A sample of helium gas occupies 1521mL at 719 mmHg. For a gas sample at constant temperature determine the volume of helium at 745 mmHg.

Solution

If the sample is at constant temperature we're dealing with isothermal process, so volume for this process can be found as follows:

$p_1V_1=p_2\mathbf{V_2}$, p – pressure of helium

V – volume of helium

$V_2 = \frac{p1V1}{p2}$; $V_2 = \frac{719 mm Hg * 1521 mL}{745\ mm Hg} = 1467.9\ mL$

Answer: 1467.9 mL