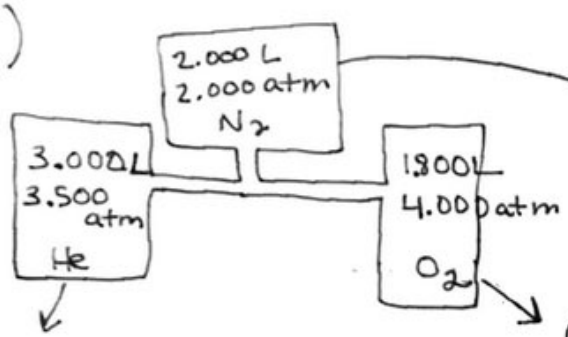
Test Review

13) $105.46 - (23.60 + 76.90) = \boxed{4.5\ kPa}$

P_{H_2}

14)



$(2.000\ atm)(2.000\ L) = P_2(6.800\ L)$

$P_2 = .5882\ atm = P_{N_2}$

$(4.000\ atm)(1.800\ L) = P_2(6.800\ L)$

$P_2 = .3268\ atm = P_{O_2}$

$(3.500\ atm)(3.000\ L) = P_2(6.800\ L)$

$P_2 = 1.500\ atm$

P_{He}

$P_T = 1.500\ atm + .5882\ atm + .3268\ atm = 2.415\ atm$

→ should say "what volume of hydrogen gas"

15) $Mg + 2HCl \rightarrow H_2 + MgCl_2$

$$\frac{.515\ g\ Mg}{1} \left| \frac{1\ mol\ Mg}{24.305\ g\ Mg} \right| \frac{1\ mol\ H_2}{1\ mol\ Mg} \left| \frac{22.4\ L\ H_2}{1\ mol\ H_2} \right| = .475\ L\ H_2$$

16) $N_2 + 6H_2 \rightarrow 2NH_3$

$V = 1000.0\ L$

$T = 297\ K$

$$P = \frac{350\ \cancel{kPa}}{1} \left| \frac{1\ atm}{101.3\ \cancel{kPa}} \right| = 3.455\ atm$$

$$n = \frac{PV}{RT} = \frac{(3.455)(1000.0)}{(.0821)(297)} = 142\ moles$$

$$\frac{142\ moles\ NH_3}{1} \left| \frac{1\ mol\ N_2}{2\ moles\ NH_3} \right| \frac{28.02\ g\ N_2}{1\ mol\ N_2} =$$

$1990\ g\ N_2$