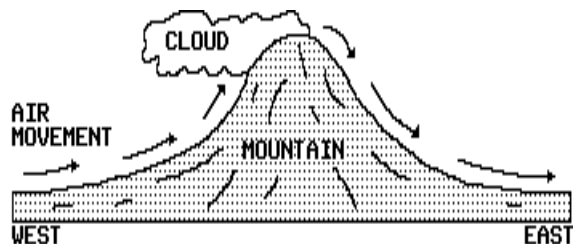


Name: _____

- 1) As the difference between the dewpoint temperature and the air temperature decreases, the probability of precipitation
 - A) increases
 - B) remains the same
 - C) decreases
- 2) Which statement best explains why a cloud is forming as shown in the diagram below?

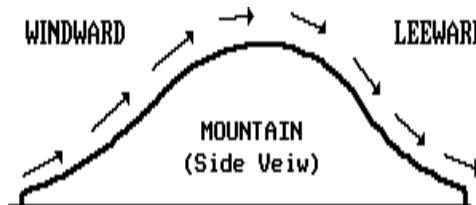


- A) Warm air sinks and expands.
 - B) Water vapor is condensing.
 - C) Cold air rises and compresses.
 - D) Moisture is evaporating.
- 3) According to the *Earth Science Reference Tables*, when the dry-bulb temperature reading is 10.°C and the wet-bulb temperature is 2.0°C, the dewpoint temperature of the air is approximately

A) 10.°C	C) -8.0°C
B) 2.0°C	D) -14.°C
- 4) The primary cause of winds is the
 - A) unequal heating of the Earth's atmosphere
 - B) uniform density of the atmosphere
 - C) friction between the atmosphere and the lithosphere
 - D) rotation of the Earth
- 5) Which process is most likely to remove pollutants from the air?

A) precipitation	C) transpiration
B) evaporation	D) runoff

- 6) The diagram below shows the direction of movement of air over a mountain.



As the air moves down the leeward side of the mountain, the air will

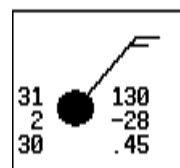
- A) warm due to compression
 - B) cool due to compression
 - C) warm due to expansion
 - D) cool due to expansion
- 7) Moisture is evaporating from a lake into stationary air at a constant temperature. As more moisture is added to this air, the rate at which water will evaporate will probably
 - A) remain the same
 - B) decrease
 - C) increase
- 8) The energy gained by water during evaporation is later released by the water vapor during the process of

A) condensation	C) transpiration
B) convection	D) melting
- 9) A temperature of 73° Fahrenheit is approximately equal to a temperature of

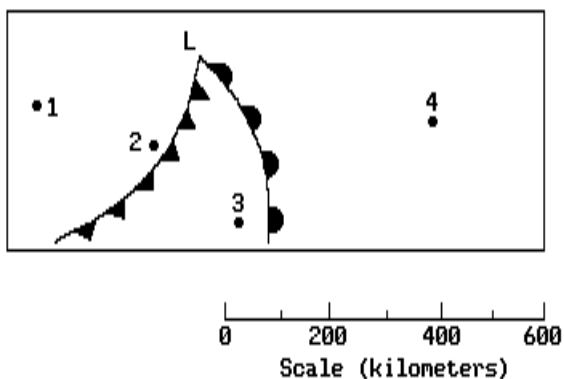
A) 17° Celsius	C) 23° Celsius
B) 162° Celsius	D) 26° Celsius
- 10) A balloon carrying weather instruments is released at the Earth's surface and rises through the troposphere. As the balloon rises, what will the instruments generally indicate?
 - A) an increase in air temperature and a decrease in air pressure
 - B) an increase in both air temperature and air pressure
 - C) a decrease in both air temperature and air pressure
 - D) a decrease in air temperature and a increase in air pressure

Questions 11 and 12 refer to the following:

The diagram below shows a weather station.

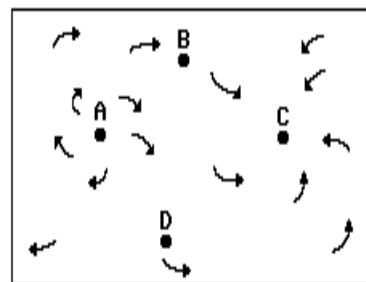


- 11) The barometric pressure is
 A) 913.0 mb C) 10.28 mb
 B) 130.0 mb D) 1013.0 mb
- 12) The weather forecast for the next 6 hours at this station most likely would be
 A) sunny, cold, probable rain
 B) overcast, cold, probable snow
 C) overcast, hot, poor visibility
 D) overcast, hot, unlimited visibility
- 13) According to the *Earth Science Reference Tables*, an atmospheric pressure of 978 millibars is equal to
 A) 29.00 inches of mercury
 B) 28.76 inches of mercury
 C) 28.88 inches of mercury
 D) 28.92 inches of mercury
- 14) An air pressure of 1023 millibars is equal to how many inches of mercury?
 A) 30.10 C) 30.21
 B) 30.19 D) 30.15
- 15) Present-day weather predictions are based primarily upon
 A) land and sea breezes
 B) airmass movements
 C) cloud height
 D) ocean currents
- 16) The diagram below shows four points on a map with their relative positions to a low-pressure weather system. Which point is most likely having heavy precipitation?

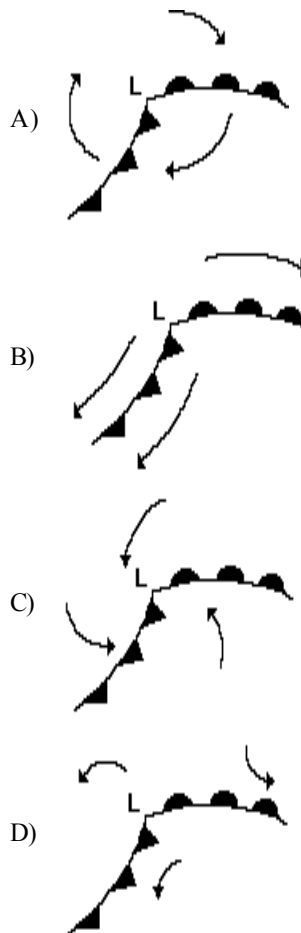


- A) 3 B) 1 C) 4 D) 2
- 17) What is the approximate dewpoint temperature if the dry-bulb temperature is 26°C and the wet-bulb temperature is 21°C? [Refer to the *Earth Science Reference Tables*.]
 A) 9°C C) 12°C
 B) 5°C D) 18°C
- 18) The rate of evaporation from the surface of a lake would be increased by
 A) an increase in the surface area of the lake
 B) an increase in the moisture content of the air
 C) a decrease in wind velocity
 D) a decrease in the amount of insolation

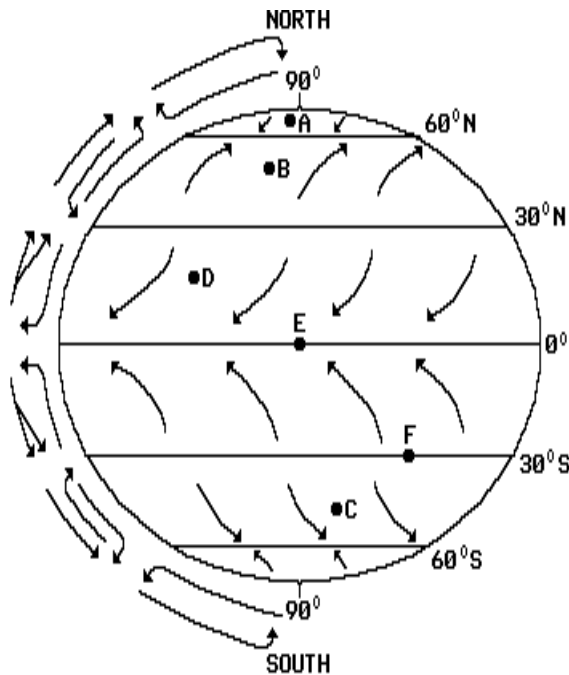
- 19) The arrows on the diagram below represent surface wind directions on a weather map. The points represent the locations of four weather stations in the Northern Hemisphere. Which weather station probably has the *lowest* air pressure?



- A) A B) C C) B D) D
- 20) How does air circulate within a cyclone (low pressure area) in the Northern Hemisphere?
 A) clockwise and toward the center of the cyclone
 B) counterclockwise and away from the center of the cyclone
 C) clockwise and away from the center of the cyclone
 D) counterclockwise and toward the center of the cyclone
- 21) Which diagram below best represents the air circulation around a Northern Hemisphere low-pressure center?

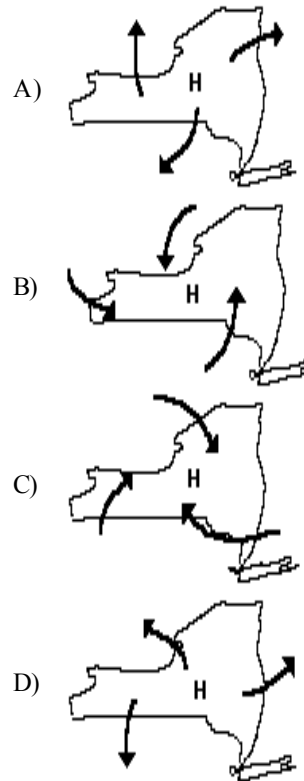


- 22) As a sample of very moist air rises from sea level to a higher altitude, the probability of condensation occurring in that air sample will
- increase
 - decrease
 - remain the same
- 23) A temperature of 104° Fahrenheit is equal to a temperature of
- 72° C
 - 104° C
 - 40° C
 - 136° C
- 24) Condensation of water vapor in the atmosphere is most likely to occur when a condensation surface is available and
- a strong wind is blowing
 - the air pressure is rising
 - the air is saturated with water vapor
 - the temperature of the air is below 0° C
- 25) An airmass from the Gulf of Mexico, moving north into New York State, has a high relative humidity. What other characteristics will it probably have?
- cool temperatures and high pressure
 - warm temperatures and low pressure
 - warm temperatures and high pressure
 - cool temperatures and low pressure
- 26) The diagram below represents the general circulation of the Earth's atmosphere and the Earth's planetary wind and pressure belts. Points A through F represent locations on the Earth's surface.



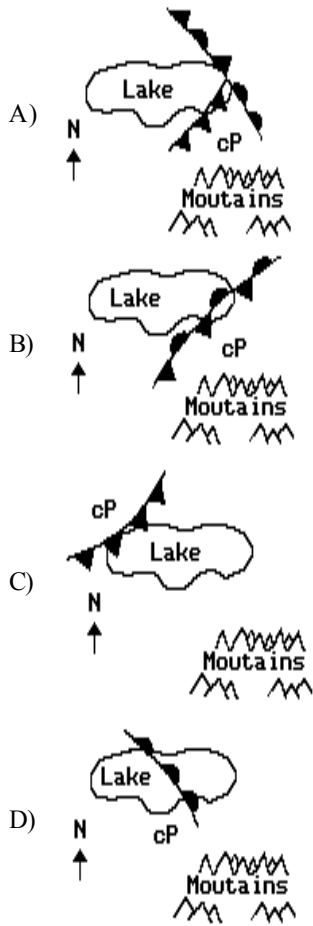
- Which location is experiencing a southwest planetary wind?
- B
 - A
 - C
 - F

- 27) In which general direction do low-pressure centers usually travel across New York State?
- west to east
 - north to south
 - northeast to southwest
 - southeast to northwest
- 28) Which map best represents the normal air circulation around a high pressure air mass located over central New York State?



- 29) Why do clouds usually form at the leading edge of a cold airmass?
- Cold air contains more dust particles than warm air does.
 - Cold air contains more water vapor than warm air does.
 - Cold air flows over warm air, causing warm air to descend and cool.
 - Cold air flows under warm air, causing the warm air to rise and cool.
- 30) A high-pressure center is generally characterized by
- cool, wet weather
 - warm, dry weather
 - cool, dry weather
 - warm, wet weather

35) Which surface weather map below best represents the frontal system shown in the diagram?



36) Which geographic area is the source of the cP airmass shown in the diagram?

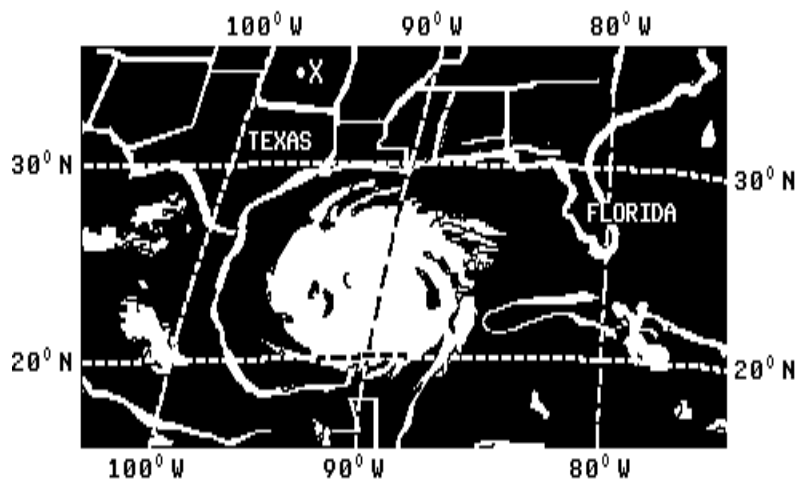
- A) North Atlantic Ocean
- B) southwestern United States
- C) Caribbean Sea
- D) central Canada

37) As the air moves from point D to point E, it will be

- A) warmed by expansion
- B) warmed by compression
- C) cooled by expansion
- D) cooled by compression

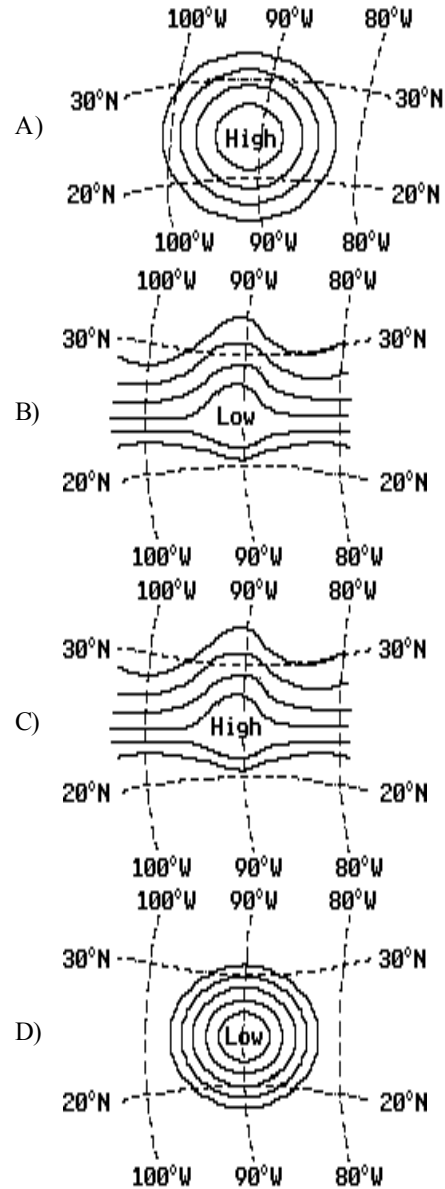
Questions 38 through 41 refer to the following:

In the satellite diagram below, a tropical storm (white cloud swirl) is centered in the Gulf of Mexico. An outline of the southwestern United States and the latitude-longitude system have also been drawn.



- 38) At the time this photograph was taken, the weather conditions at point X could be described as
 A) heavy precipitation associated with the storm
 B) clear skies and sunny
 C) partial cloud cover with scattered precipitation
 D) heavy cloud cover but no precipitation
- 39) What is the primary source of moisture for this storm?
 A) evaporation of river water
 B) transpiration from tropical jungles
 C) melting of southern glaciers
 D) evaporation of ocean water
- 40) What type of air mass would most likely be associated with the storm in the satellite diagram?
 A) warm and moist
 B) warm and dry
 C) cold and dry
 D) cold and moist

- 41) Which map best represents the surface air-pressure field of this tropical storm? [The solid lines represent isobars.]

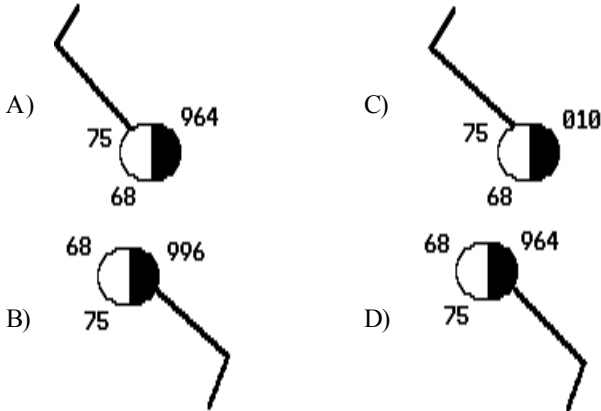


Questions 42 through 45 refer to the following:

DATA TABLE

	Temperature (to nearest degree)	Air Pressure (mb)	Dewpoint (to nearest degree)	Wind Direction and Speed (knots)
9 a.m. Monday	24°C (75°F)	996.4	20°C (68°F)	NW 10
9 a.m. Tuesday	20°C (68°F)	962.4	19°C (66°F)	SSE 25
9 a.m. Wednesday	17°C (63°F)	1013.8	12°C (54°F)	W 15
9 a.m. Thursday	7°C (45°F)	1020.2	-2°C (28°F)	N 10

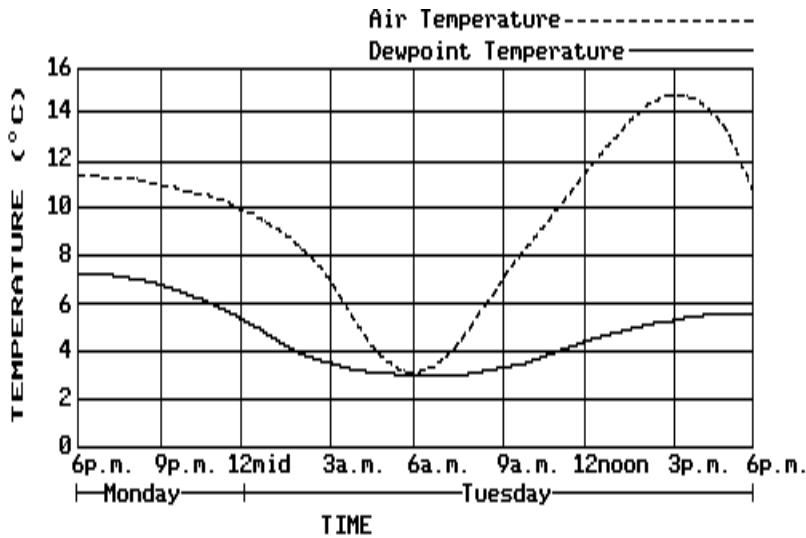
- 42) Which region is the most likely source of the airmass over this location on Thursday?
 A) the Gulf of Mexico
 B) northern Canada
 C) the south Atlantic
 D) southern California
- 43) Which weather station model most likely represents the weather conditions at 9 a.m. on Monday?



- 44) According to the wind speeds shown, on which day did the highest pressure gradient most probably exist between this location and another nearby region?
 A) Tuesday
 B) Wednesday
 C) Thursday
 D) Monday
- 45) On which day did precipitation most likely occur?
 A) Thursday
 B) Tuesday
 C) Wednesday
 D) Monday

Questions 46 through 49 refer to the following:

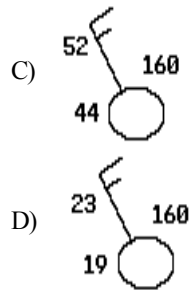
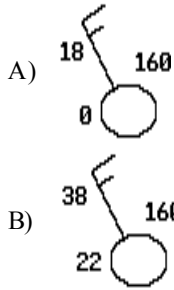
The graph below shows the air temperature and dewpoint temperature over a 24-hour period for a location in New York State.



- 46) The air's capacity to hold water vapor was *greatest* at
 A) 3 p.m. Tuesday
 B) 12 noon Tuesday
 C) 6 a.m. Tuesday
 D) 6 p.m. Monday
- 47) If the trends shown continued, the air temperature at 7 p.m. Tuesday was probably about
 A) 2°C
 B) 8°C
 C) 11°C
 D) 14°C

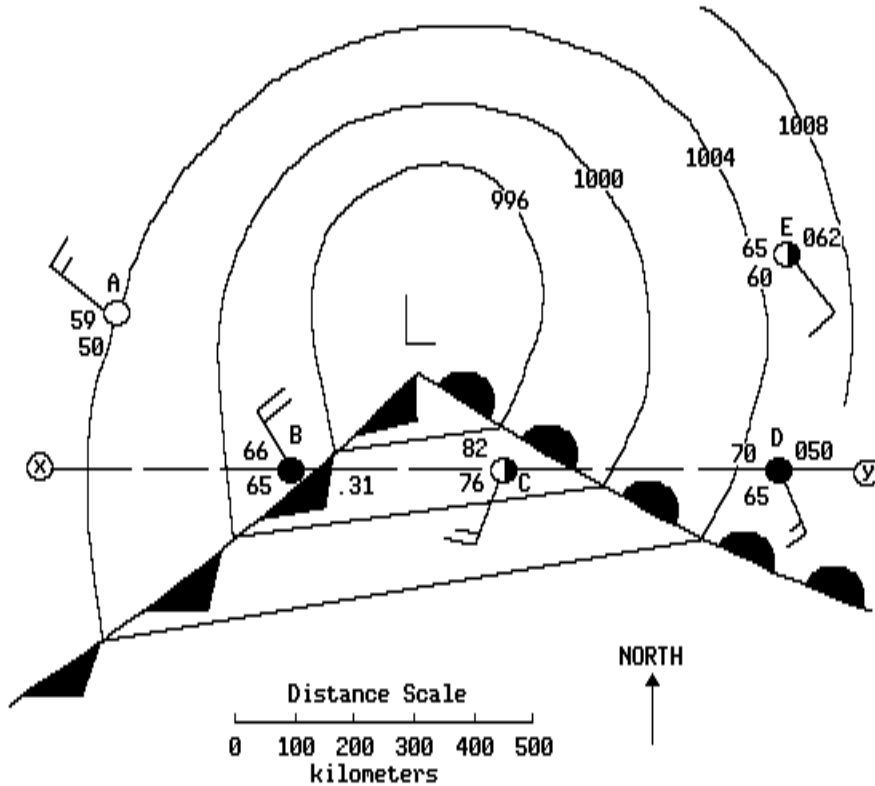
- 48) When was the air at ground level saturated with water vapor?
 A) 12 noon Tuesday
 B) 3 p.m. Tuesday
 C) 6 p.m. Monday
 D) 6 a.m. Tuesday

49) According to the weather map information in the *Earth Science Reference Tables*, which weather station model best represents the weather conditions at this location at 9 p.m. on Monday?

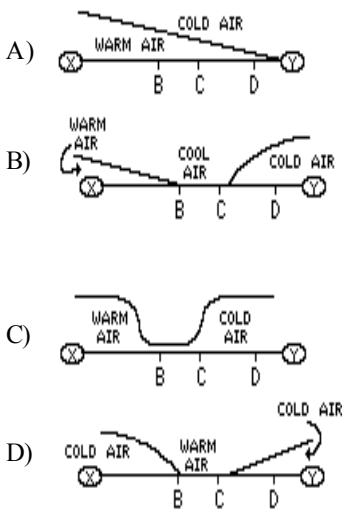


Questions 50 through 54 refer to the following:

The map below represents a weather system located over the central United States. Letters *A*, *B*, *C*, *D*, and *E* locate weather stations on the map.



50) Which diagram best represents a cross section of the Earth's atmosphere showing the fronts between airmasses as they would appear along line $x-y$?



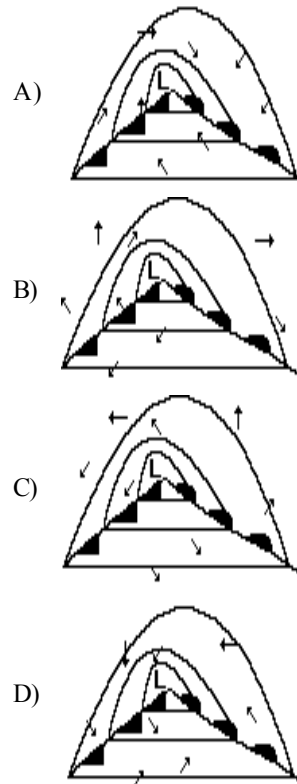
51) Which weather station is experiencing clouds, heavy precipitation, and rapidly decreasing air temperature?

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

52) If the weather system follows a normal storm track at a speed of 50 kilometers per hour, which best describes the atmospheric changes which will most likely occur at weather station C in about six hours?

- A) little atmospheric change with a low probability of precipitation
 B) air temperature increase, no change in air pressure, and clearing sky
 C) air temperature increase, air pressure increase, and clearing sky
 D) air temperature decrease, air pressure increase, and precipitation

53) In which diagram do the arrows best represent the wind direction in the weather system?



54) What is the air pressure at weather station A?

- A) 1064 mb C) 1069 mb
 B) 1000 mb D) 1004 mb