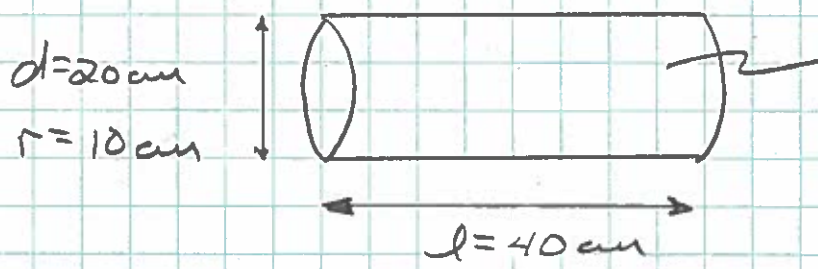

M = 50g of O_2 at T = 20°C = 293K

a.) For O_2, $m = 32u \Rightarrow M_{mol} = \frac{32g}{mol} = 0.032 \frac{kg}{mol}$

So, $n = \frac{M}{M_{mol}} = \frac{0.05\,kg}{0.032\,kg/mol} = \underline{1.562\,mol}$

b.) $N = nN_A = 9.403 \times 10^{23}$

c.) Volume, $V = \pi r^2 l = 1.257 \times 10^{-2}\,m^3$

So $\frac{N}{V} = \underline{7.483 \times 10^{25}\,m^{-3}}$

d.) $PV = nRT$

$P = \frac{nRT}{V} = 3.027 \times 10^5\,Pa$

and a pressure gauge will read

$P_{gauge} = P - P_{atm} = \underline{2.014 \times 10^5\,Pa}$