

Name: _____ Sci Number: _____
 Period: _____ Parent Signature: _____

My little book of:

States of Matter

Chp 3

Draw/paste examples of all 5 States of Matter. Be sure to Label

Four States of Matter: Section 1 definitions: (pg60)

Word: Pg found	Book definition	My sentence definition
States of matter	_____ _____ _____	_____ _____ _____
Solid	_____ _____ _____	_____ _____ _____
Liquid	_____ _____ _____	_____ _____ _____
Gas	_____ _____ _____	_____ _____ _____
pressure	_____ _____ _____	_____ _____ _____
Boyle's law	_____ _____ _____	_____ _____ _____
Charle's law	_____ _____ _____	_____ _____ _____
plasma	_____ _____ _____	_____ _____ _____

Section 1: Four States of Matter (pages 60-67)

1. Skim the first paragraph on page 60 and complete the following:
 The states of matter are the _____
 in which a substance can exist.
 For example, water commonly exists in 3 different states of matter:
 _____ (ice), _____ (water),
 and _____ (steam).

2. True or False (circle one): Matter consists of tiny particles called atoms and molecules that can only be seen with a powerful microscope. These atoms and molecules are always motionless.

3. True or False (circle one): The state of matter of a substance is determined by how fast the particles move and how strongly they are attracted to one another.

4. Use figure 2 on page 60 to fill in the chart below:

	Solid	Liquid	Gas
<i>Draw a picture of what the particles look like in each of the 3 states.</i>			
<i>Describe how the particles move in each of the 3 states.</i>			
<i>Describe in terms of volume & shape for each of the 3 states</i>			

5. What is the blue title on page 61?

6. What are the two types of solids?
 _____ and _____

7. How are the two types of solids different from one another?

8. What is the blue title on page 62?

9. What are the properties of liquids?
 _____ and _____

10. Explain each property of a liquid:

11. What is the blue title on page 63?

12. Look at figure 8. Describe how the motion of the particles in a balloon is different from the motion of the particles in the cylinder.

13. What type of natural plasmas do we have here on Earth?

14. Describe & **draw** the difference of pressure in a basketball & a beach ba (See pg 64 to help!) _____

**Teach a parent: Today's concept is:
Explain what the 5 Phases of Matter are,
and how they differ from each other?**

Please use this format for the Teach It Master It (TIMI) assignments.. This should be fun!! If dancing around the table helps to teach a concept, do it! The better YOU the student can teach the concept, the better YOU the student will understand the concept. AND you might just have some fun too! To teach the assignment/concept, you may use ANY or ALL of these techniques to help. You may also use the book as a guide. PLEASE HAVE FUN!!

- A. Simply explain the concept. No written work is necessary.
- B. Explain the concept and use some notebook paper to show real-life examples you created while teaching.
- C. Write out the thought process you will use to explain the concept. You may do this in steps or a one-chunk paragraph form.
- D. Show real-life examples you used along the way to effectively explain the process.

Parent Response

- 1. _____ I'm not sure my child really understands, therefore, I don't either. Please work with him/her and let's try again.
- 2. _____ The concept was explained thoroughly with effective examples he/she created. "By golly, I think they've got it!"
- 3. _____ WOW! My child did an exceptional job! It was logically explained, therefore I caught on immediately and feel confident about teaching it to others. The self-created examples were a perfect fit. My child even asked me a question at the end to make sure I understood. I believe my child could effectively teach this concept to others.

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Mom or Dad Comments: Please explain how your student taught you this concept and what you learned in 3-5 sentences!

Space for any additional notes from this section:

Boyle's Law

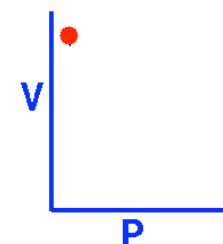
Air is a gas. Gases have various properties which we can observe with our senses, including the gas pressure (p), temperature, mass, and the volume (V) which contains the gas. Careful, scientific observation has determined that these variables are related to one another, and the values of these properties determine the state of the gas.

In the mid 1600's, Robert Boyle studied the relationship between the **pressure p** and the **volume V** of a confined gas held at a constant temperature. Boyle observed that the product of the pressure and volume are observed to be nearly constant. The product of pressure and volume is exactly a constant for an ideal gas.

$$p * V = \text{constant}$$

This relationship between _____ and _____ is called Boyle's Law in his honor.
Draw how this graph would look:

Frozen: Mass & Temp.



For extra help see: (click on line link)

<http://www.grc.nasa.gov/WWW/K-12/airplane/boyle.html>

http://www.chem.iastate.edu/group/Greenbowe/sections/projectfolder/flash/es/gaslaw/boyles_law_graph.html

Charles' Law

Air is a gas. Gases have various properties that we can observe with our senses, including the gas pressure, temperature (T), mass, and the volume (V) that contains the gas. Careful, scientific observation has determined that these variables are related to one another and that the values of these properties determine the state of the gas.

The relationship between temperature and volume, at a constant number of moles and pressure, is called Charles' Law in honor of the original work, It was observed that if the **PRESSURE** is held constant, the _____ is equal to a constant times the _____

Draw how this graph would look:

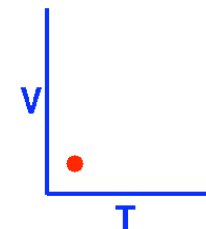
$$V = \text{constant} * T$$

For extra help see: (click on line link)

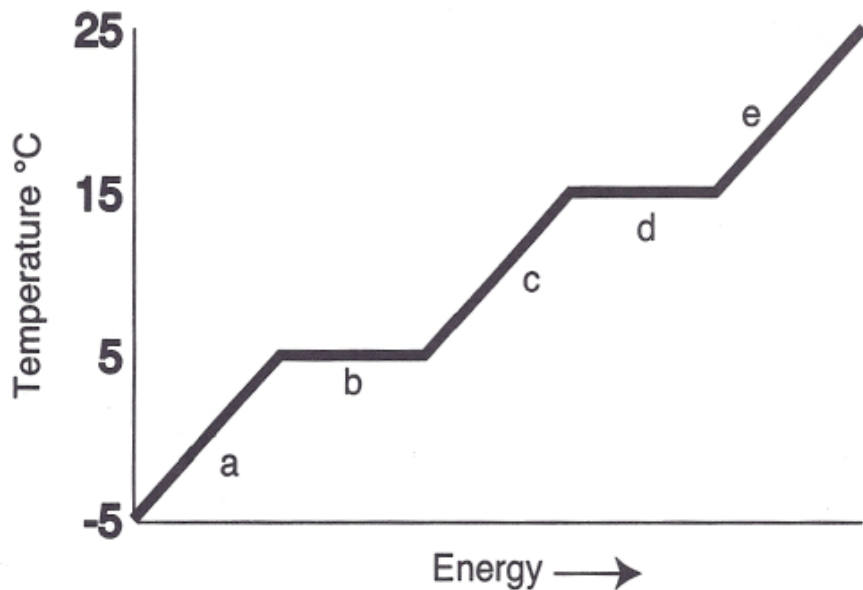
<http://www.grc.nasa.gov/WWW/K-12/airplane/aglussac.html>

http://preparatorychemistry.com/Bishop_Charles_frames.htm

Frozen: Mass & Press.



Freezing and Boiling Point Graph



Answer the following questions using the graph above

1. What is the freezing point of the substance? _____
2. What is the boiling point of the substance? _____
3. What is the melting point of the substance? _____
4. What letter represents the range where the solid is being warmed? _____
5. What letter represents the range where the liquid is being warmed? _____
6. What letter represents the range where the vapor is being warmed? _____
7. What letter represents the melting of the solid? _____
8. What letter represents the vaporization of the liquid? _____
9. What letter represents condensation? _____
10. Which point has required more energy: **a** **b** **d** **e**

pg7

Changes of State: Section 2 definitions: (pg68)

Word: Pg found	Book definition
Change of state	_____ _____ _____
Endothermic	_____ _____
Exothermic	_____ _____ _____
vaporization	_____ _____ _____
evaporation	_____ _____ _____
Boiling & Boiling point	_____ _____ _____
Melting & Melting Pt	_____ _____ _____
Freezing & freezing point	_____ _____ _____
condensation	_____ _____ _____
sublimation	_____ _____ _____

Section 2: Changes of State (pages 68-73)

1. True or False (circle one): A change of state is a conversion of a substance from one physical form to another. All changes of state are chemical changes. In a chemical change, the identity of a substance does not change.
2. True or False (circle one): During a change of state, the energy of a substance does not change. The energy of a substance is related to the motion of the particles in the substance.
3. True or False (circle one): The temperature of a substance is a measure of the speed of the particles, and is therefore a measure of the energy of a substance.
4. Copy figure 13 on page 68 below:

5. Copy chart at the bottom of page 72 below:

Summary of the Changes of State			
Change of state	Direction	Endothermic or exothermic?	Example

6. Draw & label Fig 19 from pg 73 in the box below:

7. For each pair of terms, explain the differences

a. exothermic/endothermic

b. Boyle's Law / Charles's Law

c. evaporation / boiling

d. melting / freezing

Teach a parent: Today's concept is:

1. Explain the differences between: Exothermic & Endothermic?

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I believe my child could effectively teach this concept to others.

Teach a parent: Today's concept is:

Explain what: Vaporization, Evaporation, Condensation & Sublimation are how they are different from each other

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Phase Change:

Evaporation, Condensation, Freezing, Melting, Sublimation & Deposition

Watch the video by using on online link:

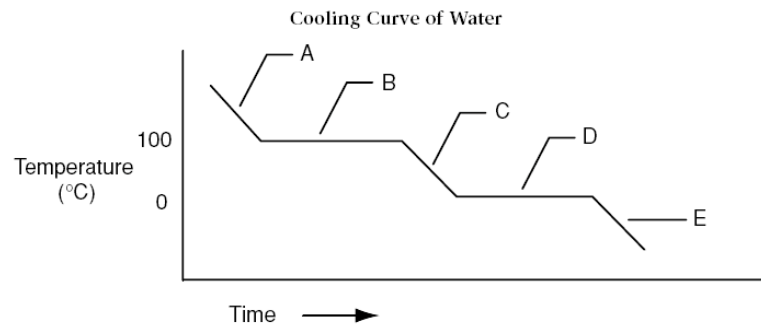
<http://education-portal.com/academy/lesson/phase-change-evaporation-condensation-freezing-melting.html - lesson>

Identify these phase changes:

- _____ the substance changes directly from a gas to a solid without going through the liquid phase.
- _____ the substance changes from a liquid to a solid.
- _____ the substance changes from a liquid to a gas.
- _____ the substance changes from a gas to a liquid
- _____ the substance changes back from the solid to the liquid.
- _____ the substance changes directly from a solid to a gas without going through the liquid phase.

Use the letters on the graph to the match the following terms:

Gas ___ freezing ___ liquid ___ condensation ___ solid ___



Part 2: Endothermic or Exothermic? Summarizing the changes of state

Change of State	Endothermic or Exothermic?
Condensation	
Sublimation	
Melting	
Vaporization	
Freezing	