53. (a) Starting from $\sum Q = 0$ (for calorimetry problems) we can derive (when no phase changes are involved)

$$T_f = \frac{c_1 m_1 T_1 + c_2 m_2 T_2}{c_1 m_1 + c_2 m_2} = 40.9^\circ\text{C} \ ,$$

which is equivalent to 314 K.

From Eq. 21-1, we have

$$\Delta S_{\text{copper}} = \int_{353}^{314} \frac{c\, m\, dT}{T} = (386)(0.6) \ln\left(\frac{314}{353}\right) = -27.2 \text{ J/K} \ .$$

(b) Also,

$$\Delta S_{\text{water}} = \int_{283}^{314} \frac{c\, m\, dT}{T} = (4190)(0.07) \ln\left(\frac{314}{283}\right) = 30.4 \text{ J/K} \ .$$

(c) The net result for the system is $30.3 - 27.2 = 3.2$ J/K. (Note: these calculations are fairly sensitive to round-off errors. To arrive at this final answers, the value 273.15 was used to convert to Kelvins, and all intermediate steps were retained to full calculator accuracy.)