CS HW 2

1. $P_{TOTAL} = P_1 + P_2 + P_3 + \dots + P_4$
2. $P_{TOTAL} = 550\ mmHg + 152\ mmHg = 702\ mmHg$
3. $702\ mmHg + 75\ mmHg = 777\ mmHg$
4. $760\ mmHg = 593.525\ mmHg + .285\ mmHg + P_{O_2}$

   $760\ mmHg - 593.525 - .285 = P_{O_2} = 166.19\ mmHg$
5. $.82\ ATM = 623.2\ mmHg$

   $P_{TOTAL} = 623.2\ mmHg + 17.5\ mmHg = 640.7\ mmHg$
6. $730\ mmHg = P_{O_2} + 17.5\ mmHg$

   $P_{O_2} = 712.5\ mmHg$
7. $1\ ATM$ & $0°C$
8. $742\ mmHg = P_{DRY} + 42.2\ mmHg$

   $699.8\ mmHg = P_{DRY}$

9. $P_1V_1 = P_2V_2$

   $752 - 12.8 = 739.2\ mmHg = P_1$

   $770 - 12.8 = 757.2\ mmHg = P_2$

   $\frac{(739.2\ mmHg)(175\ ml)}{(757.2\ mmHg)} = (757.2\ mmHg)(V_2)$

   $170.8\ ml = V_2$
10. ALWAYS use KELVINS as TEMPERATURE UNIT.

U6 HW 2 (cont)

11. $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2} = \frac{(1\text{ ATM})(5\text{L})}{(273\text{K})} = \frac{P_2 (7\text{L})}{(423\text{K})}$

$$\frac{(1\text{ ATM})(5\text{L})(423\text{K})}{(273\text{K})(7\text{L})} = P_2$$

$$1.11\text{ ATM} = P_2$$

12. $P_1 T_2 = P_2 T_1$

$$(2\text{ ATM})(T_2) = (8.5\text{ ATM})(298\text{K})$$

$$T_2 = \frac{(8.5\text{ ATM})(298\text{K})}{2\text{ ATM}}$$

$$T_2 = 1266.5\text{K}$$

13. $1^\circ\text{K}/2\text{SEC}$ TOTAL $\Delta t = 968.5\text{K}$

$$\frac{1^\circ\text{K}}{2\text{SEC}} = \frac{968.5\text{K}}{X}$$

$$X = 968.5 \cdot 2\text{SEC} = 1937\text{ SECONDS}$$

$$(1937\text{ SECONDS})\left(\frac{1\text{ min}}{60\text{ SECONDS}}\right) = 32.3\text{ MINUTES}$$

14. THE MOLECULES SPEED UP (GAIN VELOCITY / GAIN KE)

15. $V_1 T_2 = V_2 T_1$

$$\frac{(10\text{L})(323\text{K})}{273\text{K}} = (V_2)(273\text{K})$$

$$11.83\text{L} = V_2$$

16. $P_1V_1 = P_2V_2 = \frac{(660\ mmHg)(5000L)}{(550\ mmHg)} = (550\ mmHg)(V_2)$

$6000L = V_2$

17. $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2} = \frac{(660\ mmHg)(5000L)}{(358\ K)} = \frac{(550\ mmHg)V_2}{(333K)}$

$\frac{(660\ mmHg)(5000L)(333\ K)}{(358\ K)(550\ mmHg)} = V_2$

$5581.0L = V_2$

18. $100\ mL/hr = .1\ L/hr$

$(5581.0L)\frac{(1\ HR)}{(.1L)} = 55810.0\ HRS$

19. $\frac{(30\ psi)(2500\ in^3)}{298K} = \frac{P_2\ (2600\ in^3)}{(323\ K)}$

$\frac{(30\ psi)(2500\ in^3)(323K)}{(298K)(2600\ in^3)} = P_2$

$31.3\ psi = P_2$