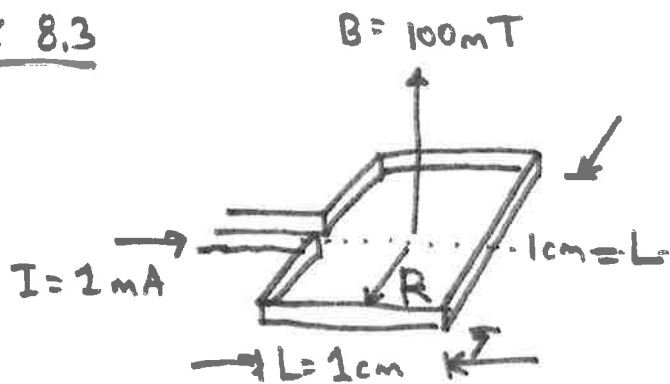


EX 8.3



(Magnetic torque)

$$\begin{aligned}\text{Torque} &= (F) \times (\text{Lever arm}) \\ &= (ILB) \times \left(\frac{L}{2}\right) \\ &= (I \times a \times a) \times (B)\end{aligned}$$

$$1 \times 10^{-8} \text{ N-m} = (1 \text{ mA}) \times (1 \text{ cm}^2) \times (100 \text{ mT})$$

$$\text{Torque} = \boxed{0.1 \text{ dyne-cm}}$$

- This torque will occur not when the wire is oriented as shown above, but rather when it lies in the plane of the magnetic field.
- The torque will act in such a way as to orient the loop perpendicular to the magnetic field (as shown above).