Torque on Current Loop

- magnetic field: $\vec{B}$ (horizontal)
- area of loop: $A = ab$
- unit vector $\perp$ to plane of loop: $\hat{n}$
- right-hand rule: $\hat{n}$ points up.
- forces on sides a: $F = IaB$ (vertical)
- forces on sides b: $F = IbB$ (horizontal, not shown)
- torque: $\tau = Fb\sin\theta = IAB\sin\theta$
- magnetic moment: $\vec{\mu} = IA\hat{n}$
- torque (vector): $\vec{\tau} = \vec{\mu} \times \vec{B}$