

30. (a) By symmetry, when the two batteries are connected in parallel the current i going through either one is the same. So from $\mathcal{E} = ir + (2i)R$ we get $i_R = 2i = 2\mathcal{E}/(r + 2R)$. When connected in series $2\mathcal{E} - i_R r - i_R R - i_R R = 0$, or $i_R = 2\mathcal{E}/(2r + R)$.
- (b) In series, since $R > r$.
- (c) In parallel, since $R < r$.