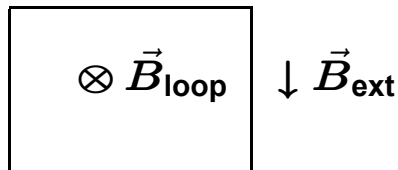


CLASS EXERCISE #13 - July 11, 2005

On your sheet, draw rectangular circuits with the current indicated and a uniform magnetic field shown, and show the direction of the force (\uparrow , \downarrow , \leftarrow , \rightarrow , \odot , \otimes or 0 if no force) on each side of the circuit. Then indicate if there is a net torque on the circuit and, if so, how it would rotate. To indicate how it would rotate, say "clockwise" or "counterclockwise" as viewed from the left, right, top, or bottom, as appropriate.

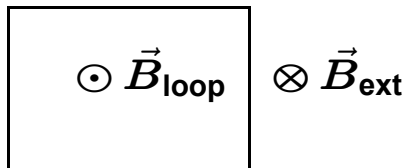
(1) Clockwise current, magnetic field \downarrow



Forces CW from top side are \otimes , 0, \odot , 0.

Net torque exists; rotation is CCW viewed from left.

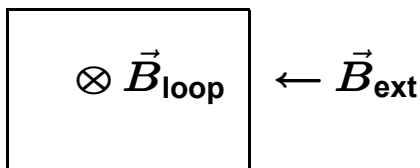
(2) Counterclockwise current, magnetic field \otimes



Forces on all sides are towards the center: CW from top side, they are \downarrow , \leftarrow , \uparrow , \rightarrow .

No net torque and no rotation.

(3) Clockwise current, magnetic field \leftarrow



Forces on sides, CW from the top side, are 0, \otimes , 0 and \odot .

Net torque exists; rotation is CW viewed from below circuit.