

35. The magnetic force on the wire must be upward and have a magnitude equal to the gravitational force mg on the wire. Applying the right-hand rule reveals that the current must be from left to right. Since the field and the current are perpendicular to each other the magnitude of the magnetic force is given by $F_B = iLB$, where L is the length of the wire. Thus,

$$iLB = mg \implies i = \frac{mg}{LB} = \frac{(0.0130 \text{ kg})(9.8 \text{ m/s}^2)}{(0.620 \text{ m})(0.440 \text{ T})} = 0.467 \text{ A} .$$