CHEMISTRY MATTERS
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Unit 9F Practice Problems V
Gas Laws

Name:

Date:

Complete each of the following. Show your work and circle your final answer on all problems.

$$R = 8.314 \frac{L \cdot kPa}{mol \cdot K} \qquad R = 0.0821 \frac{L \cdot atm}{mol \cdot K}$$

1. A 7.81×10^{-3} mole sample of oxygen gas was placed in a 0.355 L container at 398 K. What is the pressure (in kPa) exerted by the gas?

2. A helium balloon with a volume of 410.0 mL is cooled from 48.0 °C to -37.0 °C. The pressure on the gas is reduced from 110.0 kPa to 91.0 kPa. What is the volume of the gas at the lower temperature and pressure?

3. A sample of methane that initially occupies 850.0 mL at 500.0 kPa and 500.0 K is compressed to a volume of 700.0 mL. To what temperature will the gas need to be cooled to lower the pressure of the gas to 200.0 kPa?

4. A 100.0 g block of dry ice (solid CO_2, molar mass = 44.0 g) vaporizes to a gas at room temperature. Calculate the volume of gas produced at 25.0 °C and 1.25 atm.