Name _____

Weather Regents Review

Based your answers to questions 1 through 4 on the four weather station models, A, B, C, and D, below.

1. List the letters of the four station models, in order, from the station with the highest air-pressure reading to the station with the lowest air-pressure reading.

Highest air-pressure station: A

D

B

Lowest air-pressure station: C

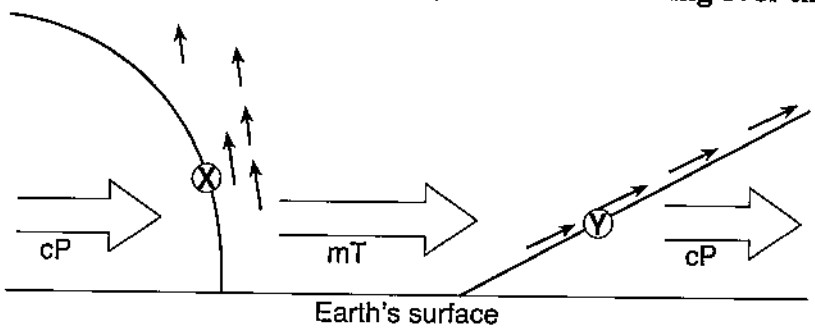
2. Convert the air temperature at station A into degrees Celsius 20°C

3. What evidence indicates that station C has the highest relative humidity?

air & dew point close

4. On station model D above, draw the proper symbol to indicate a 25-knot wind coming from the west.

Base your answers to questions 5 through 7 on the cross section below, which shows two weather fronts moving across New York State. Lines X and Y represent frontal boundaries. The large arrows show the general direction the air masses are moving. The smaller arrows show the general direction warm, moist air is moving over the frontal boundaries.



5. Which type of front is represented by letter X?

Cold

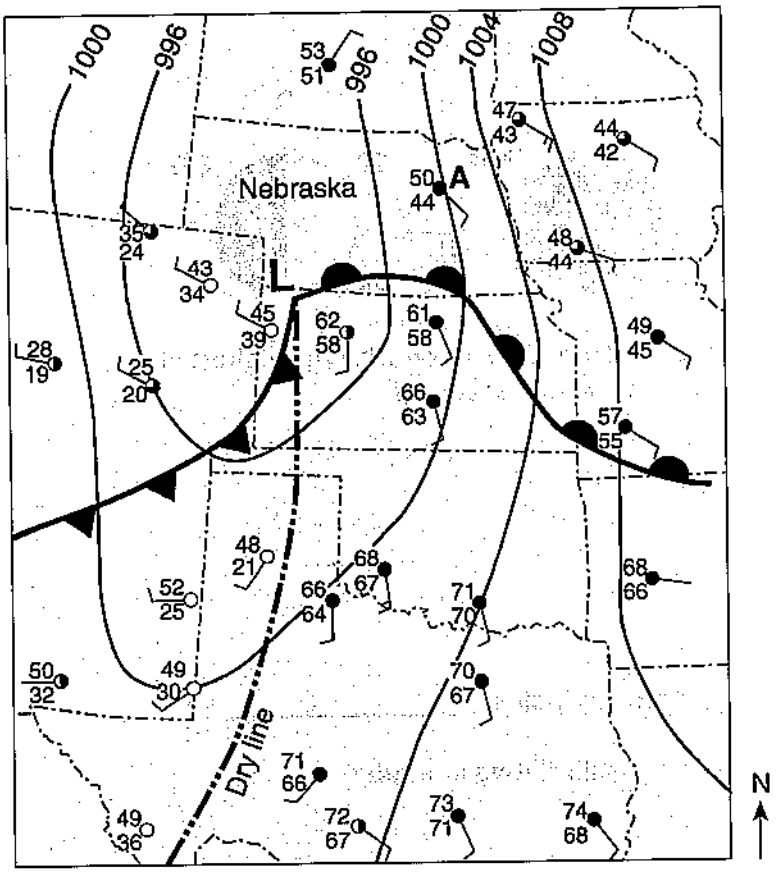
6. Explain why the warm, moist air rises over the frontal boundaries.

cold air force air up

7. Which type of front forms when front X catches and overtakes front Y?

occluded

Base your answers to questions 8 through 11 on the information and weather map below. The weather map shows the center of a low-pressure system. The symbol -- .. -- .. represents the dry line which separates cT and mT air masses. Isobars are drawn at intervals of 4 millibar. Letter A indicates a weather station model.



8. The atmospheric conditions in eastern Nebraska are represented on the map by a station model labeled A. Fill in the correct information for each weather variable, based on station model A.

Air temperature: 50°F
Dewpoint: 44°F
Wind direction from: SE
Wind speed: 10 kts
Cloud cover: 100%

9. Compared to the temperature and humidity of the air on the east side of the dry line, describe the temperature and humidity of the air on the west side.

Temperature Warm

Humidity Moist

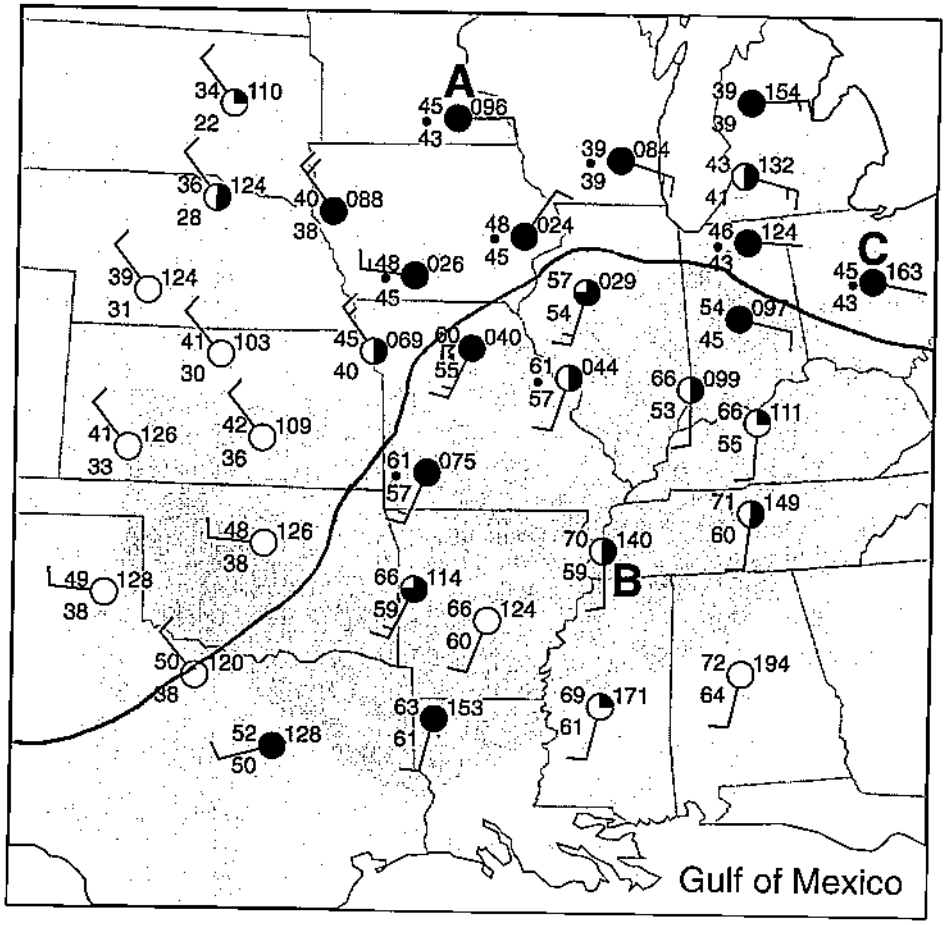
10. Explain why the warm air is rising along the warm front.

Cold air acts like a wedge and forces it up.

11. In what compass direction will the center of this low-pressure system most likely move if it follows a normal storm track?

NE

Base your answers to questions 12 through 15 on the map below, which shows weather station models and some weather variables for a portion of the United States. Selected weather stations are labeled A, B, and C.



12. On the map above, draw the 50°F isotherm. The isotherm must extend to the edges of the map.
13. State the air pressure, in millibars, at weather station A.

1009.6 mb

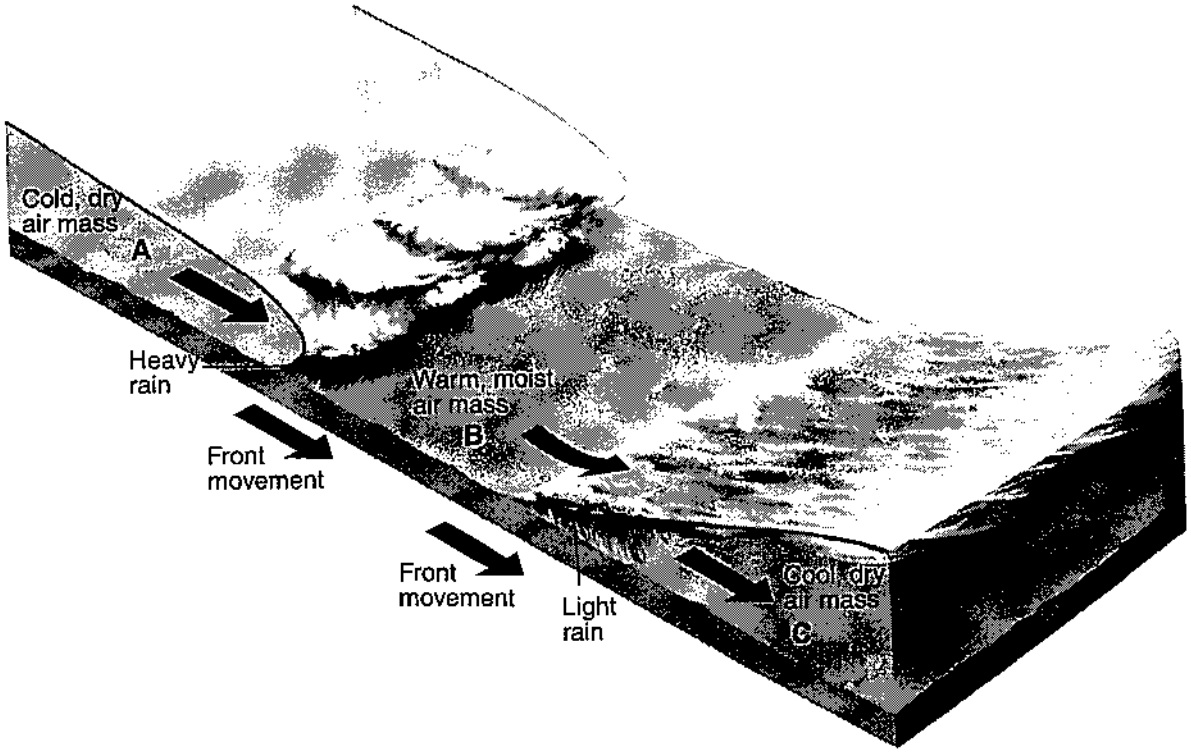
14. The city represented by weather station B is currently being affected by an air mass that originated over the Gulf of Mexico. What is the two-letter air mass symbol used to represent this air mass?

mT

15. Which weather condition is indicated by the present weather symbol at station C?

RAIN

Base your answers to questions 16 through 18 on the diagram below, which shows air masses, clouds, and rain associated with two fronts that are influencing weather conditions in New York State. Letters A, B, and C represent three air masses. The arrows show the direction of air and front movements.



16. Identify the most likely geographic source region for air mass B.

Gulf of Mexico

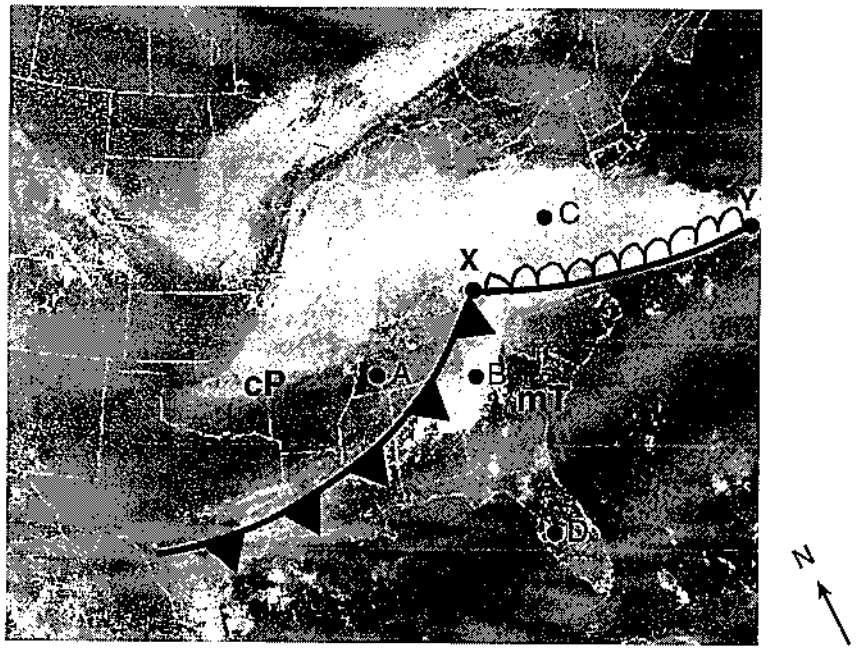
17. Identify the type of front shown between air mass B and air mass C.

WARM

18. Identify *one* process that causes clouds to form in the air rising along the frontal surfaces between air mass A and air mass B.

rising, expanding, cooling, condensation

Base your answers to question 19 through 23 on the satellite image shown below. The satellite image shows a low-pressure system over a portion of the United States. Air-mass symbols and frontal boundaries have been added. Line XY is one frontal boundary. Points A, B, C, and D represent surface locations. White areas represent clouds.



19. Draw the proper symbol to represent the most probable front on line XY.

20. State *one* process that causes clouds to form in the moist air along the cold front.

rising, expanding, condensing, cooling

21. Describe *one* piece of evidence shown on the map that suggests location A has a lower relative humidity than location B.

no clouds

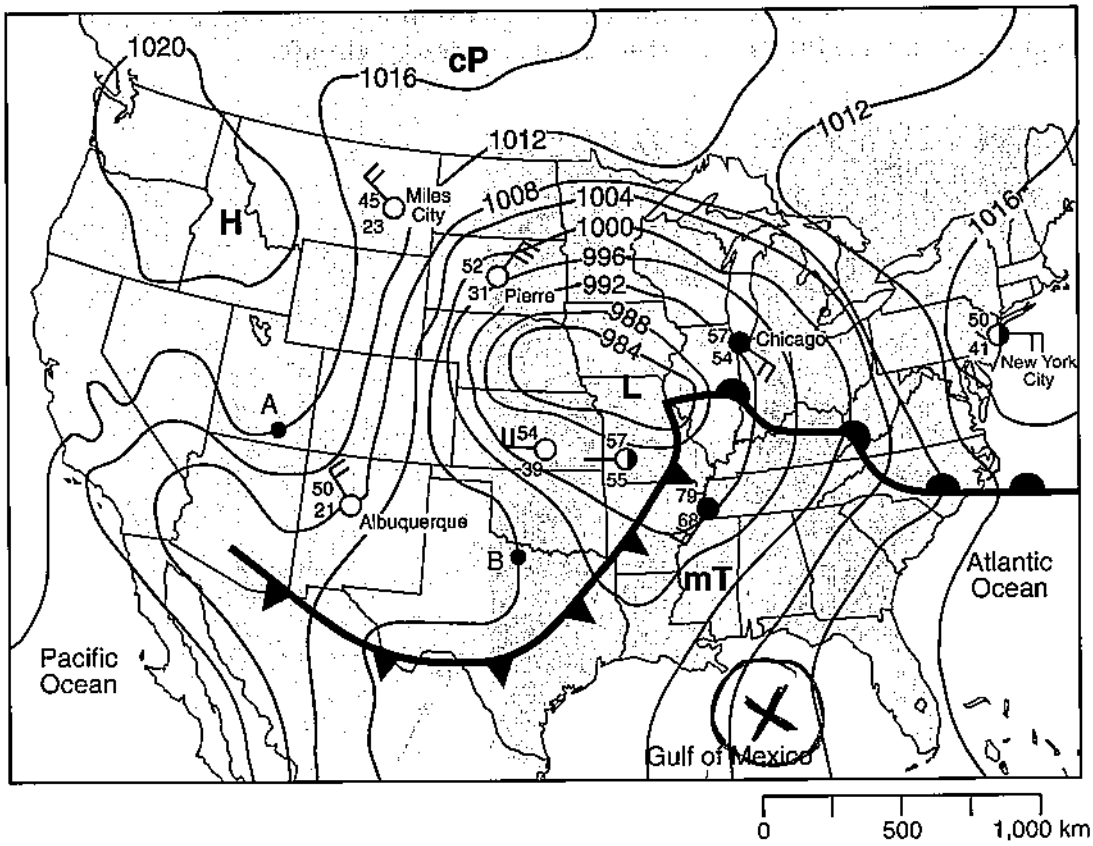
22. Explain why location C most likely has a cooler temperature than location D.

cP air mass

23. Stat the compass direction that the center of this low-pressure system will move over the next few days if it follows a normal storm track.

NE

Base your answers to questions 24 through 28 on the weather map below. The isobars show air pressures, in millibars. Point A and B indicate locations on the map.



24. On the weather map above, place an **X** centered on the geographic region that was most likely the source of the mT air mass.

25. Calculate the pressure gradient along a straight line between point A and point B on the map. Label your answer with the correct units.

$$\frac{1016 - 1000}{\qquad} = \frac{16 \text{ mb}}{1{,}000 \text{ km}} = 0.016 \text{ mb/km}$$

26. Describe the evidence shown on the map that indicates strong winds were blowing between Miles City and Pierre.

isobars are close together

27. Write the names of the cities below in sequence from lowest relative humidity to highest relative humidity.

New York City, Chicago, Albuquerque

Alb	NY	Chi

Lowest Relative Humidity → Highest Relative Humidity

28. Describe the pattern of the surface winds around the center of the low-pressure system (L).

counter clockwise inward