Questions for Mid-Latitude Cyclones & Fronts

1. Define the terms air mass and air-mass weather.

2. What two criteria must be met for an area to be an air-mass source region?

3. Why are regions that have a cyclonic circulation generally not conducive to air-mass formation?

4. On what bases are air masses classified? Compare the temperature and moisture characteristics of the following air masses: cP, mP, mT, and cT.

5. Why is mA left out of the air-mass classification scheme?

6. During winter, polar air masses are cold. Which should be coldest, a wintertime mP air mass or a wintertime cP air mass? Explain your choice.

7. How might vertical movements induced by a pressure system or topography act to modify an air mass?

8. What two air masses are most important to the weather of the United States east of the Rocky Mountains? Explain your choice.

9. What air mass influences the weather of the Pacific Coast more than any other?

10. Why do cA and cP air masses often sweep so far south into the United States?

11. Describe the modifications that occur as a cP air mass moves across one of the Great Lakes in the winter.

12. Why do mP air masses from the North Atlantic source region seldom affect the eastern United States?

13. What air mass and source region provide the greatest amount of moisture to the eatern and central United States?

14. For each statement below, indicate which air mass is most likely involved and from what source region it came:
    a. Summer drought in the southern Great Plains
    b. Wintertime advection fog in the Midwest
    c. Heavy winter precipitation in the western mountains
    d. Summertime convectional showers in the Mid-west and East
    e. A nor'easter
15. If you were located 400 km ahead of the surface position of a typical warm front, how high would the frontal surface be above you?

16. Compare the weather of a warm front with that of a cold front.

17. Why is cold-front weather usually more severe than warm-front weather?

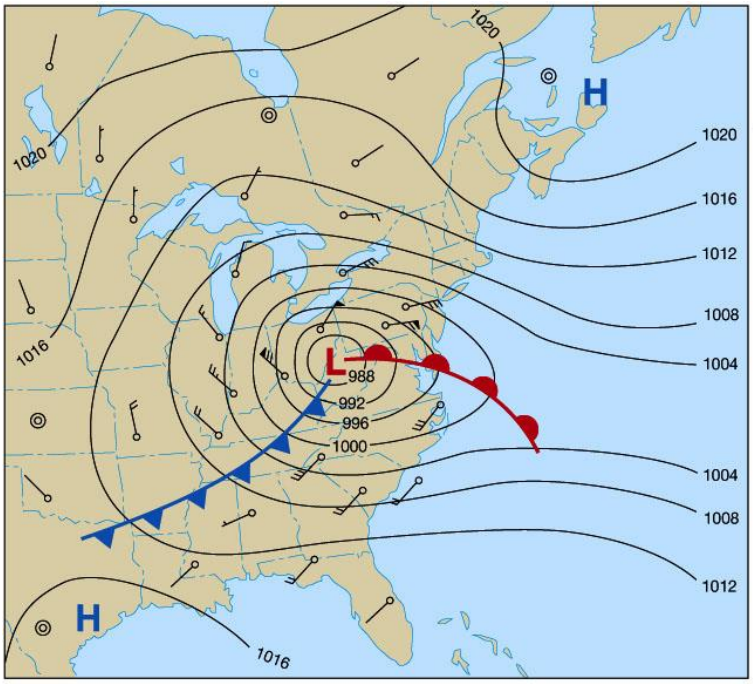
18. How does a stationary front produce precipitation when its position does not change, or changes very slowly?

19. Describe the initial stage in the formation of a mid-latitude cyclone.

20. Mid-latitude cyclones are sometimes called *wave cyclones.* Why do you think this is so?

21. Although the formation of an occluded front often represents a period of increased intensity for a mid-latitude cyclone, it also marks the beginning of the end of the system. Explain why such is the case.

22. For each of the weather elements listed here, describe the changes that an individual experiences when a middle latitude cyclone passes with its center north of the observer. (Hint: Use the figure provided)
    a. Wind direction and speed
    b. Pressure tendency
    c. Cloud type
    d. Precipitation
    e. Temperature tendency
23. Describe the weather conditions that an observer would experience if the center of a mid-latitude cyclone passed to the south.



ff	Miles per hour
◎	Calm
	1–2
	3–8
	9–14
	15–20
	21–25
	26–31
	32–37
	38–43
	44–49
	50–54
	55–60
	61–66
	67–71
	72–77
	78–83
	84–89
	119–123