

ESCI 341 – Atmospheric Thermodynamics
Answers to Selected Exercises for Lesson 4

1. From the ideal gas law $pV = nRT$, calculate how many molecules are contained in a cubic centimeter (cm^3) of air at a pressure of 1013.25 mb and a temperature of 15 °C? ($R = 8.3145 \text{ J}\cdot\text{mol}^{-1}\cdot\text{K}^{-1}$; $N_A = 6.022 \times 10^{23} \text{ molecules/mol}$)

Answer: 2.55×10^{19} molecules

2. How many oxygen molecules are there in a cm^3 of air at a pressure of 1013.25 mb and a temperature of 15 °C?

Answer: 5.35×10^{18} molecules