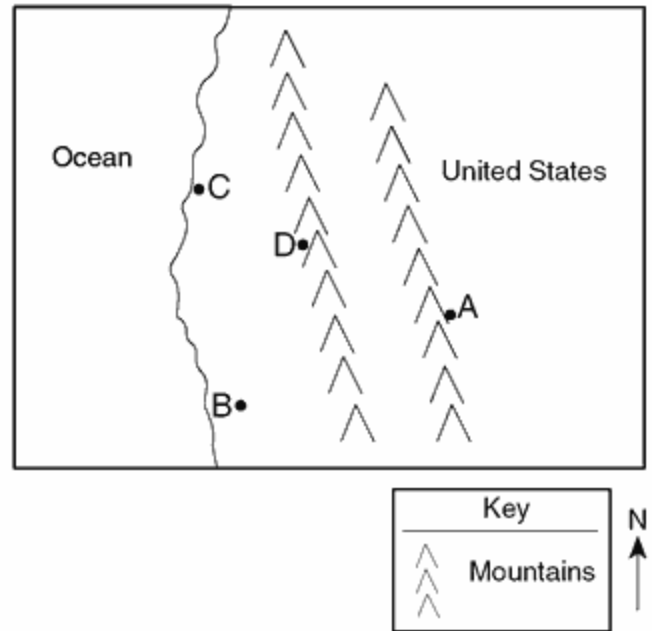
The trade winds between 30° S and the equator usually blow from the

- A) northeast **B) southeast** C) northwest D) southwest

48. Which planetary wind pattern is present in many areas of little rainfall?

- A) Winds converge and air sinks.
- B) Winds converge and air rises.
- C) Winds diverge and air sinks.**
- D) Winds diverge and air rises.

49. Base your answer to the following question on 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?

- A) *A* B) *B* C) *C* D) *D*

50. Which factor most likely causes two cities at the same elevation and latitude to have different yearly average temperature ranges?

- A) rotation of Earth
- B) duration of insolation
- C) distance from a large body of water**
- D) direction of prevailing winds

Answer Key
weather

1. **D**
2. **D**
3. **C**
4. **B**
5. **B**
6. **B**
7. **D**
8. **B**
9. **B**
10. **B**
11. **D**
12. **A**
13. **B**
14. **C**
15. **C**
16. **C**
17. **B**
18. **C**
19. **A**
20. **C**
21. **C**
22. **C**
23. **B**
24. **B**
25. **A**
26. **C**
27. **C**
28. **D**
29. **B**
30. **C**
31. **D**
32. **C**
33. **D**
34. **C**
35. **A**
36. **B**

37. **C**
 38. **C**
 39. **C**
 40. **C**
 41. **B**
 42. **A**
 43. **B**
 44. **A**
 45. **B**
 46. **B**
 47. **B**
 48. **C**
 49. **A**
 50. **C**
-