

# 7<sup>th</sup> Grade Science

## Week #3

\* Appendix # I & II = Vocabulary for this Unit.

Day 1 = page 1. (Honors: <sup>Also</sup> Correct FALSE Statements)

Day 2 = Lab experiment on Page 2. (Honors = Also Nonlinguistic)

Day 3 = page #3 (Honors: <sup>Also</sup> page 4)

Day 4 = page #5 (Honors: Also page 6)

Day 5 = page #7 (Honors: Also page 8)

Quiz = Page #9

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# Quick Vocabulary

## Lesson 1

**air pressure** the pressure that a column of air exerts on the air or surface below it

**dew point** temperature at which air near the ground becomes fully saturated with water

**humidity** amount of water vapor in the air

**kinetic energy** the energy an object has due to its motion

**precipitation** water, in liquid or solid form, that falls from the atmosphere

**relative humidity** amount of water vapor present in the air relative to the maximum amount of water vapor the air can contain at that temperature

**variable** a quantity that can change

**water cycle** a series of natural processes in which water continually moves among oceans, land, and the atmosphere

**weather** atmospheric conditions of a certain place at a certain time

## Lesson 2

**air mass** large body of air with distinct temperature and moisture characteristics

**blizzard** violent winter storm characterized by freezing temperatures, strong winds, and blowing snow

**dominate** to exert the guiding influence on

**front** boundary between two air masses

**high-pressure system** large body of circulating air that has high pressure at its center and lower pressure on the outside

**hurricane** intense tropical storm with winds exceeding 119 km/h

**low-pressure system** large body of circulating air that has low pressure at its center and higher pressure on the outside

**tornado** violent, whirling column of air that comes in contact with the ground

# Quick Vocabulary

## Lesson 3

**computer model** detailed program that solves a set of complex mathematical formulas

**Doppler radar** specialized radar that can detect precipitation and movement of small particles and can approximate wind speed

**isobar** line on a map used to connect all places where air pressure has the same value

**surface report** describes a set of weather measurements made on Earth's surface

**upper-air report** describes wind, temperature, and humidity conditions above Earth's surface



**Get Ready to Read**

**Weather**

**What do you think?**

Before you read, decide if you agree or disagree with each of these statements. On the line before each statement, ~~place an A if you agree or a D if you disagree.~~ As you read this chapter, see if you change your mind about any of the statements.

Write "T" for True ; Write "F" for False.

Before You Read	Statements	After You Read
	1. Weather is the long-term average of atmospheric patterns of an area.	
	2. All clouds are at the same altitude within the atmosphere.	
	3. Precipitation often occurs at the boundaries of large air masses.	
	4. There are no safety precautions for severe weather, such as tornadoes and hurricanes.	
	5. Weather variables are measured every day at locations around the world.	
	6. Modern weather forecasts are done using computers.	

**What have you learned?**

After you read each lesson, return to this worksheet to see if you have changed your mind about any of the statements related to that lesson. Place a C after each statement that is correct or an I for those that are incorrect.

\* HONORS: correct any statement that is False.


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**Inquiry** Launch Lab

LESSON 1: 15 minutes

### Can you make clouds in a bag?

When water vapor in the atmosphere cools, it condenses. The resulting water droplets make up clouds.

**Procedure** 

1. Read and complete a lab safety form.
2. Half-fill a 500-mL beaker with ice and cold water.
3. Pour 125 mL of warm water into a resealable sandwich bag and seal the bag.
4. Carefully lower the bag into the ice water. Record your observations in your Science Journal.

**Think About This**

1. What did you observe when the warm water in the bag was put into the beaker?

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2. What explanation can you give for what happened?

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3.  **Key Concept** What could you see in the natural world that results from the same process?

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\* Honors: Draw a nonlinguistic from what you have seen in your results.

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#2

**Content Vocabulary**

**LESSON 1**

**Describing Weather**

**Directions:** Write the correct term in the boxes to the right of each definition. Then unscramble the letters in the shaded boxes to spell a ninth term.

- |                   |           |             |                |               |
|-------------------|-----------|-------------|----------------|---------------|
| air pressure      | dew point | humidity    | kinetic energy | precipitation |
| relative humidity | variable  | water cycle | weather        |               |

- series of processes through which water moves around the globe  

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--	--	--	--	--
- the amount of water vapor in the air compared to the maximum possible amount of water vapor the air can contain at that temperature  

--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--
- energy an object has because of its motion  

--	--	--	--	--	--	--

--	--	--	--	--	--
- atmospheric conditions at a certain place and time  

--	--	--	--	--	--	--
- a quantity that can be changed  

--	--	--	--	--	--	--	--	--
- a force exerted by a column of air  

--	--	--

--	--	--	--	--	--	--	--	--	--
- the amount of water vapor in the air  

--	--	--	--	--	--	--	--	--
- boundary at which water vapor becomes liquid water  

--	--	--

--	--	--	--	--	--
- When they are unscrambled, the letters from the shaded boxes spell \_\_\_\_\_, which includes rain, snow, and sleet.

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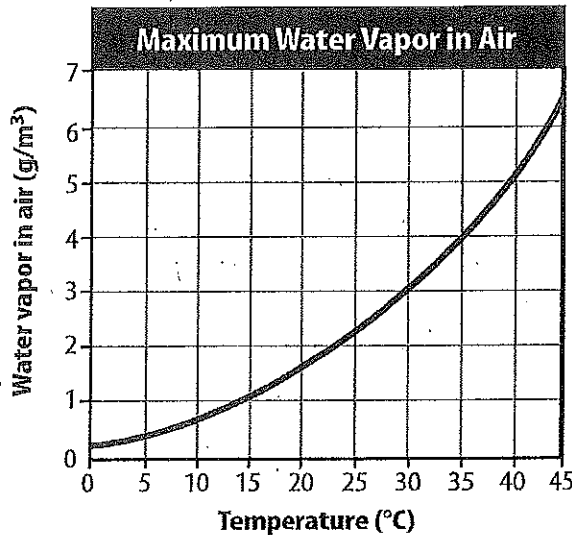
#3

**Inquiry** MiniLab

LESSON 1: 20 minutes

### When will dew form?


The relative humidity on a summer day is 80 percent. The temperature is 35°C. You want to find out if the dew point will be reached if the temperature drops to 25°C later that evening. Use the figure below to find the amount of water vapor needed for saturation at each temperature.



#### Procedure

1. Calculate the amount of water vapor in air that is 35°C at 80 percent relative humidity. (Hint: multiply the amount of water vapor air can contain at 35°C by the percent of relative humidity.)
2. At 25°C, air can hold 2.2 g/cm<sup>3</sup> of water vapor. If your answer from step 1 is less than 2.2 g/cm<sup>3</sup>, the dew point is not reached and dew will not form. If the number is greater, dew will form.

#### Analyze and Conclude

 **Key Concept** After the Sun rises in the morning, the air's temperature increases. How does the relative humidity change after sunrise? What does the line represent?

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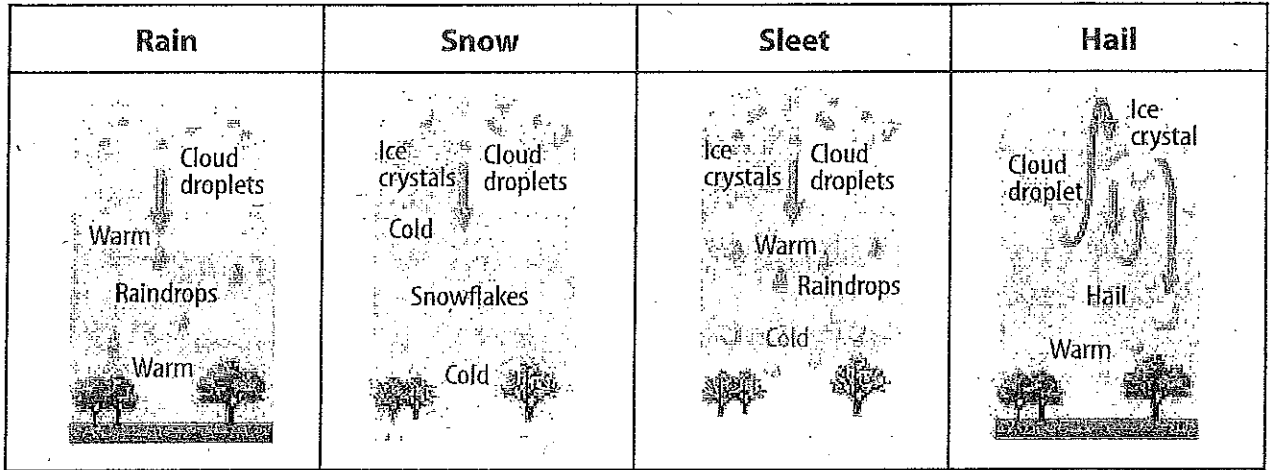


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**Content Practice A**

**LESSON 1**

***Describing Weather***



**Directions:** Use the diagram to answer each question.

Question	Rain	Snow	Sleet	Hail
What form is the water in when it is in the clouds—liquid or solid?				
What is the air temperature near the clouds—warm or cold?				
What is the air temperature near Earth's surface—warm or cold?				
What is the form of precipitation that falls—liquid or solid?				
How are rain, snow, sleet, and hail part of the water cycle?				
What role does temperature play in the type of precipitation that develops?				

#5



**Key Concept Builder** 

**LESSON 1**

## *Describing Weather*

**Key Concept** How is weather related to the water cycle?

**Directions:** *On the line before each statement, write T if the statement is true and F if the statement is false.*

- \_\_\_\_\_ 1. Precipitation, condensation, and evaporation are important to the water cycle.
- \_\_\_\_\_ 2. The water cycle is a natural process.
- \_\_\_\_\_ 3. In the water cycle, water is constantly added to the atmosphere, where it builds up over time.
- \_\_\_\_\_ 4. Most water enters the atmosphere through surface runoff.
- \_\_\_\_\_ 5. Water vapor warms as it rises in the atmosphere.
- \_\_\_\_\_ 6. Water vapor that evaporates eventually condenses.
- \_\_\_\_\_ 7. Clouds form from liquid water and ice.
- \_\_\_\_\_ 8. Evaporation occurs when water falls from clouds.
- \_\_\_\_\_ 9. Water enters the atmosphere when it condenses.
- \_\_\_\_\_ 10. Thermal energy causes water at the ocean's surface to evaporate.

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# 6

**Key Concept Builder** 

**LESSON 1**

**Describing Weather**

**Key Concept** - What variables are used to describe weather?

**Directions:** Answer each question or respond to each statement in the space provided.

Variable	Definition	How is the variable measured?
Air temperature	1.	2.
Air pressure	3.	4.
Wind	5.	6.
Humidity	7.	8.
Relative humidity	9.	10.
Dew point	11.	12.
Clouds and fog	13.	14.
Precipitation	15.	16.

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#7

**Key Concept Builder** 

**LESSON 1**

**Describing Weather**

**Key Concept** What variables are used to describe weather?

**Directions:** Use the clues and the terms listed below to complete the puzzle.

air pressure

air temperature

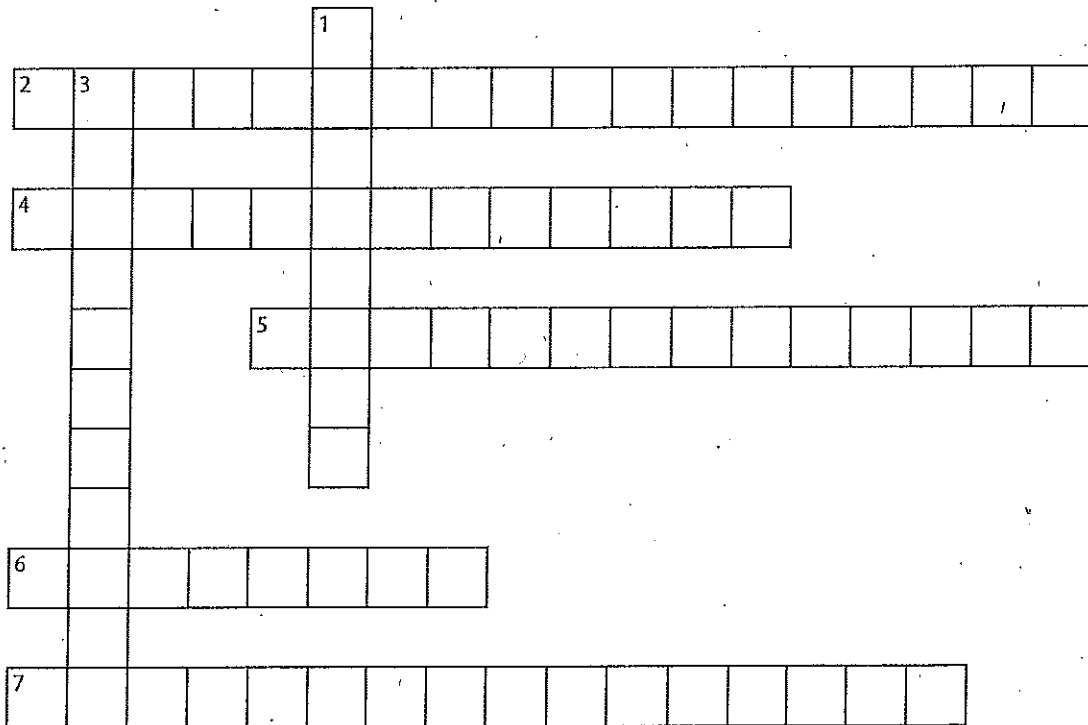
barometric pressure

dew point

humidity

precipitation

relative humidity



**Clues**

**Across**

- 2. another term for air pressure
- 4. when water, in liquid or solid form, falls from the atmosphere
- 5. measure of the average kinetic energy of molecules in the air
- 6. amount of water vapor in the air
- 7. amount of water vapor in the air relative to the maximum amount of water vapor the air can contain at that temperature

**Down**

- 1. temperature at which air becomes fully saturated
- 3. pressure that a column of air exerts on the air or surface below it

# 8

**Lesson Quiz A**

**LESSON 1**

***Describing Weather***

**Multiple Choice**

**Directions:** *On the line before each question, write the letter of the correct answer.*

- \_\_\_\_\_ 1. Which variable is **NOT** weather related?  
A. humidity  
B. evaporation  
C. wind direction
  
- \_\_\_\_\_ 2. Which instrument measures wind speed?  
A. barometer  
B. anemometer  
C. thermometer
  
- \_\_\_\_\_ 3. A volume of air contains half the moisture that it can at a certain temperature. What is its relative humidity?  
A. 25 percent  
B. 50 percent  
C. 75 percent
  
- \_\_\_\_\_ 4. Which water cycle processes are directly related to cloud formation?  
A. melting and freezing  
B. precipitation and evaporation  
C. evaporation and condensation

**Matching**

**Directions:** *On the line before each definition, write the letter of the term that matches it correctly. Each term is used only once.*

- |  |              |
|--|--------------|
| _____ 5. solid crystals of precipitation                   | A. dew point |
| _____ 6. liquid precipitation                              | B. hail      |
| _____ 7. temperature when relative humidity is 100 percent | C. humidity  |
| _____ 8. forms as water freezes and melts within a cloud   | D. rain      |
| _____ 9. is greater in warm air than in cooler air         | E. sleet     |
| _____ 10. precipitation that starts in snow clouds         | F. snow      |

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