84. Note that there is no voltage drop across the ammeter. Thus, the currents in the bottom resistors are the same, which we call i (so the current through the battery is $2i$ and the voltage drop across each of the bottom resistors is iR). The resistor network can be reduced to an equivalence of

$$R_{\text{eq}} = \frac{(2R)(R)}{2R+R} + \frac{(R)(R)}{R+R} = \frac{7}{6}R$$

which means that we can determine the current through the battery (and also through each of the bottom resistors):

$$2i = \frac{\mathcal{E}}{R_{\text{eq}}} \implies i = \frac{3\mathcal{E}}{7R} .$$

By the loop rule (going around the left loop, which includes the battery, resistor $2R$ and one of the bottom resistors), we have

$$\mathcal{E} - i_{2R}(2R) - iR = 0 \implies i_{2R} = \frac{\mathcal{E} - iR}{2R} .$$

Substituting $i = 3\mathcal{E}/7R$, this gives $i_{2R} = 2\mathcal{E}/7R$. The difference between i_{2R} and i is the current through the ammeter. Thus,

$$i_{\text{ammeter}} = i - i_{2R} = \frac{3\mathcal{E}}{7R} - \frac{2\mathcal{E}}{7R} = \frac{\mathcal{E}}{7R} .$$