

Chapter 8

Predicting Current in a Circuit

8.1

8.2 Less than predicted (R will be greater than predicted)

8.3 1.5 V because the resistor is the only element in the circuit (other than the battery)

8.4 0.5 V across the 1- Ω resistor and 1.0 V across the 2- Ω resistor

8.5 (a) 6 Ω , (b) Yes

8.6 0.5 A

8.7 (a) 0.55 Ω , (b) Yes

8.8 9.33 Ω

8.9 Yes, they could be made of the same substance

8.10 The left side is at a higher potential, current flows from left to right

8.11 Bottom loop: $-I_{\text{middle}}(8.00 \Omega) - (16.0 \text{ V}) + (6.0 \text{ V}) - I_{\text{bottom}}(2.00 \Omega) = 0$.

Outer loop: $-I_{\text{top}}(4.00 \Omega) + (6.0 \text{ V}) - I_{\text{bottom}}(2.00 \Omega) = 0$.

- 8.12 1.29 A toward the left; (Note: by assuming the current was directed toward the right, as in the text, you end up with a negative 1.29 A toward the right]