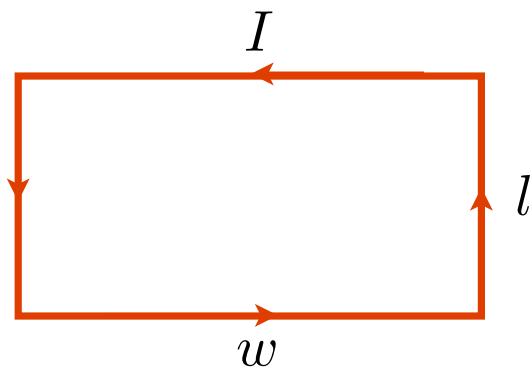
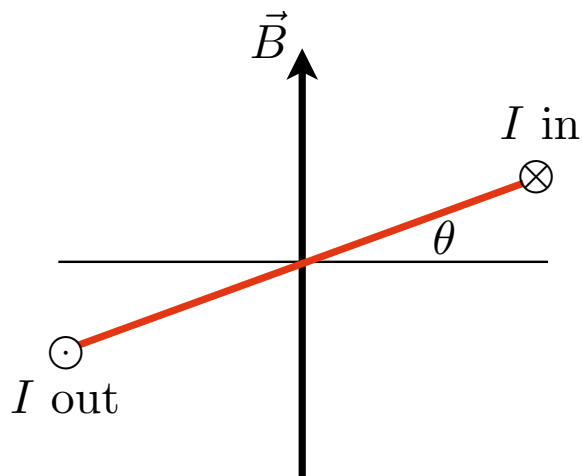


## Lorentz Force and the Work Done on a Rectangular Loop of Current

A rectangular loop of current-carrying wire has current  $I$ , length  $l$ , and width  $w$ .



The loop is placed at an angle  $\theta$  to the horizontal in a uniform magnetic field, where  $\vec{B}$  is in the  $\hat{z}$ -direction.



1. Find the direction of the force on each piece of the wire.
2. Calculate the force on the right side of the wire (where  $I$  is into the page).
3. Find the net force on the whole wire.
4. Calculate the work you need to do to rotate the wire from  $\theta = -\frac{\pi}{2}$  to some angle  $\theta_0$ .