

6. The temperature of the gas remains constant, so we can use Boyle's law to solve for the unknown volume.

$$P_1 V_1 = P_2 V_2$$

Divide both sides of the equation by P_2 to get

$$V_2 = (P_1 V_1) / P_2$$

$$V_2 = (40.0 \text{ kPa} (0.90 \text{ m}^3)) / (60.0 \text{ kPa})$$

$$V_2 = 0.60 \text{ m}^3$$

This conforms to our expectations that an increase in pressure should result in a decrease in the volume.