

Physical Science Unit Schedule: Weeks 4-7

Unit	Chapter(s)	Essential Questions:
States of Matter	3	-What are the differences between states of matter? -What is necessary to change between different states of matter?
Atomic Structure	4	-What is the structure of an atom?

Timeline:

Date	In Class	Activities	Homework
Week 4	Test: Chapters 1 and 2 Chapter 3 Pretest	Correct ?'s # 1-8 p. 74, 1-8 p. 81, 1-8 p. 91	Read Chapter 3 Do ?'s # 1-8 p. 74, 1-8 p. 81, 1-8 p. 91 Chapter 3 Pretest
Week 5	Discuss Chapter 3	Lab: " <i>Boyle's Law: Pressure-volume Relationship in Gases</i> " Chemistry With Computers Lab Manual p. 6-1 Lab: " <i>Pressure-Temperature Relationship in Gases</i> " Chemistry With Computers Lab Manual p. 7-1	Read Lab: " <i>Boyle's Law: Pressure-volume Relationship in Gases</i> " Chemistry With Computers Lab Manual p. 6-1 and write procedure Read Lab: " <i>Pressure-Temperature Relationship in Gases</i> " Chemistry With Computers Lab Manual p. 7-1 and write procedure
Week 6	Chapter 3 Test	Lab: <i>Gas Laws</i> —see below	Read Lab: <i>Gas Laws</i> —see below—and write procedure Do ?'s #18-25 p. 390-391 <i>Holt Modern Chemistry Textbook</i> Read Chapter 4 and take notes Do ?'s #1-8 p. 105, 109 p. 112, 1-8 p. 118 Chapter 4 Pretest
Week 7	Chapter 4 Pretest Discuss Chapter 4		

Lab: Gas Laws

Directions: Follow the lab procedure below and write your observations and questions in your notebook.

Temperature vs. Volume (Charles's Law)

Explanation: Charles discovered that the volume and temperature of a gas are directly related if the pressure and particle number are held constant. This only works if the temperature is measured in degrees Kelvin (to get Kelvin from Centigrade, just add 273). You are going to verify this qualitatively.

Procedure:

1. Find a cool flask and a balloon. Put less than 50mL of water in the flask and seal the top with the balloon. Try to get the balloon centered on the top.
2. Turn on the hot plate (high setting) and put the flask on it.
3. Observe the balloon as the flask heats. Record your observations.
4. CAUTION!!! Do not handle the hot flask without using the hot pad.
5. Carefully release the pressure from the flask by taking the balloon off part of the flask top. (Watch out for hot steam!!)
6. Reseal the flask with the balloon. Again, try to center the balloon on the top.
7. Remove the flask from the hot plate and turn the hot plate off.
8. Once the flask has cooled enough so that you can safely handle it, run some tap water on the outside of it to help it cool.
9. Observe the balloon as the flask cools. Record your observations.

Observations:

Boiling Water in La Paz.

Explanation: As we will learn in section 3.3, a liquid can boil when its vapor pressure reaches the atmospheric pressure. Vapor pressure is the pressure of vapor escaping from the liquid. Vapor pressure can be increased by heating the liquid. In this lab we will see what effect the relatively low atmospheric pressure of La Paz has on the boiling point of water.

Procedure:

1. Fill a beaker 2/3 full with tap water.
2. Turn on the hot plate (high setting) and place the beaker on it.
3. Put the thermometer in the beaker. Hold the thermometer so that it is in contact with the water, but not with the beaker itself.
4. Open LoggerPro 2.1
5. Under the File menu choose New
6. Record the temperature readings every 5 minutes, and again when the water boils. Turn these in with you lab.
7. Turn off the hot plate and remove the beaker from the hot plate using the hot pad.

Observations:

Follow up Questions:

1. How are the pressure and volume of a gas related if the temperature and number of particles is held constant?
2. Explain why pressure and volume are related this way (think about the Kinetic theory of gasses)
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6. Explain why pressure and temperature are related this way (think about the Kinetic theory of gasses)
7. Why does a gas at absolute zero have zero pressure?
8. Why does water boil at a lower temperature in La Paz than at sea level?