Question #73416

Answer:

Conditions: constant temperature and pressure

n_1 = initial moles of gas = 10 mol
V_1 = initial volume of gas = 245 L

moles gas removed = 5 mol
n_2 = initial moles gas - moles gas removed
n_2 = 10 - 5 = 5 mol

$$\frac{V_1}{n_1} = \frac{V_2}{n_2}$$

$$V_2 = \frac{V_1}{n_1} \times n_2$$

$$= \frac{245}{10} \times 5$$

When some of this gas is removed while the temperature is held constant, the pressure should drop because there will be fewer collisionsbetween the gas molecules and the container walls.
BUT, we have been told that the pressure remains constant, therefore the volume of the gas must decrease in order to maintain the same pressure V_2 = 122.5 L