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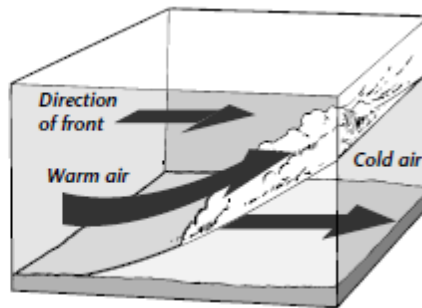
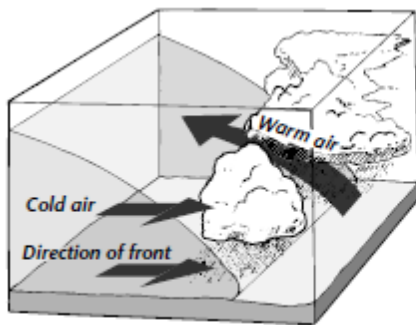
Guided Reading Chapter 18: Weather Patterns

18-1: Air Masses and Fronts

1. What is an air mass?
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

5. In the continental United States, major wind belts generally push air masses from _____ to _____.
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.
- Cold fronts can cause violent thunderstorms.
 - Warm fronts are associated with clouds and rain.
 - Stationary fronts may bring many days of clouds and precipitation.
 - Occluded fronts always bring fair weather.
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?

18-2: Storms

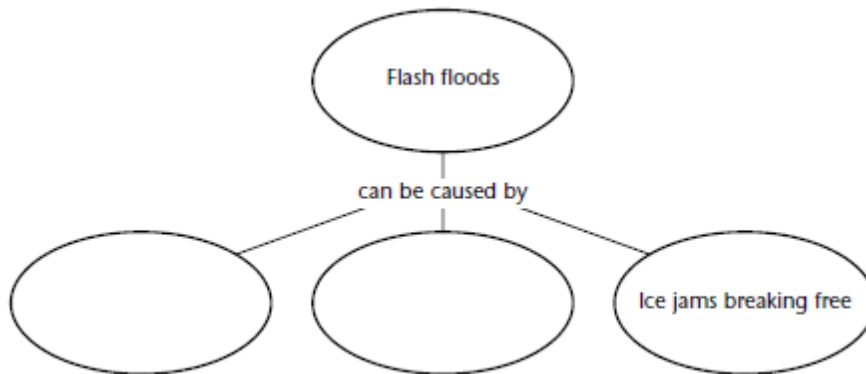
- What is a storm?
- Circle the letter of type of clouds in which thunderstorms form.
 - cumulus
 - nimbus
 - nimbostratus
 - cumulonimbus

3. A sudden energy discharge between parts of a cloud, between nearby clouds or between a cloud and the ground is called _____.
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.
6. Is the following sentence true or false? Tornadoes develop in the same clouds that bring thunderstorms.
7. 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.
8. Where is the safest place to be during a tornado?
9. 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.
10. The quiet center of a hurricane is called the _____.
11. A "dome" of water that sweeps across the coast where the hurricane lands is called a(n) _____.
12. Is the following sentence true or false? If you hear a hurricane warning and are told to evacuate, you should leave the area immediately.
13. What conditions are necessary for snow to fall?

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

18-3: Floods

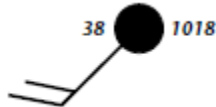
- Is the following sentence true or false? Floods are the most dangerous weather-related events in the United States.
- A sudden, violent flood that occurs within a few hours, or even minutes, of a storm is called a(n) _____.
- Complete the concept map.



- An announcement describing the area in which flooding is possible is a(n) _____.
- An announcement that floods have already been reported or are about to occur is a(n) _____.
- What is the first rule of flood safety?
- Circle the letter of each choice that is a flood hazard.

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

18-4: Predicting the Weather

1. Scientists who study the causes of weather and try to predict it are called _____.
2. Circle the letter of each choice that is a source of weather information for meteorologists.
 - a. radar
 - b. seismographs
 - c. instruments carried by balloons
 - d. satellites
3. Is the following sentence true or false? Weather forecasts for over three days into the future are never reliable.
4. 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.
5. 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.
6. What data are shown on a weather map?
7. What are the temperature, air pressure and wind direction at the weather station represented by the symbol shown here?
8. Why is weather forecasting tricky, even with current technology?
9. 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.