Group Problem: Solenoid

Calculate the self-inductance $L$ of a solenoid (n turns per meter, length $\ell$, radius $R$)

**REMEMBER**
1. Assume a current $I$ is flowing in your device
2. Calculate the $B$ field due to that $I$
3. Calculate the flux due to that $B$ field
4. Calculate the self inductance (divide out $I$)

\[ L = \frac{\Phi_{\text{Self, total}}}{I} \]