

7. (a) The potential difference is $V = \mathcal{E} + ir = 12\text{ V} + (0.040\ \Omega)(50\text{ A}) = 14\text{ V}$.
(b) $P = i^2 r = (50\text{ A})^2(0.040\ \Omega) = 100\text{ W}$.
(c) $P' = iV = (50\text{ A})(12\text{ V}) = 600\text{ W}$.
(d) In this case $V = \mathcal{E} - ir = 12\text{ V} - (0.040\ \Omega)(50\text{ A}) = 10\text{ V}$ and $P = i^2 r = 100\text{ W}$.