Find the number of molecules in 100ml of Carbondioxide?

In order to find the number of molecules of CO_2, we need to know number of moles.

At STP $\nu = V/V_m$
$V = 0.1$ L
$V_m = 22.4$ L/mol

$\nu (CO_2) = 0.1/22.4 = 0.0045$ mol

Then we have to use Avogadro's Law

$N (CO_2) = \nu (CO_2) * N_A$ $N_A = 6.02*10^{23}$ mol^{-1}
$N (CO_2) = 0.0045 * 6.02*10^{23} = 2.71*10^{21}$

$N (CO_2) = 2.71*10^{21}$