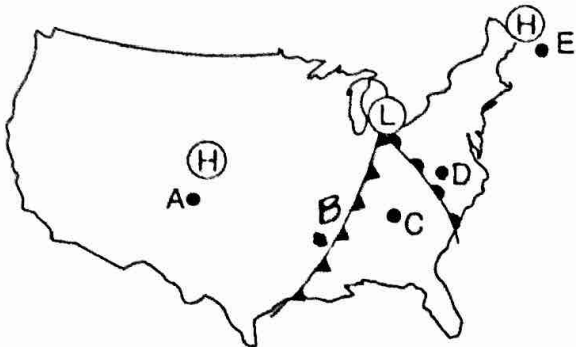


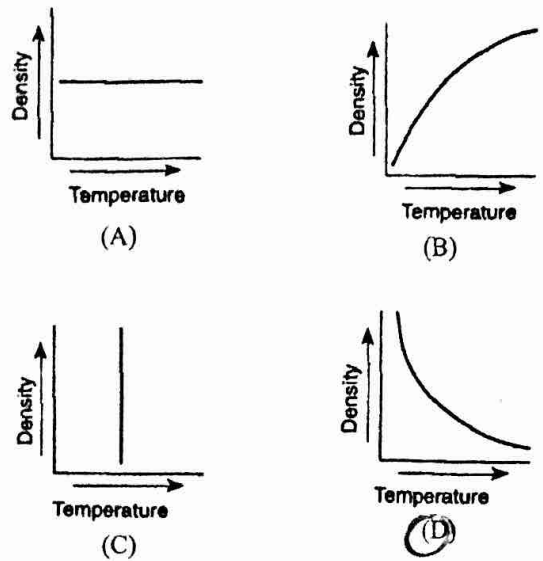
- Which weather change is most likely indicated by rapidly falling air pressure?
 - (A) Humidity is decreasing.
 - (B) Temperature is decreasing.
 - (C) A storm is approaching.
 - (D) Skies are clearing.
- Weather-station measurements indicate that the dewpoint temperature and air temperature are getting farther apart and that air pressure is rising. Which type of weather is most likely arriving at the station?
 - (A) a warm front
 - (B) cool, dry air
 - (C) a snowstorm
 - (D) maritime tropical air
- A temperature of 73° Fahrenheit is approximately equal to a temperature of
 - (A) 23° Celsius
 - (B) 162° Celsius
 - (C) 17° Celsius
 - (D) 26° Celsius
- The map below shows high-pressure and low-pressure weather systems in the United States.



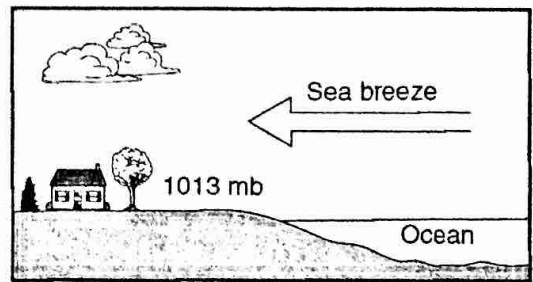
Key	
<input checked="" type="radio"/> (H)	High pressure
<input checked="" type="radio"/> (L)	Low pressure

- 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
- The highest surface wind speeds occur when there is a
 - (A) 4-millibar air-pressure difference between two nearby locations
 - (B) 20-millibar air-pressure difference between two distant locations
 - (C) 20-millibar air-pressure difference between two nearby locations
 - (D) 4-millibar air-pressure difference between two distant locations

- Which graph best represents the relationship between air temperature and air density in the atmosphere?



- The cross section below shows a sea breeze blowing from the ocean toward the land. The air pressure at the land surface is 1013 millibars.



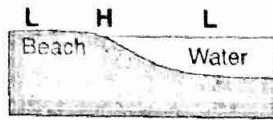
(Not drawn to scale)

The air pressure at the ocean surface a few miles from the shore is most likely

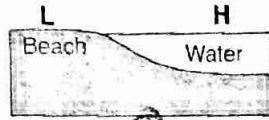
- (A) 1013 mb
 - (B) 1005 mb
 - (C) 1017 mb
 - (D) 994 mb
- What is the relative humidity when the dry-bulb temperature is 16°C and the wet-bulb temperature is 14°C?
 - (A) 13%
 - (B) 90%
 - (C) 80%
 - (D) 14%
 - The dewpoint changes most directly as a result of changes in the atmosphere's
 - (A) pressure
 - (B) water vapor content
 - (C) convection currents
 - (D) wind direction
 - Which type of air mass is associated with *warm, dry* atmospheric conditions?
 - (A) cT
 - (B) mP
 - (C) mT
 - (D) cP

11. Which cross section below best shows the locations of high air pressure and low air pressure near a beach on a hot, sunny, summer afternoon?

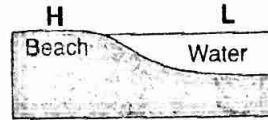
Key	
H	High air pressure
L	Low air pressure



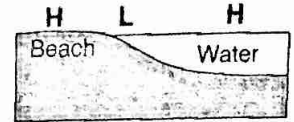
(A)



(B)

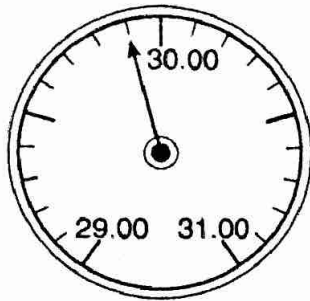


(C)



(D)

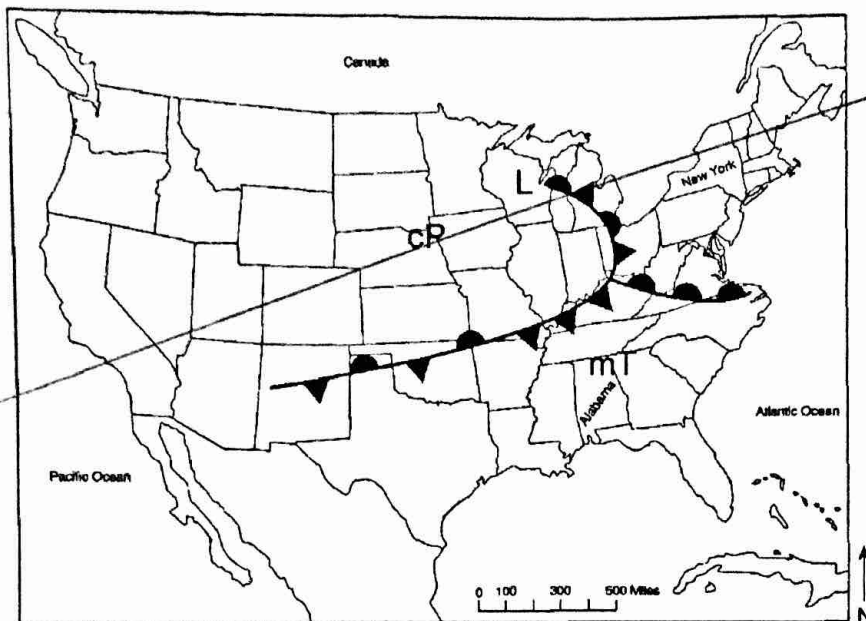
12. The diagram below represents an aneroid barometer that shows the air pressure, in inches of mercury.



When converted to millibars, this air pressure is equal to

- (A) 1009.0 mb (B) 1015.5 mb
 (C) 1012.5 mb (D) 1029.9 mb
13. Air masses are identified on the basis of temperature and
- (A) type of precipitation
 (B) wind velocity
 (C) atmospheric transparency
 (D) moisture content
14. Compared to a maritime tropical air mass, a maritime polar air mass has a
- (A) lower temperature and more water vapor
 (B) lower temperature and less water vapor
 (C) higher temperature and less water vapor
 (D) higher temperature and more water vapor
15. Wind is caused mainly by air-pressure differences that result from
- (A) uneven heating of Earth's atmosphere
 (B) rotation of Earth on its axis
 (C) radiation of heat from Earth's landmasses to water bodies
 (D) absorption of ultraviolet radiation by Earth's landmasses

16. Base your answer to the following question on the weather map below, which shows a weather system that is affecting part of the United States.



Which sequence of events forms the clouds associated with this weather system?

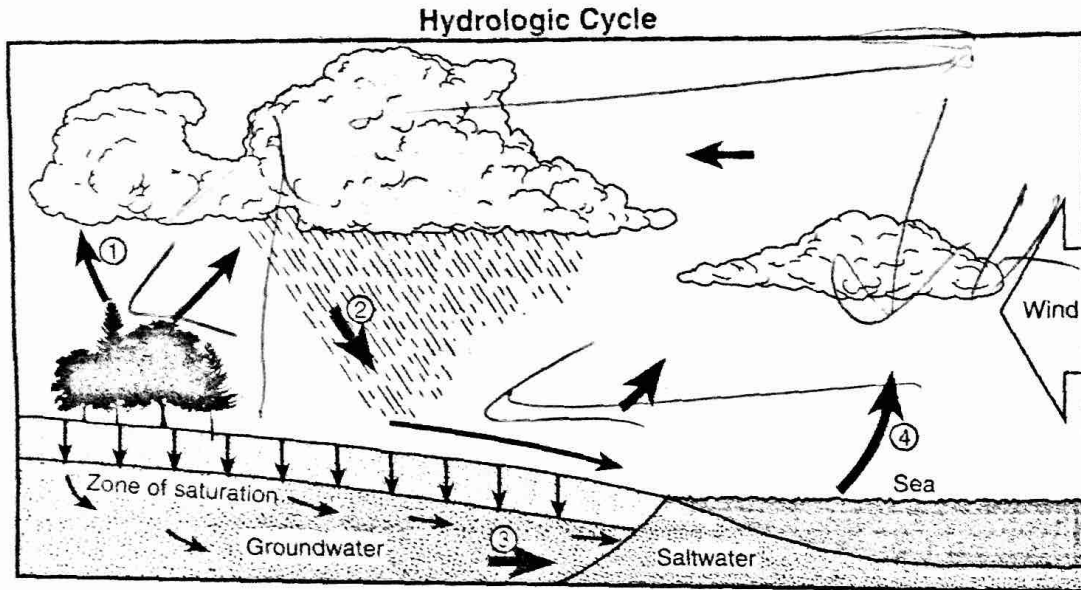
- (A) Moist air rises, becomes saturated, and condenses on microscopic particles.
 (B) Moist air rises and becomes saturated in clean air.
 (C) Moist air falls, reaches the dewpoint, and condenses on microscopic particles.
 (D) Moist air falls and reaches the dewpoint in clean air.

L - rising
 - exp
 - cools
 - cond -

17. Why are most beaches often considerably cooler than nearby inland locations on hot summer afternoons?

- (A) The beaches are farther from the Equator than the inland locations are.
 (B) A sea breeze develops due to the higher specific heat of water and the lower specific heat of land.
 (C) The beaches are closer to the Equator than the inland locations are.
 (D) A land breeze develops due to the lower specific heat of water and the higher specific heat of land.

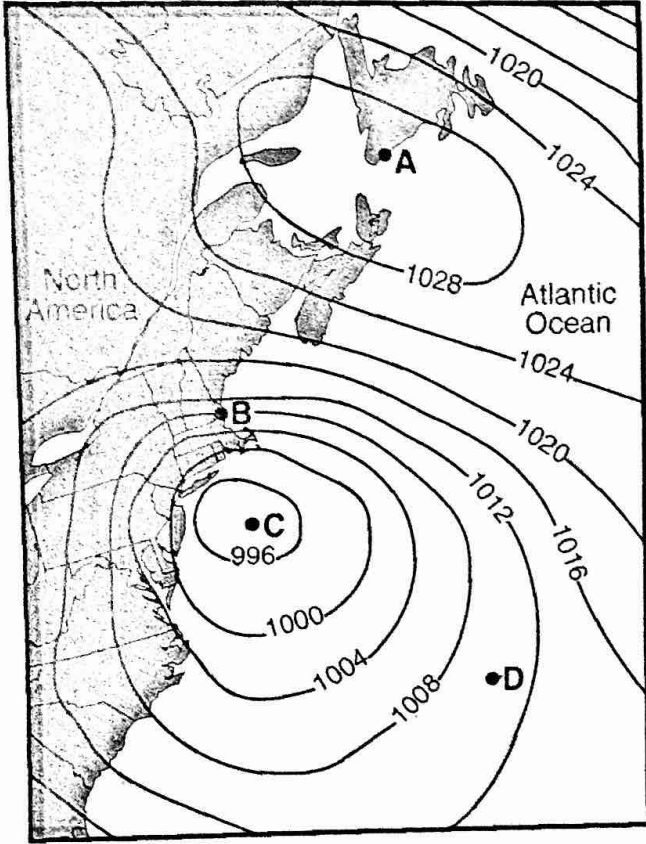
18. Base your answer to the following question on the water cycle diagram shown below. Some arrows are numbered 1 through 4 and represent various processes.



- Which atmospheric condition is most likely responsible for the wind blowing the clouds from the sea toward the land?
- (A) low visibility over the sea and high visibility over the land
 - (B) low air density over the sea and high air density over the land
 - (C) high air pressure over the sea and low air pressure over the land
 - (D) high air temperature over the sea and low air temperature over the land

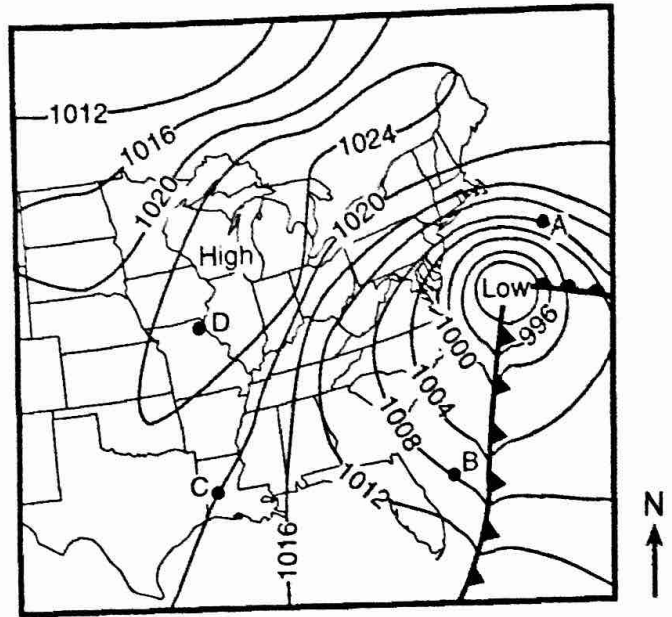
19. Base your answer to the following question on the map below, which shows sea-level air pressure, in millibars, for a portion of the eastern coast of North America. Points A, B, C, and D are sea-level locations on Earth's surface.

Sea-Level Air Pressures



- The air pressure recorded at point D was most likely
- (A) 1010 mb
 - (B) 1012 mb
 - (C) 1006 mb
 - (D) 1014 mb

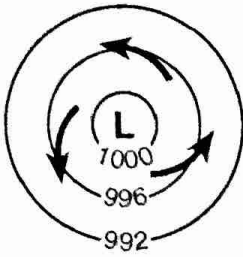
20. Base your answer to the following question on the weather map below. Points A, B, C, and D are locations on Earth's surface.



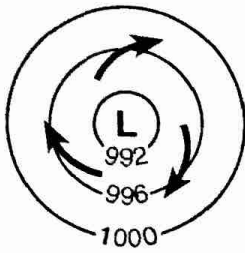
- The isolines on the map represent values of air
- (A) density
 - (B) humidity
 - (C) pressure
 - (D) temperature

21. Which map view best represents the pattern of isobar values, in millibars, and the pattern of wind flow, shown by arrows, at Earth's surface surrounding a Northern Hemisphere low-pressure center?

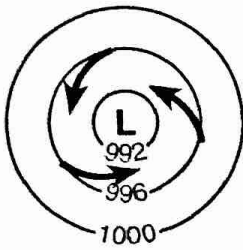
(A)



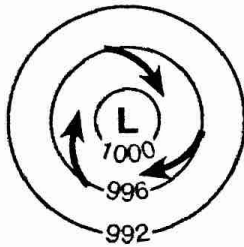
(B)



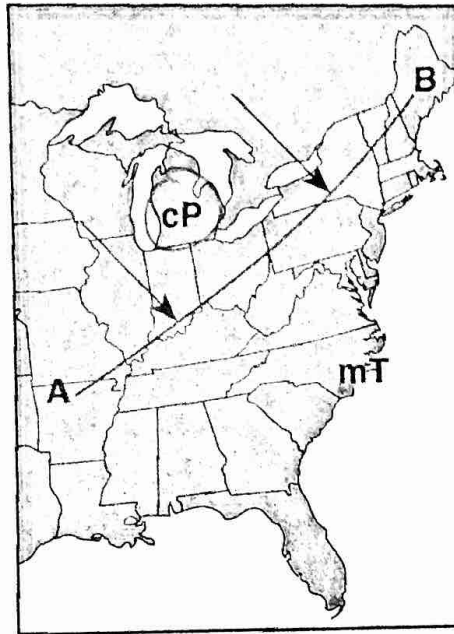
(C)



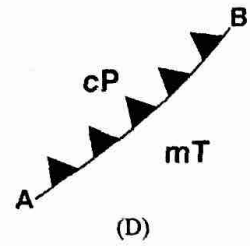
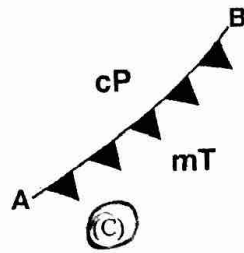
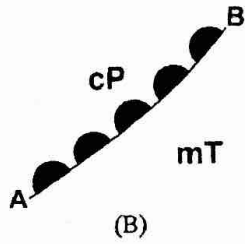
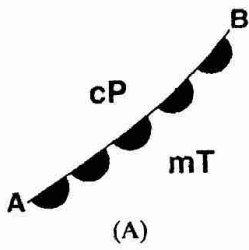
(D)



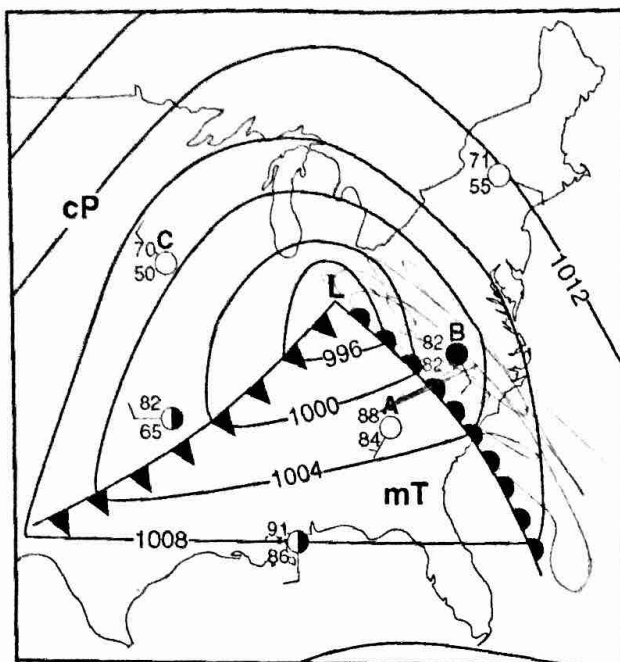
22. The weather map below shows a portion of the United States. Line *AB* represents a frontal boundary between two air masses. The two large arrows indicate the direction that a cP air mass is moving.



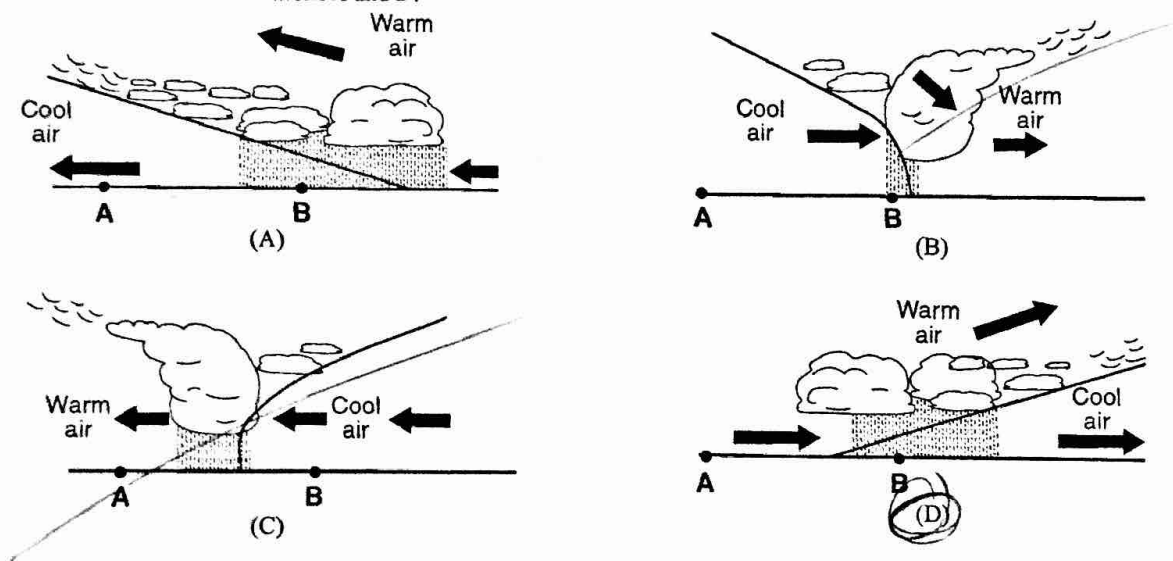
Which symbol correctly represents the frontal boundary at line *AB*?



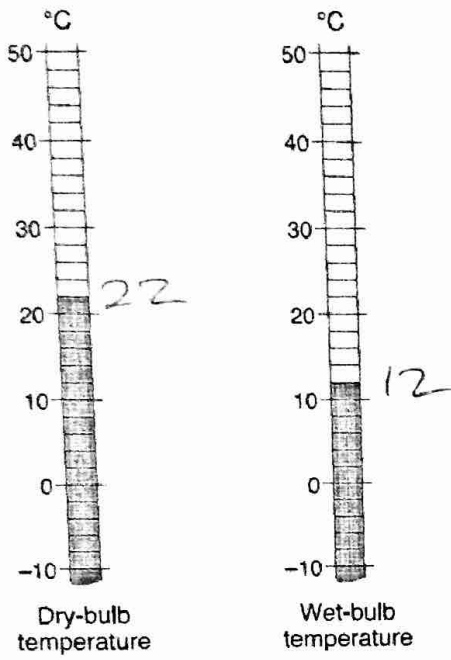
23. Base your answer to the following question on the weather map below. The map shows a low-pressure system and some atmospheric conditions at weather stations *A*, *B*, and *C*.



Which cross section best represents the air masses, air movement, clouds, and precipitation occurring behind and ahead of the warm front located between stations *A* and *B*?



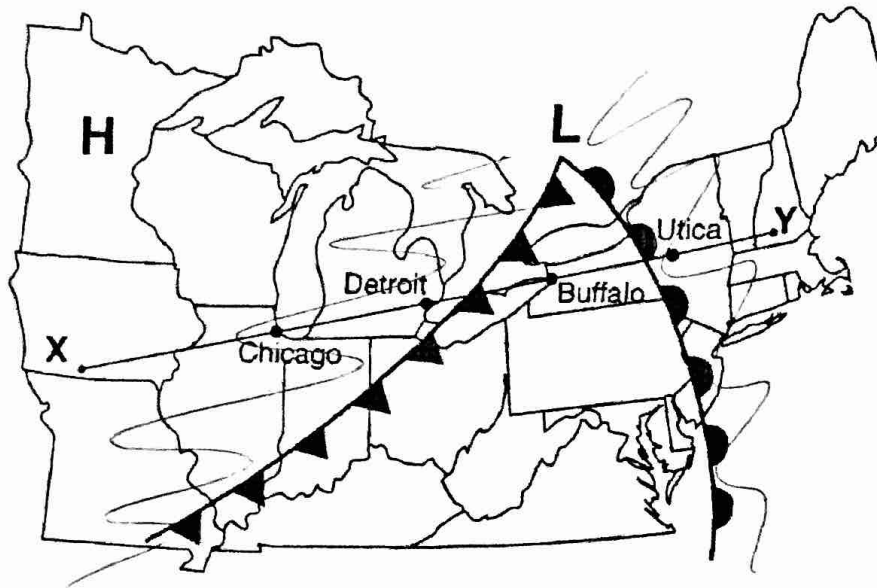
24. The diagram below shows dry-bulb and wet-bulb temperature readings for a parcel of air.



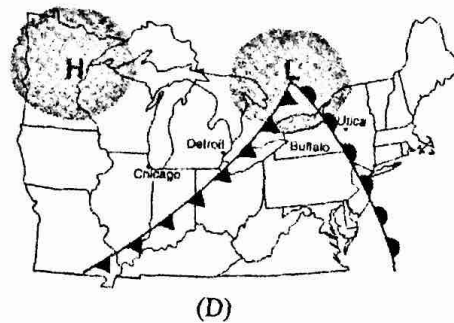
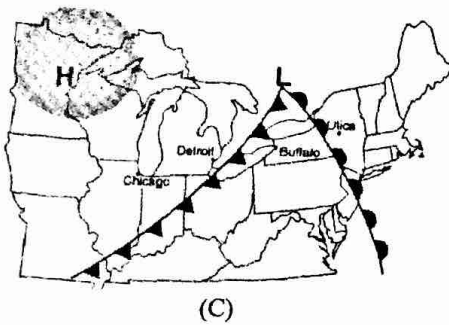
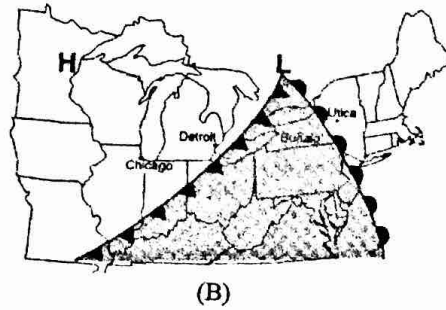
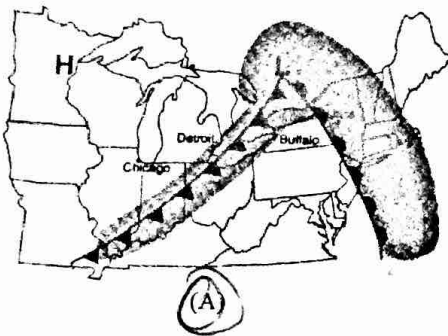
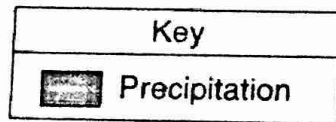
What is the dewpoint of the air?

- (A) 3°C
- (B) 10°C
- (C) -5°C
- (D) 27°C

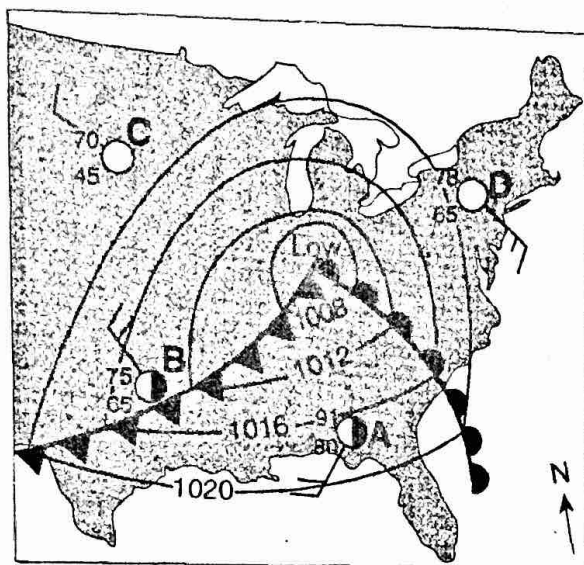
25. Base your answer to the following question on the weather map below, which shows a high-pressure center (H) and a low-pressure center (L), with two fronts extending from the low-pressure center. Points X and Y are locations on the map connected by a reference line.



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



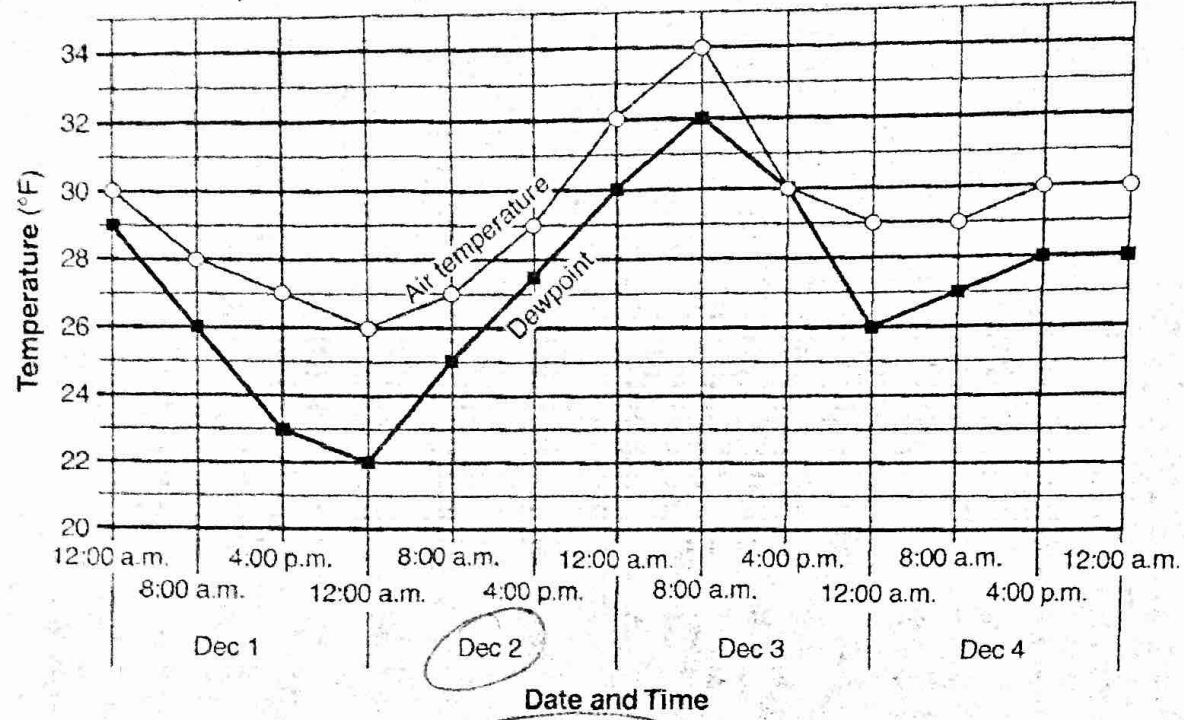
Base your answers to questions 26 and 27 on the weather map below, which shows a low-pressure system over the eastern United States. Letters *A* through *D* represent weather stations.



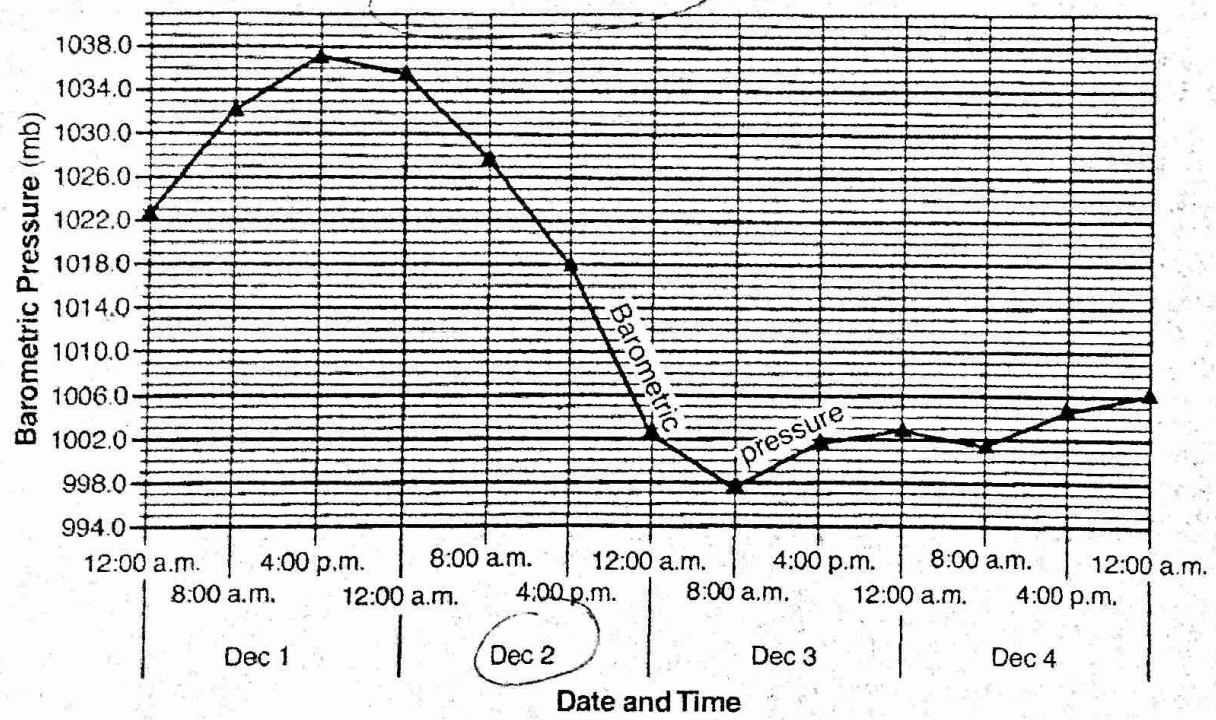
26. Surface winds within this low-pressure system most likely are flowing
- | | |
|--|--|
| (A) away from the center in a clockwise pattern | (B) toward the center in a clockwise pattern |
| <input checked="" type="radio"/> (C) toward the center in a counterclockwise pattern | (D) away from the center in a counterclockwise pattern |
27. Which weather instrument was used to measure wind speed at station *D*?
- | | | | |
|-----------------|---------------|------------------|---|
| (A) thermometer | (B) barometer | (C) psychrometer | <input checked="" type="radio"/> (D) anemometer |
|-----------------|---------------|------------------|---|

Complete your answers to questions 28 through 31 on the weather graphs below, which show data recorded at Syracuse, New York, as a winter storm moved across the region between December 1 and December 4, 2007. Graph 1 shows air temperatures and dew points. Graph 2 shows barometric pressures.

Graph 1: Air Temperature and Dewpoint at Syracuse, New York



Graph 2: Barometric Pressure at Syracuse, New York



Complete the table below by identifying *one* instrument used to determine barometric pressure and *one* weather variable determined by using a psychrometer.

Weather Variable	Instrument Used
barometric pressure	barometer
DP/RH	psychrometer

On the station model below, record the barometric pressure for Syracuse at 4 p.m. on December 2.



30. On which date and at what time did the relative humidity reach 100% in Syracuse? why?

Dec 3 4pm Temp 50% Sat 100%

31. State the relationship between the air temperature and the barometric pressure in Syracuse on December 2.

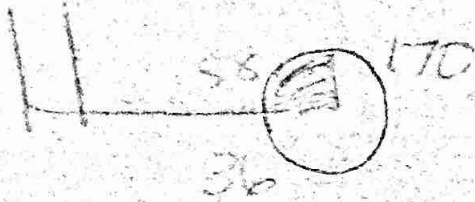
wd as temp ↑ press ↓

Base your answers to questions 32 and 33 on the table below, which shows weather data recorded at Albany, New York.

Data Table

Location	Temperature (°F)	Dewpoint (°F)	Cloud Cover (%)	Pressure (mb)	Wind Direction	Wind Speed (knots)
Albany	58	36	25	1017.0	from the west	20

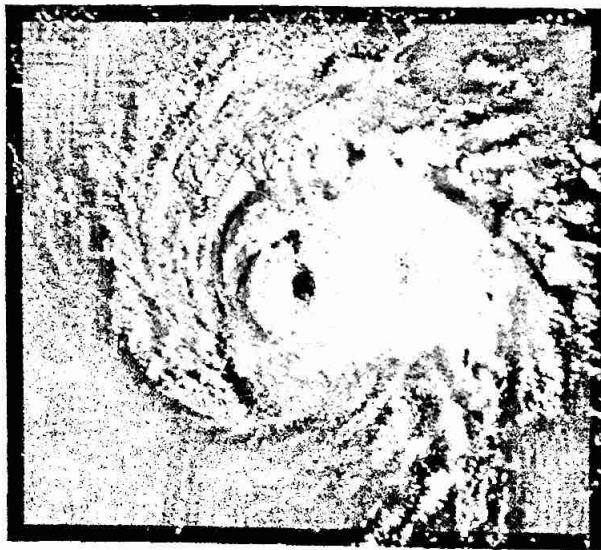
32. Complete the station model below using the proper format to accurately represent these six weather conditions.



33. State one reason why rain was unlikely at the time the data was collected. Support your answer by using the data.

*Temp. far below / cloud cover
air temp & DP temp too close*

34. Base your answer to the following question on the satellite image below, which shows a Northern Hemisphere hurricane.



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

36 Mt. Marcy often has the coldest nighttime temperatures in New York State because of its

- (1) latitude and planetary winds
- (2) latitude and elevation
- (3) longitude and planetary winds
- (4) longitude and elevation

37 The table below shows the average January air temperature from 1901 to 2006 in two different cities in New York State.

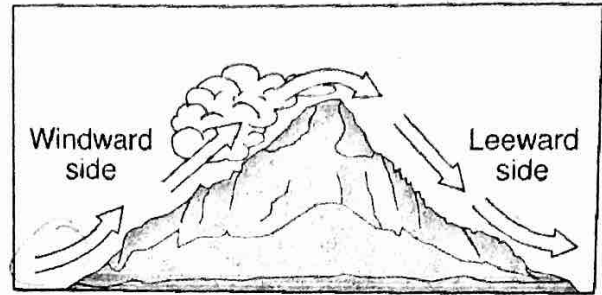
Data Table

City	Average January Air Temperature (°F)
Albany	21.4
New York City	29.7

The most likely cause of this air temperature difference is that New York City is located

- (1) in a different prevailing wind belt
- (2) at a higher latitude
- (3) near a large body of water
- (4) at a higher elevation

38 The diagram below shows air movement over a mountain.



Compared to the climate on the windward side of the mountain, the climate on the leeward side of the mountain is

- (1) drier and warmer
- (2) drier and cooler
- (3) more humid and warmer
- (4) more humid and cooler

39 The planetary wind belts in the troposphere are primarily caused by the

- (1) Earth's rotation and unequal heating of Earth's surface
- (2) Earth's revolution and unequal heating of Earth's surface
- (3) Earth's rotation and Sun's gravitational attraction on Earth's atmosphere
- (4) Earth's revolution and Sun's gravitational attraction on Earth's atmosphere

40. What does this mean?

Present weather

9

Present weather =

- 1. snow
- 2. hail
- 3. confusion
- (4) drizzle