

GAS LAWS

Practice Problems

P vs. V, P vs. T, and V vs. T Relationships for Gases (Temperatures in Kelvin!)

1. A bubble of air has a volume of 25.0 mL at sea level. The bubble floats up to an altitude where the pressure is 85 kPa. What is the volume of the bubble at this pressure?

<u>Given</u>	<u>Find</u>	<u>Equation</u>	<u>Substitution</u>
--------------	-------------	-----------------	---------------------

$V_1 =$	V_2	$P_1 V_1 = P_2 V_2$	
$P_1 =$			
$P_2 =$			

2. A student has a syringe with 42.0 mL of nitrogen gas in it. There is a pressure of 225 kPa on the plunger of the syringe. The student releases the plunger, and the volume of the gas changes to 52.0 mL. What is the pressure on the plunger now?

<u>Given</u>	<u>Find</u>	<u>Equation</u>	<u>Substitution</u>
--------------	-------------	-----------------	---------------------

$V_1 =$	P_2	$P_2 = \frac{P_1 V_1}{V_2}$	
$P_1 =$			
$V_2 =$			

3. A steel helium tank has a pressure of 4.5 atm (read from the gauge of the tank). It is sitting in a room that has a temperature of 22°C. The air conditioner goes out and the temperature of the room rises to 30°C. What will the pressure gauge read now?

<u>Given</u>	<u>Find</u>	<u>Equation</u>	<u>Substitution</u>
--------------	-------------	-----------------	---------------------

$T_1 =$	P_2	$P_2 = \frac{P_1 T_2}{T_1}$	
$P_1 =$			
$T_2 =$			