**Dougherty Valley HS AP Chemistry**

**WORKSHEET #3**

**Gas Laws – Charles’s Law**

Name: **KEY** Date: Period: Seat #:

Charles’ Law states the volume of a gas varies directly with the Kelvin temperature, assuming the pressure is

constant. We use the following formulas:

$$\frac{V\_{1}}{T\_{1}}= \frac{V\_{2}}{T\_{2}}; K=℃+273$$

***Solve the following problems (assuming constant pressure). Assume all number are 3 significant figures.***

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| A sample of nitrogen occupies a volume of 250 mL at 25°C. What volume will it occupy at 95°C? 309 ml $$\frac{250 ml}{298 K}= \frac{V\_{2}}{393 K};=309 ml$$ |
| Oxygen gas is at a temperature of 40°C when it occupies a volume of 2.30 Liters. To what temperatureshould it be raised to occupy a volume of 6.50 Liters? 885 K/612°C $$\frac{2.30 L}{338 K}= \frac{6.50 L}{T\_{2}};=885K / 612°C$$ |
| Hydrogen gas was cooled from 150°C to 50°C. Its new volume is 75.0 mL. What was its originalvolume? 98.2 mL $$\frac{V\_{1}}{448 k}= \frac{75.0 mL}{348 K};=98.2 mL$$ |
| Chlorine gas occupies a volume of 25.0 mL at 300 K. What volume will it occupy at 600 K? 50.0 mL $$\frac{25.0 mL}{300. K}= \frac{V\_{2}}{600 K};=50 mL$$ |
| A sample of neon gas at 50°C and a volume of 2.50 Liters is cooled to 25°C. What is the new volume?2.31 L $$\frac{2.50 L}{348 K}= \frac{V\_{2}}{298 K};=2.31 L$$ |