

Name: \_\_\_\_\_  
Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## Chemistry: *Review Problems for the Gas Laws*

Do the following problems, showing your work and including all proper units.

### Graham's Law

1. At 350°C, nitrogen has a velocity of 800 m/s. Find the velocity of helium at the same temperature.
2. At room temperature, acetylene ( $C_2H_2$ ) has a velocity of 480 m/s. At the same temperature, an unknown noble gas has a velocity of 267 m/s. What is the unknown gas?

### Gas Laws with One Term Constant

3. A sample of gas has an initial volume of 25 L and an initial pressure of 3.5 atm. If the pressure changes to 1.3 atm, find the new volume, assuming that the temperature remains constant.
4. A sample of neon is at 89°C and 123 kPa. If the pressure changes to 145 kPa and the volume remains constant, find the new temperature, in °C.

### Combined Gas Law

5. A gas at STP occupies 28 cm<sup>3</sup> of space. If the pressure changes to 3.8 atm and the temperature increases to 203°C, find the new volume.
6. A sample of sulfur dioxide ( $SO_2$ ) is initially at a temperature of 133°C, a volume of 20 L, and a pressure of 850 mm Hg. If the volume changes to 25 L and the temperature increases to 181°C, find the new pressure.