

63. (a) The stepped-down voltage is

$$V_s = V_p \left(\frac{N_s}{N_p} \right) = (120 \text{ V}) \left(\frac{10}{500} \right) = 2.4 \text{ V} .$$

(b) By Ohm's law, the current in the secondary is

$$I_s = \frac{V_s}{R_s} = \frac{2.4 \text{ V}}{15 \Omega} = 0.16 \text{ A} .$$

We find the primary current from Eq. 33-80:

$$I_p = I_s \left(\frac{N_s}{N_p} \right) = (0.16 \text{ A}) \left(\frac{10}{500} \right) = 3.2 \times 10^{-3} \text{ A} .$$