1. Assume that you have a sample of gas at 350 K in a sealed container, as represented in (a). Which of the drawings (b) - (d) represents the gas after the temperature is lowered from 350 K to 150 K?

2. Show the approximate level of the movable piston in drawings (a) and (b) after the indicated changes have been made to the initial gas sample.

3. Which sample contains the most molecules: 1.00 L of O\textsubscript{2} at STP, 1.00 L of air at STP, or 1.00 L of H\textsubscript{2} at STP.

4. A helium gas cylinder of the sort used to fill balloons has a volume of 43.8 L and a pressure of 1.51 \times 10^4 \text{ kPa} at 25.0°C. How many moles of helium are in the tank?

5. How many moles of air are in the lungs of an average adult with a lung capacity of 3.8 L? Assume that the person is at 1.00 atm pressure and has a normal body temperature of 37°C.

6. In a typical automobile engine, the mixture of gasoline and air in a cylinder is compressed from 1.0 atm to 9.5 atm. If the uncompressed volume of the cylinder is 410 mL, what is the volume (in milliliters) when the mixture is fully compressed?