33.68. **Model:** Assume any resistance is negligible.

**Visualize:** The potential difference across the inductor and capacitor oscillate. The period of oscillation depends on the resistance and capacitance and the potential difference across the capacitor depends on the charge.

**Solve:** The current is \( I(t) = I_0 \cos \omega t = (0.60 \text{ A}) \cos \omega t \). We can relate the extreme values of the current and the capacitor potential difference. Using \( \omega = \frac{1}{\sqrt{LC}} \) and \( Q = C \Delta V_c \), we find

\[
I_0 = \omega Q_0 = \omega C \Delta V_{c,\text{max}} = \frac{1}{\sqrt{LC}} C \Delta V_{c,\text{max}} \Rightarrow C = \frac{I_0^2 L}{\Delta V_{c,\text{max}}^2} = \frac{(0.60 \text{ A})^2 (10 \times 10^{-3} \text{ H})}{(60 \text{ V})^2} = 1.0 \mu\text{F}
\]

**Assess:** This is a reasonable capacitance.