

## Task #81919

What is the pressure of 0.540 mol of an ideal gas at 35.5 L and 223 K?

### Solution.

To find the pressure of an ideal gas, it is necessary to write the equation of state for an ideal gas, that is, the Mendeleev-Clayperon equation.

$$P \cdot V = n \cdot R \cdot T$$

$$P = n \cdot R \cdot T / V$$

$$P = 0.540 \text{ mole} \cdot 8.31 \text{ J/mole} \cdot \text{K} \cdot 223 \text{ K} / 0,036 \text{ m}^3 = 27796.95 \text{ Pa}$$

### Answer:

$$P = 0.540 \text{ mole} \cdot 8.31 \text{ J/mole} \cdot \text{K} \cdot 223 \text{ K} / 0,036 \text{ m}^3 = 27796.95 \text{ Pa}$$