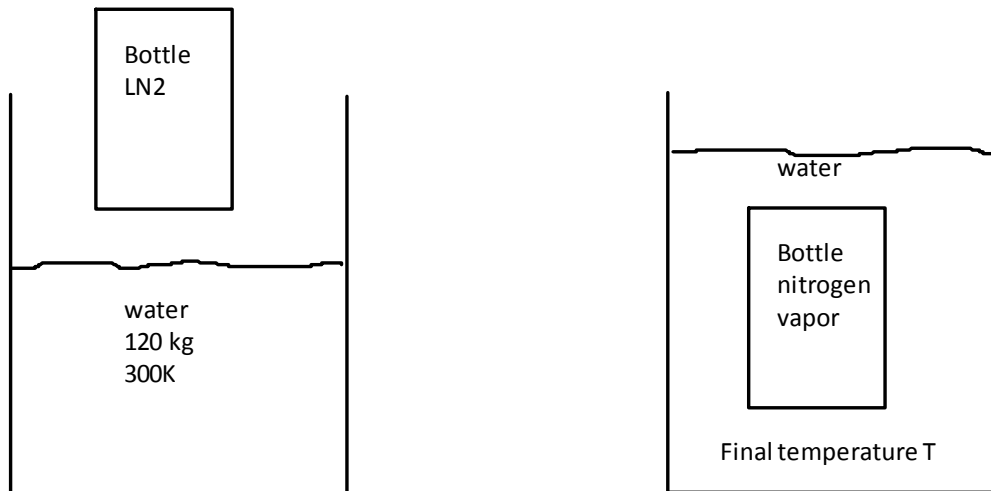


Question 3.

What is the change in temperature of the water due to the heating of the nitrogen?



Heat loss from the water + Heat gained by the nitrogen = 0

$$m_w c_w \Delta T + 15,000 \text{ J} = 0$$

$$(120 \text{ kg})(4186 \text{ J/kgK}) \Delta T = -15,000 \text{ J}$$

$$\Delta T = -0.03 \text{ K} (-0.03^\circ \text{C}) (-0.05^\circ \text{F})$$

$$\text{Final temperature } T = 299.97 \text{ K}$$

*neglected the heating of the nitrogen from the plastic bottle