Dougherty Valley • AP Chemistry [Keep for Reference]

Gases and Their Properties

STUDY LIST From Paul Groves

Measuring Pressure

□ Know the pressure of the atmosphere at sea level measured in atm, kPa, mmHg, torr, psi

□ Convert one pressure unit into another

□ Understand how to measure pressure using a U-tube manometer, open-end manometer, and a barometer

Recognizing Graphs

□ Recognize from a graph whether two variables are directly or inversely proportional.

□ Manipulate a curve graph to give a straight-line graph

□ Form a mathematical law from a straight-line graph

Boyle’s Law

□ Sketch a P vs. V graph

□ Manipulate P V data so a straight-line graph is obtained

□ State Boyle’s Law

□ Recognize situations of Boyle’s Law

□ Do Boyle’s Law problems

Charles’ Law

□ Sketch a V vs. T graph

□ Graphically determine a value for absolute zero

□ State Charles’s Law

□ Explain why temperatures must be in K

□ Recognize situations of Charles’s Law

□ Do Charles’s Law problems

Combined Gas Law

□ Know the Combined Gas Law (P,V&T)

□ Show how each of the gas laws is a special case of the Combined Gas Law

□ Know Avogadro’s Law (V&n)

Ideal Gas Law

□ Know the Ideal Gas Law

□ Given the molar volume of a gas (22.414 L at STP) determine values of R, the ideal gas constant, with different pressure units

□ Do Ideal Gas Law problems

Twists on the Ideal Gas Law

□ Derive the gas density equation from the Ideal Gas Law

□ Do gas density problems

□ Calculate molar mass from P, V, and T data

Stoichiometry

□ Do Gas Laws and Stoichiometry problems by determining mass or moles of a substance

Dealing with Mixtures of Gases

□ Know Dalton’s Law of Partial Pressures

□ Do Partial Pressure problems

□ Apply this to gases collected over water

Explaining the Gas Laws

□ Know the principal features of the Kinetic Molecular Theory of gases

□ Be able to explain why each of the gas laws works in terms of the Kinetic Molecular Theory

Why Do All Gases Act The Same?

□ Understand the significance of the Maxwell-Boltzmann distribution curves on pages 566-567

□ Derive Graham’s Law of Effusion from rms or KE of two gases

□ Do Graham’s Law problems

Real Gases vs. Ideal Gases

□ Compare van der Waal’s equations for Real gases with the Ideal Gas Law

□ Know the correction factors that appear in the Real Gas Law