Ch. 11

#71 0.88 g of water condenses on a 75.0 g block of Fe. initially at 22°C

assume heat of enthalpy of vaporization 44.0 kJ/mole

$$0.88\,g \times \frac{1\,mole}{18.02\,g} \times \frac{44.0\,kJ}{mole} = 2.1487\,kJ$$

$$Fe = .449\,\frac{J}{g°C} \times 75.0\,g = 33.675\,\frac{J}{°C}$$

$$\frac{2148.7\,J}{33.675\,\frac{J}{°C}} = 63.8°C \quad \text{Increase in temp}$$

Final Temp $63.8 + 22°C = 85.8°C$

$86°C$

Practice Test
Ch. 11

#2 Vapor pressure at 35°C 41.175 mm Hg

$PV = nRT$

$P = \frac{nRT}{V}$

$12.0\,g \times \frac{1\ mole\ H_2O}{18.02\,g} = 0.665926\ moles$

$$P = \frac{(0.665926\ mole)\left(62.4\ \frac{mm\,Hg\ L}{mole\ K}\right)(308\,K)}{0.675\,L}$$

$P = 18960.8\ mm\,Hg$

Vapor pressure $-41.175\ mm\,Hg$

$18919.6\ mm\,Hg$ Not used or evaporated

$n = \frac{PV}{RT}$

$$n = \frac{(41.175\ mm\,Hg)(.675\,L)}{\left(62.4\ \frac{mm\,Hg\ L}{mole\ K}\right)(308\,K)}$$

$n = 0.001446\ moles \times \frac{18.02\,g}{mole}$

$= 0.026058\,g$

$\boxed{= 0.0261\,g}$