

Task:

An ideal gas in a tank occupies a volume of 7.32 L. Given that 1 cubic meter (m^3) equals 1,000 L and there are 100 centimeters (cm) in 1 meter (m), what is the volume of the gas in cubic centimeters (cm^3)?

Solution:

$$1\text{m} = 100\text{ cm}$$

$$1\text{ m}^3 = 1\text{ m} \cdot \text{m} \cdot \text{m} = 1 \cdot 100\text{cm} \cdot 100\text{cm} \cdot 100\text{ cm} = 1 \cdot 10^6\text{ cm}^3$$

$$1\text{m}^3 = 1000\text{ L}$$

$$1\text{ m}^3 = 1 \cdot 10^6\text{ cm}^3$$

$$\text{That's why we have } 1000\text{ L} = 1 \cdot 10^6\text{ cm}^3$$

$$\text{Then } 1\text{ L} \text{ is } 1\text{L} = (1 \cdot 10^6) / 1000\text{ cm}^3 = 1 \cdot 10^3\text{ cm}^3$$

$$1\text{ L} = 1 \cdot 10^3\text{ cm}^3$$

$$7.32\text{ L} = x\text{ cm}^3$$

Now we can find x:

$$x = (7.32 \cdot 1 \cdot 10^3) / 1 = 7.32 \cdot 10^3\text{ cm}^3$$

Answer: The volume is $7.32 \cdot 10^3\text{ cm}^3$