Angeles City Science High School

Science 10

Name: Paul Gerald D. Pare **Section:** 10-Hawking

Activity 7. Solve Me!

Objective: Apply the concept of the relationship between volume and temperature through worded problems. Facilitate mastery of concepts on the volume-pressure relationship:

Direction Answer the following Charles' Law problem

A. Solve the following Boyle's Law worded problem. Identify the following a) given b) Unknown c) Formula d) Solution e) Answer

1. A cylinder with a movable piston contains 250 cm3 air at 10C. If the pressure is kept constant, at what temperature would you expect the volume to be 150 cm3?

Given: $V_1 = 0.25L, T_1 = 283K, V_2 = 0.15L$
Unknown: $T_2 = ?$
Formula: $T_2 = \frac{T_1 V_2}{V_1}$

Solution: $T_2 = \frac{283*0.15}{0.25} = 169.8K$
Answer: 169.8K

2. A tank (not rigid) contains 2.3L of helium gas at 25C. What will be the volume of the tank after heating it and its content to 40C temperature at constant pressure?

Given: $V_1 = 2.3L, T_1 = 298, T_2 = 313$
Unknown: $V_2 = ?$
Formula: $V_2 = \frac{V_1 T_2}{T_1}$

Solution: $V_2 = \frac{2.3*313}{298} = 2.42L$
Answer: 2.42L

3. At 20C, the volume of chlorine gas is 15dm3. Compute for the resulting volume if the temperature is adjusted to 318K provided that the pressure remains the same.

Given: $V_1 = 15L, T_1 = 293K, T_2 = 318K$
Unknown: $V_2 = ?$
Formula: $V_2 = \frac{V_1 T_2}{T_1}$

Solution: $V_2 = \frac{15*318K}{293K} = 16.28L$
Answer: 16.28L