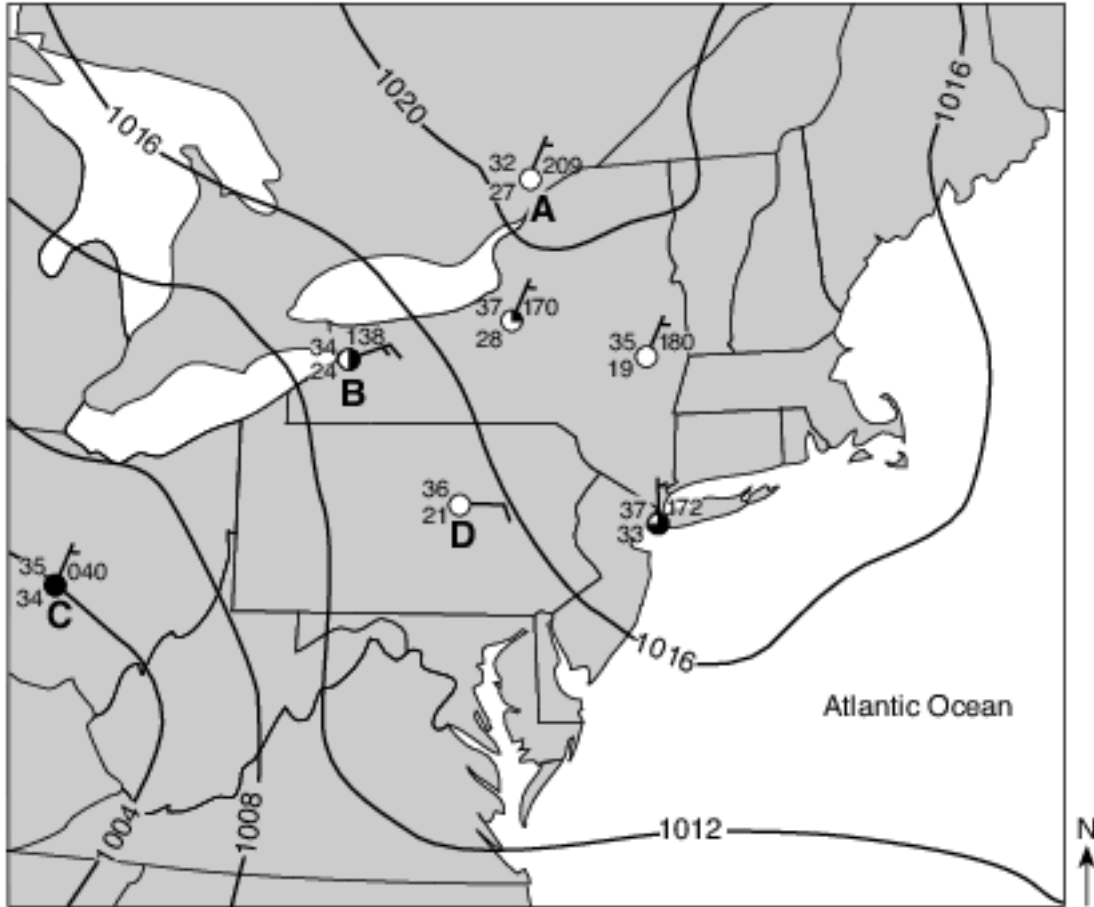




Measuring Weather Variables

Base your answers to questions 1 on the weather map below. The map shows isobars and seven weather station models. Four of the weather stations are identified by letters A, B, C, and D.



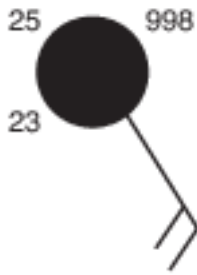
1 Which weather information shown at station B was measured with an anemometer and weather vane?

- | | | | |
|-----|---|---|-----|
| 34 |  |  | 138 |
| (1) | (2) | (3) | (4) |

- (1) 1
(2) 2

- (3) 3
(4) 4

2 A weather station model is shown below.



Which information shown on the station model is most closely associated with measurements from an anemometer?

25

998



(1)

(2)

(3)

(4)

(1) 1

(3) 3

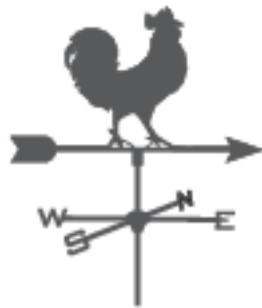
(2) 2

(4) 4

3 Which weather instrument is used to determine wind direction?



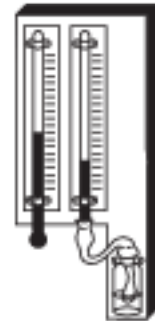
(1)



(2)



(3)



(4)

(1) 1

(3) 3

(2) 2

(4) 4

4 Which weather instrument is most useful in measuring relative humidity?

(1) barometer

(3) psychrometer

(2) anemometer

(4) wind vane

5 Which weather instrument is used to measure air temperatures recorded on a weather map?

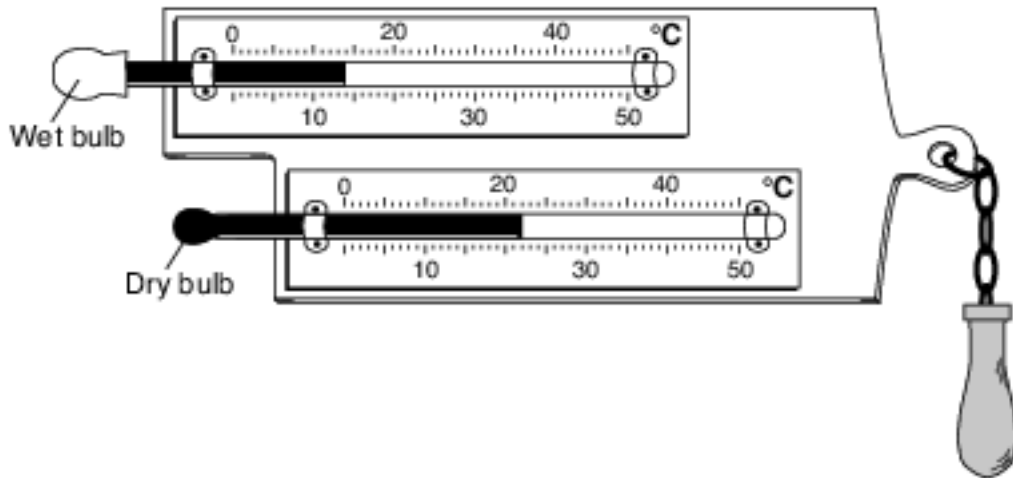
(1) anemometer

(3) thermometer

(2) wind vane

(4) barometer

6 The diagram below shows a weather instrument used to determine relative humidity.



What is the relative humidity?

- (1) 40%
- (2) 36%
- (3) 8%
- (4) 4%

7 Which set of instruments is correctly paired with the weather variables that they measure?

(1)

wind speed – barometer
wind direction – wind vane

(2)

wind speed – anemometer
wind direction – wind vane

(3)

wind speed – wind vane
wind direction – barometer

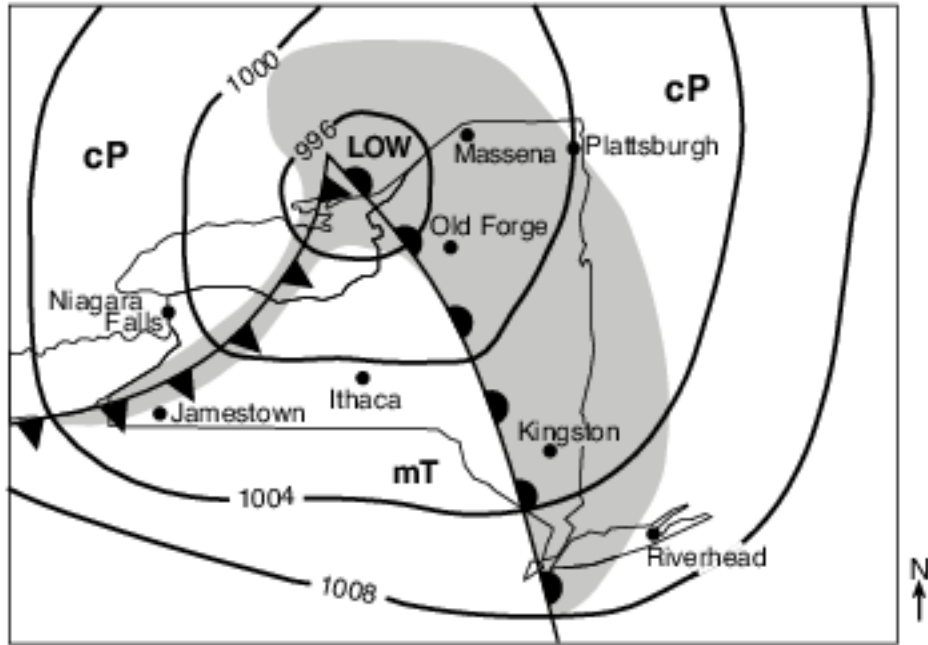
(4)

wind speed – anemometer
wind direction – barometer

8 A psychrometer is used to determine which weather variables?

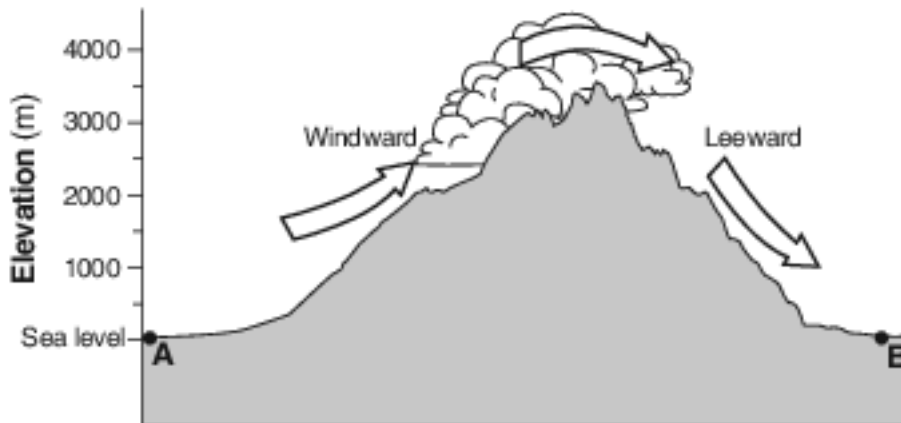
- (1) wind speed and wind direction
- (2) percentage of cloud cover and cloud height
- (3) air pressure and air temperature
- (4) relative humidity and dewpoint

Base your answers to questions 9 on the weather map below and on your knowledge of Earth science. The map shows the location of a low-pressure system over New York State during late summer. Isobar values are recorded in millibars. Shading indicates regions receiving precipitation. The air masses are labeled. Eight locations in New York State are indicated.



9 Identify the weather instrument used to measure air pressure. [1]

Base your answers to questions 10 on the diagram below, which shows the windward and leeward sides of a mountain range. Arrows show the movement of air over a mountain. Points A and B represent locations at sea level on Earth's surface.



10 Identify one weather instrument that could be used to determine the dewpoint of the air at point A. [1]

Base your answers to questions 11 on the air pressure field map in image provided and on your knowledge of Earth science. The map shows air pressures recorded in millibars (mb) at locations in eastern North America. Four isobars are shown. Points W, X, Y, and Z represent locations on Earth’s surface. Letter L represents the center of a low-pressure system.

11 Identify the weather instrument used to measure air pressure. [1]

Base your answers to questions 12 on the weather map in image provided and on your knowledge of Earth science. The weather map shows atmospheric pressures, recorded in millibars (mb), at locations around a low-pressure center (L) in the eastern United States. Isobars indicate air pressures in the western portion of the mapped area. Point A represents a location on Earth’s surface.

12 Identify the weather instrument that was used to measure the air pressures recorded on the map. [1]

Base your answers to questions 13 on the map in image provided and on your knowledge of Earth science. The weather map shows isobars, recorded in millibars (mb).

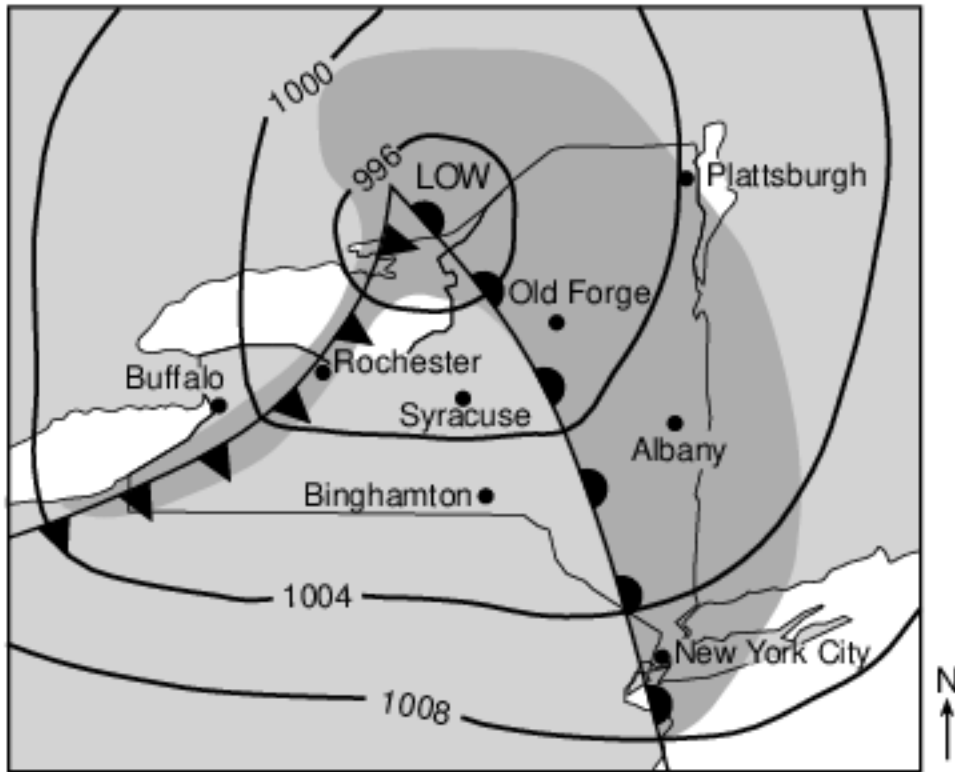
13 The table below lists some weather conditions for another location on this map.

Temperature (°F)	Dewpoint (°F)	Precipitation (inches in past 6 hours)	Present Weather
76	74	0.85	Rain showers

On the weather station model in your answer booklet, using the proper format, record the weather conditions listed in the table. [1]



Base your answers to questions 14 on the weather map below and on your knowledge of Earth science. The map shows the location of a low-pressure system over New York State during summer. Isobar values are recorded in millibars. The darker shading indicates areas of precipitation. Some New York State locations are indicated.



14 Identify the name of the weather instrument used to measure the wind speed at Plattsburgh. [1]

Base your answers to questions 15 on the map in image provided and on your knowledge of Earth science. The map shows the path of a tornado that moved through a portion of Nebraska on May 22, 2004 between 7:30 p.m. and 9:10 p.m. The path of the tornado along the ground is indicated by the shaded region. The width of the shading indicates the width of destruction on the ground. Numbers on the tornado's path indicate the Fujita intensity at those locations. The Fujita Intensity Scale (F-Scale), in the left corner of the map, provides information about wind speed and damage at various F-Scale intensities.

15 Identify the weather instrument usually used to measure wind speed. [1]

Answer Keys

1 3

2 4

3 2

4 3

5 3

6 1

7 2

8 4

9 Allow 1 credit for barometer or barograph.

10 Allow 1 credit. Acceptable responses include, but are not limited to:

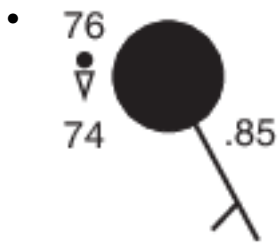
- — psychrometer
- — wet- and dry-bulb thermometer
- — hygrometer

11 Allow 1 credit for barometer or barograph.

12 Allow 1 credit for barometer or barograph.

13 Allow 1 credit if all four weather conditions are in the correct location and in the correct format.

- Note: Do not allow credit for “0.85” because this is not the correct format used on a weather station model.
- Example of a 1-credit response:



14 Allow 1 credit. Acceptable responses include, but are not limited to:

- — anemometer
- — wind meter
- — wind sock
- — wind gauge
- — Doppler radar

15 Allow 1 credit for anemometer or wind speed meter.