

Chapter 17 Weather Patterns

Study Guide

1. Air Masses and Fronts

- a. Types of Air Masses
 - i. **Maritime Tropical**
 - ii. **Maritime Polar**
 - iii. **Continental Tropical**
 - iv. **Continental Polar**
- b. How Air Masses Move
- c. **Fronts**
 - i. Cold Fronts
 - ii. Warm Fronts
 - iii. Stationary Fronts
 - iv. **Occluded** Fronts
- d. **Cyclones and Anticyclones**

2. Storms

- a. Thunderstorms
 - i. How Thunderstorms Form
 - ii. **Lightning** and Thunder
 - iii. Thunderstorm Safety
- b. **Tornadoes**
 - i. How Tornadoes Form
 - ii. Tornado Safety
- c. **Hurricanes**
 - i. How Hurricanes Form
 - ii. The Eye of the Hurricane
 - iii. How Hurricanes Move
 - iv. Hurricane Damage
 - 1. **Storm Surge**
 - v. Hurricane Safety
 - 1. **Evacuate**

- d. Winter Storms
 - i. Lake-effect Snow
 - ii. Snowstorm Safety

3. Floods

- a. **Flash Floods**
- b. Flood Safety Measures
 - i. Predicting Floods
 - ii. Emergency Safety
 - iii. Other Flood Hazards

4. Prediction the Weather

- a. Weather Forecasting
 - i. **Meteorologists**
- b. Weather Technology
 - i. Weather Balloons and Satellites
 - ii. Computer Forecasts
- c. **El Niño**
- d. Reading Weather Maps
 - i. Weather Service Maps
 - 1. **Isobars**
 - 2. **Isotherms**
 - ii. Newspaper Weather Maps
- e. Butterfly Effect

SECTION 17-1

REVIEW AND REINFORCE

Air Masses and Fronts

◆ Understanding Main Ideas

Fill in the blanks in the table below.

Air Masses

Type	Where It Forms	Temperature	Humidity
1.	Over ocean	Warm	Moist
Maritime polar	2.	Cold	Moist
Continental tropical	Over land	3.	4.
Continental polar	5.	6.	Dry

◆ Building Vocabulary

Fill in the blanks to complete each statement.

7. A huge body of air that has similar temperature, humidity, and air pressure throughout it is called a(n) _____.
8. _____ air masses form in the tropics and have low pressure.
9. Air masses that form over oceans are called _____ air masses.
10. _____ air masses form north of 50° north latitude and south of 50° south latitude.
11. The area where air masses meet and do not mix becomes a(n) _____.
12. _____ air masses form over land, in the middle of continents.
13. A warm air mass that is cut off from the ground is said to be _____.
14. A swirling center of low air pressure is called a(n) _____.
15. _____ are high-pressure centers of dry air.

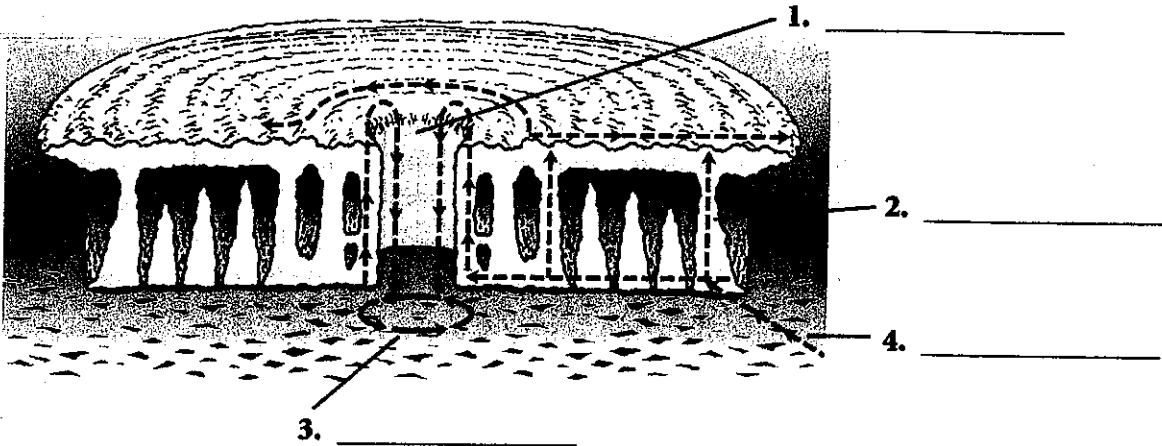
SECTION 17-2

REVIEW AND REINFORCE

Storms

◆ Understanding Main Ideas

Fill in each blank in the diagram with one of the following phrases: path of hurricane; eye of hurricane; warm, moist air; wind direction.



Answer the following questions on a separate sheet of paper.

5. Why should you be on the lookout for tornadoes during a severe thunderstorm?
6. Why should you avoid touching metal objects during a thunderstorm?
7. Where is the safest place to be during a tornado?
8. Why does a hurricane lose strength once it passes over land?
9. What should you do if you are caught in a snowstorm?

◆ Building Vocabulary

Match each term with its definition by writing the letter of the correct definition on the line beside the term.

- _____ 10. storm
- _____ 11. lightning
- _____ 12. tornado
- _____ 13. hurricane
- _____ 14. storm surge
- _____ 15. evacuate

- a. a tropical storm that has winds of 119 kilometers per hour or higher
- b. a sudden spark, or energy discharge, between parts of a cloud or between the cloud and the ground
- c. a violent disturbance in the atmosphere
- d. a rapidly whirling, funnel-shaped cloud that reaches down from a storm cloud to touch Earth's surface
- e. move away temporarily
- f. a "dome" of water that sweeps across the coast where a hurricane lands

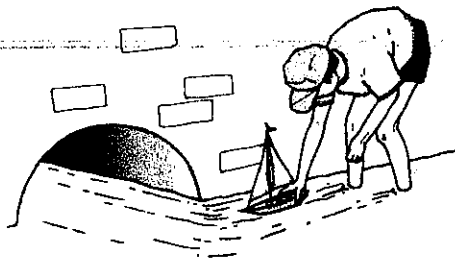
SECTION 17-3

REVIEW AND REINFORCE

Floods

◆ Understanding Main Ideas

Study following pictures. In the spaces provided, identify the flood safety rule that is being broken.



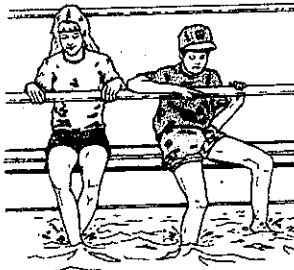
1. _____



2. _____



3. _____



4. _____



5. _____

Answer each of the following questions on a separate sheet of paper.

6. What leads to most flash floods?
7. Why do forecasters try to predict flood heights at different points along a river?
8. What is the first rule of flood safety?
9. In addition to high water, what are some other flood hazards?

◆ Building Vocabulary

Fill in the blank with the correct term.

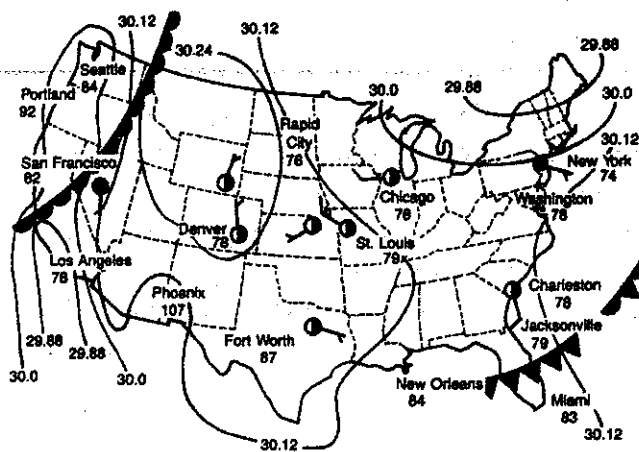
10. A(n) _____ is a sudden, violent flood that occurs within a few hours, or even minutes, of a storm.

SECTION 17-4 REVIEW AND REINFORCE

Predicting the Weather

◆ Understanding Main Ideas

Fill in the blanks in the table by interpreting the symbols on the map.



Cold front ▼▼▼	Warm front ▲▲▲	Stationary front ▲▼▲▼	Occluded front ▲▲▲▼	
○ Clear	⊙ Partly cloudy	● Cloudy	⦿ Rain	
⚡ Thunderstorm	* Snow	≡ Fog	⊕ Report missing	
🌀 Hurricane	⚠ Sleet			
Wind direction				
↖	↗	↘	↙	
West wind	East wind			
Wind Scale (mph)				
○ 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

Weather Factor	Denver	Chicago	New York
Temperature (°F)	78	1.	2.
Cloud cover	3.	partly cloudy	4.
Wind direction	5.	6.	Southeast
Wind speed (mph)	7.	8.	9.
Air pressure (inches)	30.3	10.	11.

◆ Building Vocabulary

If the statement is true, write true. If it is false, change the underlined word or words to make the statement true.

- _____ 12. Scientists who study the causes of weather and try to predict it are called meteorologists.
- _____ 13. A warm-water event that occurs in the tropical Pacific Ocean periodically is known as the butterfly effect.
- _____ 14. Isotherms are lines joining places on a weather map that have the same air pressure.
- _____ 15. Lines joining places on a weather map that have the same temperature are called isobars.

Name: _____

Class: _____

Choose the letter of the correct answer.

1. A cloud cover symbol that is $\frac{3}{4}$ black and $\frac{1}{4}$ white represents
[A] 90-100 percent cloud cover. [B] 70-80 percent cloud cover.
[C] 20-30 percent cloud cover. [D] 50-60 percent cloud cover.
2. One of the best places to seek protection during a tornado is
[A] in the garage. [B] in the basement of a well-built building.
[C] beside either the stove or the refrigerator. [D] in the attic.
3. Thunderstorms form within
[A] low cirrus clouds. [B] high altocumulus clouds.
[C] large cumulonimbus clouds. [D] high cirrocumulus clouds.
4. On weather maps, a line with half circles indicates
[A] a warm front. [B] a cold front. [C] a hurricane. [D] snow.
5. One difference between cyclones and anticyclones is
[A] their size. [B] how often they occur.
[C] where they occur. [D] the direction of their winds.
6. Small lines at the end of the shaft that represents wind direction on a weather map indicate
[A] temperature. [B] pressure. [C] wind speed. [D] humidity.
7. Places shown on a weather map that have the same temperature are connected by
[A] isotherms. [B] thermobars. [C] isobars. [D] thermolines.
8. When a warm air mass and a cold air mass meet and no movement occurs, the result is a(n)
[A] warm front. [B] stationary front. [C] occluded front. [D] cold front.
9. An air mass that formed over northern Mexico and affected the southwestern United States would be a
[A] continental polar air mass. [B] continental tropical air mass.
[C] maritime polar air mass. [D] maritime tropical air mass.

Choose the letter of the correct answer.

10. Collecting of weather data in the last 40 years has been improved mostly by
[A] astronaut observations. [B] military aircraft.
[C] more people who study clouds. [D] balloons and satellites.
11. The eye of a hurricane
[A] has the highest winds. [B] is calm.
[C] produces the storm surge. [D] has dense clouds.

Fill in the word or phrase that best completes the statement(s).

12. Hot, dry air moves into the Southwest in summer from a _____ air mass.
13. Sudden, violent floods that occur within hours or minutes are called _____.
14. On newspaper weather maps, colors are often used to indicate _____ ranges for different areas.
15. When so much water pours into a river that it overflows its banks, a(n) _____ occurs.
16. Storms that form within large cumulonimbus clouds and produce rain and lightning are called _____.
17. During a thunderstorm, a person should not touch objects that are made of _____.
18. Weather forecasters use _____ to quickly process information from instruments and make forecasts.
19. Scientists called _____ study the causes of weather and attempt to predict it.
20. On a weather map, places that have the same temperature are joined with lines called _____.

If the statement is true, write true. If it is false, change the underlined word or words to make the statement true.

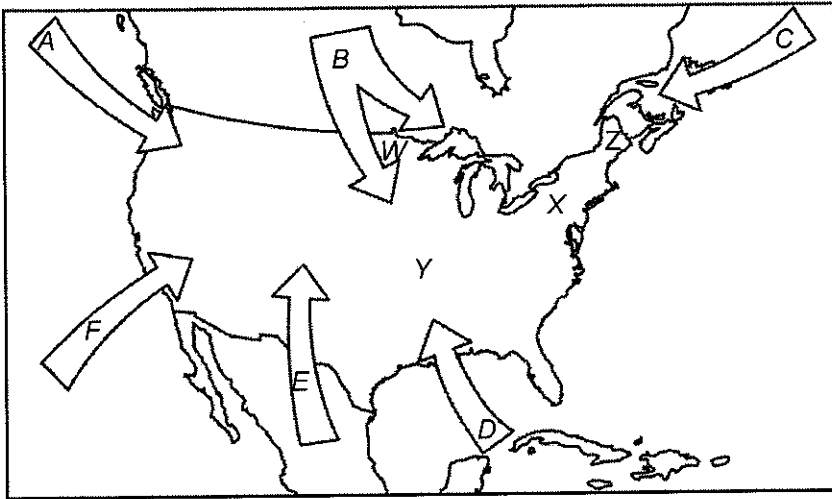
21. Weather balloons in the exosphere carry cameras that are used to photograph clouds.
22. Tornadoes form in the same kind of cloud as thunderstorms.

If the statement is true, write true. If it is false, change the underlined word or words to make the statement true.

23. During a tornado, a basement is the safest place to be.

Use the map to answer the question(s).

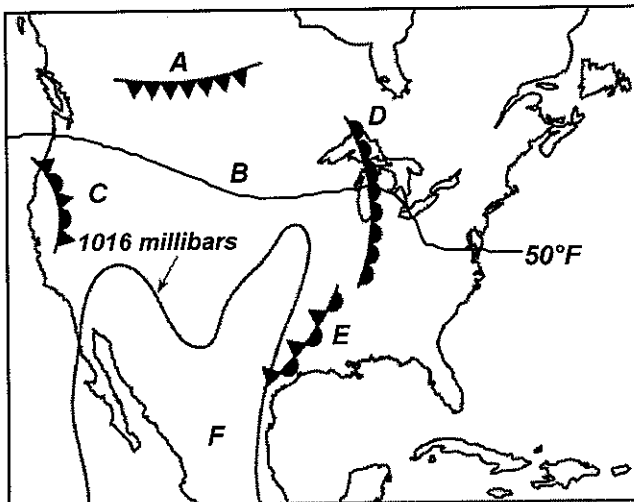
North American Air Masses



24. Is a tornado more likely to occur at location Y or Z? Explain your answer.

Use the map to answer the question(s).

Weather Map



25. What does C represent?

Write an answer to the following question(s).

26. Define "hurricane" and explain how a hurricane forms.
27. Explain why weather forecasts are not always accurate.
28. You and a friend are hiking in the wilderness when you become caught in a thunderstorm. Your friend wants to seek shelter under the nearest tree. Is this a good idea? If not, what should you do?
29. Describe two causes of flash floods.
30. Compare and contrast maritime tropical and continental tropical air masses.

Thank you for evaluating AnyBizSoft PDF Splitter.

A watermark is added at the end of each output PDF file.

To remove the watermark, you need to purchase the software from

<http://www.anypdftools.com/buy/buy-pdf-splitter.html>