

71. (a) By symmetry, we see that i_1 is half the current that goes through the battery. The battery current is found by dividing \mathcal{E} by the equivalent resistance of the circuit, which is easily found to be $6.0\ \Omega$. Thus,

$$i_1 = \frac{1}{2} i_{\text{bat}} = \frac{1}{2} \frac{12\text{ V}}{6.0\ \Omega} = 1.0\text{ A}$$

and is clearly downward (in the figure).

- (b) We use Eq. 28-14: $P = i_{\text{bat}}\mathcal{E} = 24\text{ W}$.