Name Class Date

CHAPTER 13 STUDY GUIDE FOR CONTENT MASTERY

The Nature of Storms

SECTION 13.1 *Thunderstorms*

In your textbook, read about thunderstorm formation.
Use each of the terms below just once to complete the passage.

condensation	**warmer**	**unstable**	**convection**
cumulonimbus	**moisture**	**stable**	

At any moment, more than 2000 thunderstorms are occurring on Earth. Thunderstorms develop from cumulus clouds that grow into huge **(1)** _____ clouds.

Thunderstorms form when three conditions exist that cause cumulus clouds to grow by the energy transfer method of **(2)** _____. First, there must be sufficient **(3)** _____ in the lower atmosphere to condense and release latent heat. Second, some mechanism must make the air rise, causing the cloud to grow. Third, the portion of the atmosphere that the cloud grows through must be **(4)** _____. The rising cloud must stay **(5)** _____ than the air around it in order for the growth to continue.

The cloud's growth stops when the rate of **(6)** _____ in the cloud, which diminishes with height, is insufficient to create enough heat to keep the cloud warmer than the air around it. Growth will also stop if the rising air meets a layer of **(7)** _____ air that it cannot overcome.

In your textbook, read about different types of thunderstorms.
For each item in Column A, write the letter of the matching item in Column B.

Column A		Column B
_____	**8.** Forms when an air mass rises as a result of orographic lifting	**a.** frontal thunderstorm
_____	**9.** Forms because of temperature differences between the air over land and the air over water	**b.** mountain thunderstorm
_____	**10.** Forms as cold air pushes warm air up at a boundary between cold and warm air masses	**c.** sea-breeze thunderstorm

SECTION 13.2 *Severe Weather, continued*

In your textbook, read about tornado formation.
Answer the following questions.

9. What is a tornado?

10. Describe how a tornado forms.

11. During which time of year do most violent tornadoes form? Explain why.

12. Where in the United States do many tornadoes occur? Explain why.

In your textbook, read about tornado classification.
Examine the table below. Then answer the questions.

Fujita Tornado Intensity Scale

Rank	Category	Path of Destruction	Wind Speed (mph)	Duration
F0 and F1	Weak	up to 3 miles	60–115	1–10 minutes
F2 and F3	Strong	15+ miles	110–205	20 minutes or longer
F4 and F5	Violent	50+ miles	more than 200	1 hour or longer

13. The Fujita scale classifies tornadoes according to what criteria?

14. What is the wind speed of the most violent tornadoes on the scale?

15. How long would an average F3 tornado last?

SECTION 13.3 *Tropical Storms*

In your textbook, read about the life cycle of a hurricane.
Number the stages in the development of a hurricane in the order in which they occur.

_____ **1.** tropical disturbance

_____ **2.** hurricane

_____ **3.** tropical storm

_____ **4.** tropical depression

In your textbook, read about tropical cyclones and the damage they cause.
Determine if the statement is true. If it is not, rewrite the italicized part to make it true.

_____ **5.** To people living near the Atlantic Ocean, tropical cyclones are known as *hurricanes.*

_____ **6.** Tropical cyclones are large, rotating, *high-pressure* storms.

_____ **7.** Tropical cyclones originate over the warm waters of most *tropical* oceans.

_____ **8.** Hurricanes are classified according to the *Fujita scale.*

_____ **9.** The minimum wind speed for a *Category 1* hurricane is 74 mph (120 kph).

_____ **10.** The eye of a hurricane is surrounded by a band of strong winds called the *eye current.*

_____ **11.** Hurricane winds can drive a mound of water toward the coast, where it washes over land. This is called a *storm surge.*

SECTION 13.4 *Recurring Weather*

In your textbook, read about weather patterns and problems they cause.

Complete the table by writing the result of each weather pattern. Choose from the following: *cold wave, drought, flood, heat wave.*

Weather Pattern	Result
1. Thunderstorm remains over an area for many hours	
2. Extended period of well-below-normal rainfall	
3. Extended period of above-normal temperatures	
4. Extended period of below-normal temperatures	

Complete the table by writing the name of each weather pattern associated with each atmospheric event. Choose from the following: *cold wave, flood, heat wave, drought.*

Atmospheric Event	Weather Pattern
5. Large pools of extremely cold air develop strong high-pressure systems over polar continental areas. Jet streams move systems.	
6. Large, warm, high-pressure system develops, remains over an area, and blocks cooler air masses from entering the area.	
7. Sinking air from a strong high-pressure system stops air from rising and condensation from occurring over a long period of time.	
8. A thunderstorm unleashes heavy precipitation.	