*Name*_____
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Guided Reading Chapter 17: Weather Factors

17-1: Energy in the Atmosphere

1. Is the following sentence true or false? About half the energy in Earth's atmosphere comes from the sun.

2. Energy from the sun travels to Earth as _____.

3. The direct transfer of energy by electromagnetic waves is called _____.

Match the type of radiation with its description.

Type of Radiation	**Description**
4. _____ visible light	a. It is a mixture of all the colors of the rainbow.
5. _____ infrared radiation	b. It has wavelengths that are shorter than visible light.
6. _____ ultraviolet radiation	c. It has wavelengths that are longer than visible light.

7. Is the following sentence true or false? Red light has a shorter wavelength than blue light.

8. What absorbs or reflects energy from the sun in the atmosphere?

9. Reflection of light in all directions is called_____.

10. Circle the letter of each sentence that is true about scattering.
    a. Short wavelengths of visible light scatter less than long wavelengths.
    b. Blue light scatters less than red light.
    c. Scattered light is bluer than ordinary light.
    d. Scattering explains why the daytime sky looks blue.

11. The process by which gases hold heat in the air is called the _____.

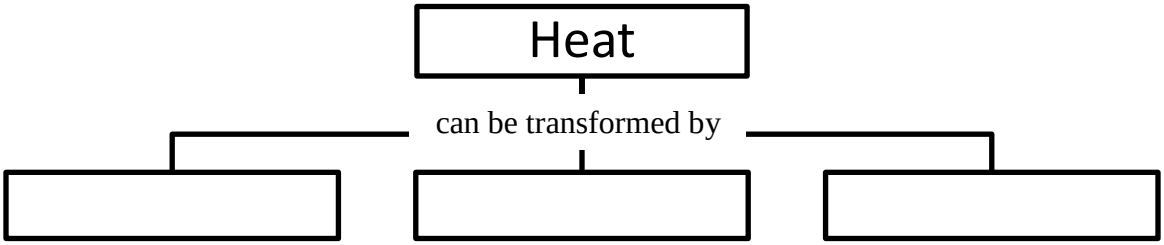
17-2: Heat Transfer

1. The total energy of motion in the molecules of a substance is called _____.

2. The average amount of energy of motion of each molecule of a substance is called _____.

3. How does a thermometer work?

4. Complete the concept map.



5. Is the following sentence true or false? Radiation is the direct transfer of energy by electromagnetic waves.

6. The direct transfer of heat from one substance to another substance that it is touching is called _____.

7. The transfer of heat by the movement of a fluid is called _____.

Match the type of heat transfer with its example.

Heat Transfer	**Example**
8. _____ radiation	a. Drying your boots over a hot-air vent
9. _____ conduction	b. Burning your bare feet on hot sand
10. _____ convection	c. Feeling the sun's warmth on your face

11. The upward movement of warm air and the downward movement of cool air form _____.

17-3: Winds

1. The horizontal movement of air from an area of high pressure to an area of lower pressure is referred to as _____.

2. What is the ultimate source of energy that powers the wind?

Match the instrument with what it measures.

	Instrument	**What It Measures**
3.	_____ wind vane	a. wind speed
4.	_____ anemometer	b. wind direction

5. Is the following sentence true or false? A south wind blows toward the south.

6. The increased cooling that a wind can cause is called the _____.

7. Winds that blow over short distances are called _____.

8. Winds that blow steadily from specific directions over long distances are called _____.

9. As Earth rotates, the Coriolis Effect causes winds in the Northern Hemisphere to turn toward the _____.

10. Circle the letter of each sentence that is true about jet streams.
    a. They are about 100 kilometers above Earth's surface.
    b. They are hundreds of kilometers wide.
    c. The blow from east to west.
    d. The blow at speeds of 200 to 400 kilometers per hour.

17-4: Water in the Atmosphere

1. A measure of the amount of water vapor in the air is _____.

2. What is relative humidity?

3. Circle the letter of each sentence that is true about relative humidity.
    a. It is a percentage.
    b. It is all the water vapor the air can hold.
    c. It depends on air temperature.
    d. It measures how hot it feels.

4. Relative humidity can be measured with a(n) _____.

5. Circle the letter of each sentence that is true about how a psychrometer works.
    a. The dry-bulb thermometer is cooled by evaporation when the wind blows.
    b. The higher the humidity, the faster water evaporates from the bulb.
    c. The wet-bulb thermometer reading is always higher than the dry-bulb reading.
    d. When relative humidity is high, there is not much difference between wet-bulb and dry-bulb thermometer readings.

Match the term with its definition.

Term	**Definition**
6. _____ condensation	a. Ice that has been deposited directly from the air onto a cold surface
7. _____ dew point	b. Water that condenses from the air onto a cold surface
8. _____ dew	c. Temperature at which condensation begins
9. _____ frost	d. Process by which molecules of water vapor become liquid water

Match the type of cloud with its height.

Type of Cloud	**Height**
10. _____ cumulus	a. About 2 to 18 kilometer above the surface
11. _____ stratus	b. More than 6 kilometers above the surface
12. _____ cirrus	c. At or near the surface
13. _____ fog	d. About 2 to 6 kilometers above the surface

14. Complete the table.

Types of Clouds	
Type of Cloud	**Description**
	Looks like fluff piles of cotton
	Forms in flat layers
	Looks wispy and feathery

17-5: Precipitation

1. Complete the table.

Types of Precipitation	
Type of Precipitation	**Description**
	Drops of water at least 0.5 mm in diameter
	Ice particles smaller than 5 mm in diameter
	Ice pellets larger 5 mm in diameter
	Ice crystals

Match the type of precipitation with how it forms.

2. _____ sleet
3. _____ freezing rain
4. _____ hail
5. _____ snow

a. Water vapor in a cloud is converted directly into ice crystals.
b. Ice pellets add layers of ice as they are carried up and down in a storm cloud.
c. Raindrops freeze after they hit the ground and other surfaces.
d. Raindrops freeze into tiny particles of ice as they fall through the air.

6. Is the following sentence true or false? On average, 10 centimeters of snow contains about the same amount of water as 5 centimeters of rain.