

Weather Guided Reading Packet

Chapter 3

Name

Period

Room Number

CHAPTER 3**WEATHER PATTERNS****SECTION****3-1****Air Masses and Fronts**

(pages 76-82)

This section describes huge bodies of air, called air masses, and explains how they move. The section also explains how the meeting of different air masses affects weather.

► Introduction (page 76)

1. What is an air mass? _____

► Types of Air Masses (pages 76-78)

2. Scientists classify air masses according to _____ and _____.
3. Is the following sentence true or false? Polar air masses have low air pressure. _____
4. Complete the compare/contrast table.

Types of Air Masses and Their Characteristics	
Type of Air Mass	Characteristics
	Warm and humid
	Cool and humid
	Warm and dry
	Cool and dry

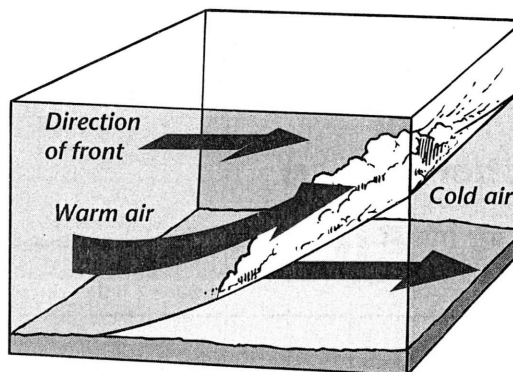
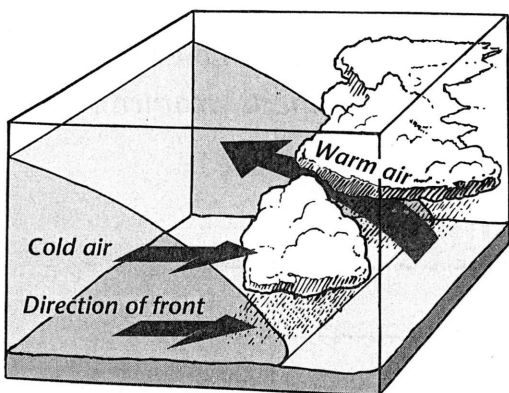
CHAPTER 3, Weather Patterns (continued)

► How Air Masses Move (page 79)

5. In the continental United States, major wind belts generally push air masses from _____ to _____.

► Fronts (pages 79–81)

6. Label the drawings to indicate a cold front and a warm front.



Match the type of front with how it forms.

Type of Front	How It Forms
_____ 7. cold front	a. A moving warm air mass collides with a slowly moving cold air mass.
_____ 8. warm front	b. A warm air mass is caught between two cooler air masses.
_____ 9. stationary front	c. A rapidly moving cold air mass runs into a slowly moving warm air mass.
_____ 10. occluded front	d. A cold air mass and a warm air mass meet and remain stalled over an area.

11. Circle the letter of each sentence that is true about fronts.

- a. Cold fronts can cause violent thunderstorms.
- b. Warm fronts are associated with clouds and rain.
- c. Stationary fronts may bring many days of clouds and precipitation.
- d. Occluded fronts always bring fair weather.

► **Cyclones and Anticyclones** (pages 81–82)

12. A swirling center of low air pressure is called a(n) _____.

13. Is the following sentence true or false? Winds spiral inward toward the center of a cyclone. _____

14. What type of weather is associated with cyclones? _____

15. Is the following sentence true or false? Winds in an anticyclone spin clockwise in the Northern Hemisphere. _____

16. What type of weather is associated with anticyclones? _____

SECTION
3–2
Storms
 (pages 83–91)

This section explains how thunderstorms, tornadoes, hurricanes, and snow storms form. The section also describes how people can stay safe in the different types of storms.

► **Introduction** (page 83)

1. What is a storm? _____

► **Thunderstorms** (pages 84–85)

2. Circle the letter of the type of clouds in which thunderstorms form.

a. cumulus

b. nimbus

c. nimbostratus

d. cumulonimbus

3. A sudden energy discharge between parts of a cloud, between nearby clouds, or between a cloud and the ground is called _____.

CHAPTER 3, Weather Patterns *(continued)*

4. Circle the letter of each sentence that is true about thunder.
- a. It is the sound of an explosion.
 - b. It occurs after lightning.
 - c. It occurs because lightning heats the air.
 - d. It occurs because light travels faster than sound.
5. Circle the letter of each sentence that is a way to stay safe in a thunderstorm.
- a. Avoid touching metal objects.
 - b. Get out of the water.
 - c. Don't use the telephone.
 - d. Get out of your car and go under a tree.

► Tornadoes (pages 85–88)

6. What is a tornado? _____

7. Is the following sentence true or false? Tornadoes develop in the same clouds that bring thunderstorms. _____
8. Circle the letter of each sentence that is true about where and when tornadoes occur.
- a. Tornadoes are most likely in late summer and early fall.
 - b. Tornadoes occur often in the Great Plains.
 - c. Tornadoes occur more often in the United States than in any other country.
 - d. Tornadoes occur in just a few parts of the United States.
9. Where is the safest place to be during a tornado? _____

► **Hurricanes (pages 88–90)**

10. Circle the letter of each sentence that is true about a hurricane.
 - a. It is a tropical storm.
 - b. It has winds of at least 159 kilometers per hour.
 - c. It is typically about 60 kilometers across.
 - d. It forms over water.
11. The quiet center of a hurricane is called the _____.
12. Is the following sentence true or false? Hurricanes do not last as long as other storms. _____
13. A “dome” of water that sweeps across the coast where the hurricane lands is called a(n) _____.
14. Is the following sentence true or false? If you hear a hurricane warning and are told to evacuate, you should leave the area immediately.

► **Winter Storms (pages 90–91)**

15. When does snow fall? _____

16. Circle the letter of each sentence that is true about lake-effect snow.
 - a. It occurs in Detroit and Chicago.
 - b. It occurs because land cools more rapidly than water.
 - c. It occurs on the south and west sides of the Great Lakes.
 - d. It occurs when humid air rises and cools over land.
17. What should you do if you are caught in a snowstorm? _____

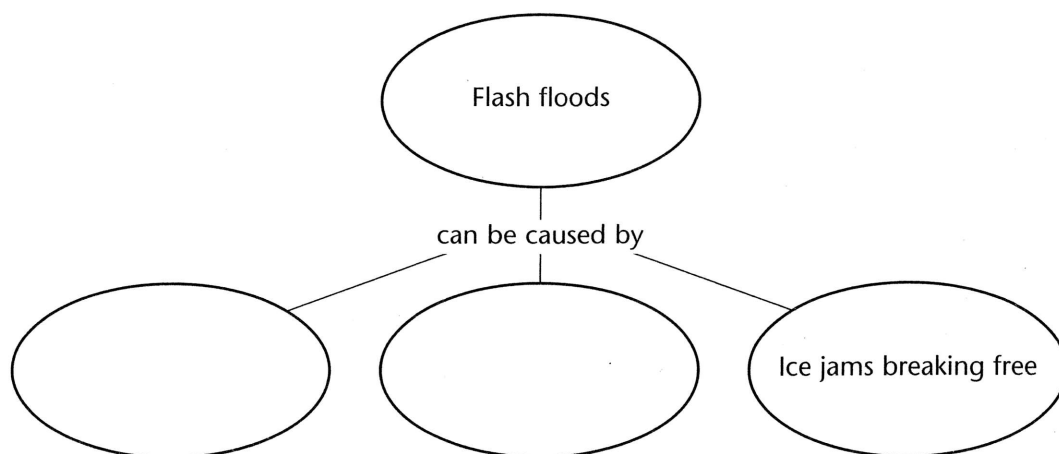
CHAPTER 3, Weather Patterns (continued)

SECTION Floods 3-3 (pages 95-98)

This section explains why floods occur and describes how to stay safe in floods.

► Flash Floods (page 96)

1. Is the following sentence true or false? Floods are the most dangerous weather-related events in the United States. _____
2. A sudden, violent flood that occurs within a few hours, or even minutes, of a storm is called a(n) _____.
3. Complete the concept map.



► Flood Safety Measures (pages 96-98)

4. Why do scientists try to predict floods? _____

5. An announcement describing the area in which flooding is possible is a(n) _____.
6. An announcement that floods have already been reported or are about to occur is a(n) _____.

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7. What is the first rule of flood safety? _____

8. Circle the letter of each choice that is a flood hazard.

- a. power outages
- b. landslides
- c. polluted drinking water
- d. interruption of emergency services



Reading Skill Practice

As you read, identifying the sentence that best expresses the main topic under each heading can help you focus on the most important points. For each heading in Section 3-3, identify and copy the sentence that best expresses the main topic under that heading. Do your work on a separate sheet of paper.

CHAPTER 3, Weather Patterns *(continued)*

► Weather Technology (page 101)

3. In what two areas have changes in technology occurred in weather forecasting? _____

4. Is the following sentence true or false? Weather forecasts for over three days into the future are never reliable. _____
5. Circle the letter of each sentence that is true about weather balloons or weather satellites.
 - a. Weather balloons carry instruments as high as the stratosphere.
 - b. Weather balloons carry computers to analyze weather data.
 - c. The first weather satellite was launched in 1940.
 - d. Weather satellites take pictures of Earth from the exosphere.
6. Circle the letter of each sentence that is true about computer forecasts of the weather.
 - a. Computers are rarely used to help forecast weather.
 - b. Computer forecasts are based on weather conditions from many weather stations.
 - c. Computers only make long-term forecasts of a week or more.
 - d. When new weather data come in, computers revise their forecasts.

► El Niño (page 102)

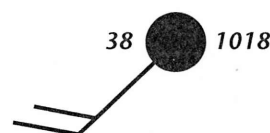
7. A warm-water event that occurs periodically in the Pacific Ocean is called _____.
8. Circle the letter of each sentence that is true about El Niño.
 - a. When it occurs, warm surface water is pushed toward South America.
 - b. It replaces cold water that usually rises to the surface near the coast of South America.
 - c. It occurs once every five to ten years.
 - d. It can affect weather patterns in places as far away as Florida.

► **Reading Weather Maps** (pages 102-105)

9. What data are shown on a weather map? _____

10. What are the temperature, air pressure, and wind direction at the weather station represented by the

symbol shown here? _____



Match the term with its definition.

Term	Definition
_____ 11. isobars	a. Lines on a weather map joining places that have the same temperature
_____ 12. isotherms	b. Lines on a weather map joining places that have the same air pressure

► **The Butterfly Effect** (page 104)

13. Why is weather forecasting tricky, even with current technology?

14. Is the following sentence true or false? The butterfly effect refers to the fact that a small change in the weather today can mean a larger change in the weather a week later. _____

CHAPTER 3, Weather Patterns (continued)

WordWise

Solve the clues by filling in the blanks with key terms from Chapter 3. Then write the numbered letters in the correct order to find the hidden message.

Clues

Key Terms

Violent disturbance in the atmosphere

1 2 _ _ _

Type of air mass that forms north of 50° north latitude or south of 50° south latitude

_ 3 _ _ 4

Type of air mass that forms over oceans

5 _ _ _ _ _

Lines on a map joining places that have the same air pressure

_ 6 _ _ 7 8 _

Type of front in which a warm air mass is cut off from the ground by cool air beneath it

_ _ _ _ _ 9 10

Type of air mass that forms in the tropics

_ _ _ _ _ 11 _

A sudden spark when electrical charges jump between nearby clouds or parts of a cloud or between a cloud and the ground

_ _ _ _ _ 12 _ _ 13

Lines on a map joining places that have the same temperature

_ _ _ _ _ 14 15 _ _

Rapidly whirling, funnel-shaped cloud that reaches down from a storm cloud to touch Earth's surface

_ 16 _ _ _ _ _

Tropical storm with winds of 119 kilometers per hour or higher

_ 17 _ _ _ _ _

Scientist who studies the causes of weather and tries to predict it

_ _ _ _ _ 18 _

Hidden Message

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18