CHEMISTRY CHAPTER 3: STATES OF MATTER NOTEPACKET

3.1 SOLIDS, LIQUIDS AND GASES

Describing the States of Matter

1. Solids
2. Liquids
3. Gases
4. Other States of Matter

Kinetic Theory

Explaining the Behavior of Gases

1. Motion in Gases
2. Kinetic Theory of Gases

1.

2.

3.

4.

Explaining the Behavior of Liquids

Explaining the Behavior of Solids

3.2 THE GAS LAWS

Pressure

1. Definition
2. Units

Factors That Affect Gas Pressure

1. Temperature
2. Definition
3. Temperature Conversions: An Approach To Problem Solving
4. Fahrenheit
5. Celsius
6. Kelvin
7. Converting from Kelvin to Celsius and vice versa

 EXAMPLES

1. 37.4oC to K
2. 298 K to oC
3. Converting from Celsius to Fahrenheit and vice versa

 EXAMPLES

1. 28.7oC to oF
2. 101oF to oC
3. Now Try
4. 29.7 oF to K
5. 350. K to oF
6. Standard Temperature and Pressure
7. Volume
8. Number of Particles

Charles’s Law

Sample problem 1: A gas occupies a volume of 4.50 L at 27oC. At what temperature in oC would the volume be 6.00 L if the pressure remains constant.

Sample problem 2: A sample of gas occupies a volume of 150. mL at 1.00 atm and 27oC. Calculate its volume at 0oC and 1.00 atm.

Boyle’s Law

Sample problem 3: The volume of a gas is 17.4 L measured at standard pressure. Calculate the pressure in torr if the volume is changed to 20.4 L and the temperature remains constant.

Sample problem 4: A sample of gas occupies a volume of 73.5 mL at a pressure of 710. torr and a temperature of 30oC. What will the volume be in mL at 650. torr and 30oC?

Combined Gas Law

Sample problem 5: A certain gas occupies 500. mL at STP. What volume in milliliters will it occupy at 10.0 atm and 100.oC?

Sample problem 6: A certain gas occupied 20.0 L at 50.oC and 780. torr. Under what pressure in torr would the gas occupy 75.0 L at 0oC?

3.3 PHASE CHANGES

Characteristics of Phase Changes

1. Temperature and Phase Changes



1. Energy and Phase Changes
2. Endothermic
3. Exothermic

Melting and Freezing

1. Melting
2. Freezing
3. Heat of fusion

Vaporization and Condensation

1. Evaporation
2. Boiling
3. Heat of Vaporization
4. Condensation

Sublimation and Deposition