Example

A tea mug, the volume of which is $\mathcal{V} = 3.48 \times 10^{-4}$ m^3, sits empty on Dr. Thom's desk. His office is at 25°C and 101.325 kPa. If air is an ideal gas with $M = 28.97$,

(a) find the density of air in Dr. Thom's office.
(b) Find the mass of air filling the tea mug. How many air molecules is this?

Dr. Thom's tea. (Probably a nice Keemun or Assam)