

General Gas Law  
CHEM 1305  
Quiz

1. A gas has a volume of 3 liters at 27 °C with a pressure of 100 psi. What would be the new pressure if the temperature increased to 60 °C and the volume remained the same?

$$P_2 = \frac{P_1 V_1 T_2}{T_1 V_2} = \frac{(100 \text{ psi}) (3 \text{ l}) (333 \text{ K})}{(300 \text{ K}) (3 \text{ l})} = 111 \text{ psi}$$

2. A gas has a volume of 8 liters at 300K with a pressure of 5 atm. What would be the new volume if the pressure decreased to 1.5 atm and the temperature remained the same?

$$V_2 = \frac{P_1 V_1 T_2}{T_1 P_2} = \frac{(5 \text{ atm}) (8 \text{ l}) (300 \text{ K})}{(300 \text{ K}) (1.5 \text{ atm})} = 26.7 \text{ liters}$$

3. A gas has a volume of 4 liters at 600K with a pressure of 800 torr. What would be the new temperature if the volume decreased to 3 liters and the pressure increased to 1000 torr ?

$$T_2 = \frac{P_2 V_2 T_1}{V_1 P_1} = \frac{(1000 \text{ torr}) (3 \text{ l}) (600 \text{ K})}{(4 \text{ l}) (800 \text{ torr})} = 562.5 \text{ K}$$