

$$(1) P_L = P_S \cdot \frac{T_L}{T_3} \quad ; \quad P_R = P_S \cdot \frac{T_R}{T_3}$$

When the ball is at the Triple Point

$$T_L = T_3 = 273.16 \text{ K} \quad \text{and} \quad P_L = P_S$$

$$T_R = T_{\text{boiling}} = 373.125$$

$$P_R = P_L = P_S \left(\frac{T_R}{T_3} - 1 \right)$$

When one T_3 bath (L) is at the triple point and the other (R) is at an unknown $x = T_R$

$$P_R - P_L = P_S \left(\frac{T_R}{T_3} - 1 \right)$$

$$\Rightarrow \frac{P_R - P_L}{P_R - P_L} = \frac{T_R - T_3}{x - T_3} = \frac{100}{90}$$

$$\Rightarrow \frac{373.125 - 273.16}{x - 273.16} = \frac{4}{3}$$

$$\Rightarrow x \approx 348 \text{ (K)}$$

DATE

Mon

Tue

Wed

Thu

Fri

Sat

Sun

$$5) T_F = \frac{9}{5} T_C + 32^\circ$$

$$T_F = 2 T_C, T_C = 160^\circ C, T_F = 320^\circ F$$

$$T_F = \frac{1}{2} T_C$$

$$\Rightarrow T_C \approx -24.6^\circ C; T_F = -12.3^\circ F$$

8) For linear scales, the relationship between X and Y can be written by:

$$y = ax + b$$

$$\Rightarrow -70 = -125a + b$$

$$\Rightarrow -30 = 360a + b$$

$$\Rightarrow -12a + b + 30 = 0$$

$$x = \frac{y - b}{a} = \frac{-12.3 - (-12.3)}{-12.3} = 1$$