

Applying KCL and KVL

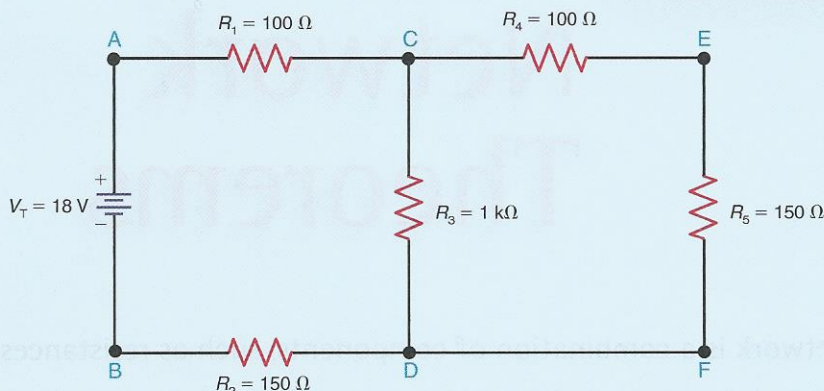
Examine the circuit in Fig. 9-26. Calculate and record the following circuit values:

$V_1 = \underline{\hspace{2cm}}$, $V_2 = \underline{\hspace{2cm}}$, $V_3 = \underline{\hspace{2cm}}$,

$V_4 = \underline{\hspace{2cm}}$, $V_5 = \underline{\hspace{2cm}}$,
 $I_1 = \underline{\hspace{2cm}}$, $I_3 = \underline{\hspace{2cm}}$, $I_{4-5} = \underline{\hspace{2cm}}$

In Fig. 9-26, indicate the direction of all currents and the polarities of all resistor voltage drops.

Figure 9-26



Construct the circuit in Fig. 9-26. Measure and record the following circuit values:

$V_1 = \underline{\hspace{2cm}}$, $V_2 = \underline{\hspace{2cm}}$, $V_3 = \underline{\hspace{2cm}}$,
 $V_4 = \underline{\hspace{2cm}}$, $V_5 = \underline{\hspace{2cm}}$,
 $I_1 = \underline{\hspace{2cm}}$, $I_3 = \underline{\hspace{2cm}}$, $I_{4-5} = \underline{\hspace{2cm}}$

Write the measured values of voltage and current next to their respective resistors in Fig. 9-26.

Using measured values, write a KCL equation for the currents entering and leaving point C. $\underline{\hspace{2cm}}$ Do the same for the currents entering and leaving point D. $\underline{\hspace{2cm}}$ Do these circuit values satisfy KCL? $\underline{\hspace{2cm}}$

Using measured values, write a KVL equation for the voltages in the loop ACDBA. Go clockwise around the loop beginning at point A. $\underline{\hspace{2cm}}$

Do these values satisfy KVL? $\underline{\hspace{2cm}}$

Using measured values, write a KVL equation for the voltages in the loop CEFDC. Go clockwise around the loop beginning at point C. $\underline{\hspace{2cm}}$ Do these values satisfy KVL? $\underline{\hspace{2cm}}$

Beginning at point C and going clockwise, add the measured voltages in the partial loop CEFD. $\underline{\hspace{2cm}}$ Is this value equal to the voltage across R_3 ? $\underline{\hspace{2cm}}$

Finally, using measured values, write a KVL equation for the voltages in the outside loop ACEFDBA. Go clockwise around the loop beginning at point A. $\underline{\hspace{2cm}}$ Do these values satisfy KVL? $\underline{\hspace{2cm}}$

Examine the circuit in Fig. 9-27. Calculate and record the individual resistor voltage drops V_{R_1} , V_{R_2} , and V_{R_3} .

$V_{R_1} = \underline{\hspace{2cm}}$, $V_{R_2} = \underline{\hspace{2cm}}$, $V_{R_3} = \underline{\hspace{2cm}}$

Indicate the direction of current and the polarity of each resistor voltage drop. Next, apply KVL and solve for the voltages V_{AG} and V_{BG} . Record your answers.

$V_{AG} = \underline{\hspace{2cm}}$, $V_{BG} = \underline{\hspace{2cm}}$

Construct the circuit in Fig. 9-27. Before turning on the power, however, have your instructor check the circuit to make sure the power supplies are wired correctly.

Measure and record the voltages V_{AG} and V_{BG} . $V_{AG} = \underline{\hspace{2cm}}$,
 $V_{BG} = \underline{\hspace{2cm}}$

Do the measured voltages match your calculated values? $\underline{\hspace{2cm}}$

Figure 9-27

