

Solutions

Each answer shows the steps, then the **result**.

2.1

- $V = \varepsilon - Ir = 9.0 - 2.0(1.0) = 7.0 \text{ V}$

2.2

- parallel pair: $\frac{8.0}{2} = 4.0 \text{ } \Omega$; then $4.0 + 4.0 = 8.0 \text{ } \Omega$

2.3

- the emf is the total energy per charge supplied; the terminal voltage is the smaller potential difference across the external circuit once Ir is lost internally

3.1 B

3.2 B

3.3

(a)

- $I = \frac{\varepsilon}{R + r} = \frac{12}{5.5 + 0.50} = 2.0 \text{ A}$

(b)

- $V = \varepsilon - Ir = 12 - 2.0(0.50) = 11 \text{ V}$