Example(1): A volume of a certain mass of gas occupies $952 cm^3$ at $561\ mmHg$. What is the volume under $760 mmHg$ at the same temperature?

Solution: :

Initial state	**Final state**
$P_1 =$ 561 mmHg	$P_2 =$ 760mmHg
$V_1 =$ 952 cm^3	$V_2 =$?

Using Boyle's Law, $P_1V_1 = P_2V_2$

$$V_2 = \frac{P_1V_1}{P_2} = \frac{561\ mmHg \times 952\ cm^3}{760\ mmHg} = \mathbf{702.7\ cm^3}$$

Check: The increase in pressure decreases the volume. So, the answer is reasonable.