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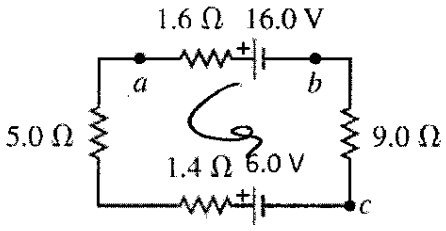
Remember: $V = IR$

Kirchoff's Rules: **at junction** $\sum I = 0$; **any closed loop** $\sum V = 0 = \sum \varepsilon - \sum I_i R_i$

Correct answers have correct units and 2 significant figures.



The circuit shown in the figure contains two resistors and two batteries, each with an emf and an internal resistance.

a. What is the equivalent resistance of this circuit?

$R_{eq} = (1.6 + 5.0 + 1.4 + 9.0)\,\Omega = 17\,\Omega$

b. What is the magnitude of the current in the circuit?

$0 = \mathcal{E}_1 - \mathcal{E}_2 - I(R_{eq}) \Rightarrow I = \dfrac{\mathcal{E}_1 - \mathcal{E}_2}{R_{eq}}$

$I = \dfrac{(16 - 6\,V)}{17\,\Omega} = 0.59\,A$

c. Is the current direction clockwise or counterclockwise?

Counterclockwise

d. What is the terminal voltage across the 16V battery?

$V_{ab} = \mathcal{E} - I(R_1) = 16.0\,V - (0.59\,A)(1.6\,\Omega)$

$= 15.1\,\Omega$