4. Follow the path determined in step 3, and calculate the current in and potential difference across each equivalent resistance. Repeat this process until the desired values are found.

A. Regroup, evaluate, and calculate.

Replace the circuit's equivalent resistance with group **(d).** The resistors in group **(d)** are in series; therefore, the current in each resistor is the same as the current in the equivalent resistance, which equals 0.71 A. The potential difference across the 2.7 Ω resistor in group **(d)** can be calculated using $\Delta V = IR$.

Given: $I = 0.71$ A $\quad R = 2.7\ \Omega$

Unknown: $\Delta V = ?$

$$\Delta V = IR = (0.71\ \text{A})(2.7\ \Omega) = 1.9\ \text{V}$$

B. Regroup, evaluate, and calculate.

Replace the center resistor with group **(c).**

The resistors in group **(c)** are in parallel; therefore, the potential difference across each resistor is the same as the potential difference across the 2.7 Ω equivalent resistance, which equals 1.9 V. The current in the 8.0 Ω resistor in group **(c)** can be calculated using $\Delta V = IR$.

Given: $\Delta V = 1.9$ V $\quad R = 8.0\ \Omega$

Unknown: $I = ?$

$$I = \frac{\Delta V}{R} = \frac{1.9\ \text{V}}{8.0\ \Omega} = 0.24\ \text{A}$$

C. Regroup, evaluate, and calculate.

Replace the 8.0 Ω resistor with group **(b).**

The resistors in group **(b)** are in series; therefore, the current in each resistor is the same as the current in the 8.0 Ω equivalent resistance, which equals 0.24 A.

$$\boxed{I = 0.24\ \text{A}}$$

The potential difference across the 2.0 Ω resistor can be calculated using $\Delta V = IR$.

Given: $I = 0.24$ A $\quad R = 2.0\ \Omega$

Unknown: $\Delta V = ?$

$$\Delta V = IR = (0.24\ \text{A})\ (2.0\ \Omega) = 0.48\ \text{V}$$

$$\boxed{\Delta V = 0.48\ \text{V}}$$

TIP *You can check each step in problems like Sample Problem D by using $\Delta V = IR$ for each resistor in a set. You can also check the sum of ΔV for series circuits and the sum of I for parallel circuits.*