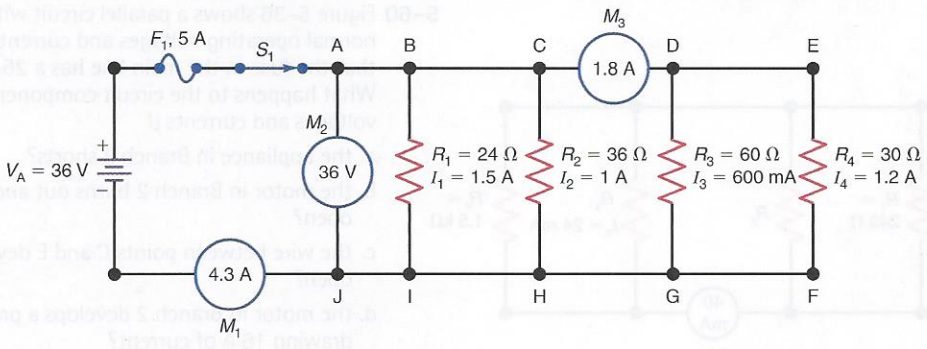
Figure 5–37 Circuit diagram for troubleshooting challenge. Normal values for I_1, I_2, I_3, and I_4 are shown on schematic.



5–71 If the fuse F_1 has blown because of a shorted branch, how much resistance would be measured across points B and I? Without using resistance measurements, how could the shorted branch be identified?

5–72 If the wire connecting points F and G opens, (**a**) How much current will M_3 show? (**b**) How much voltage would be measured across R_4? (**c**) How much voltage would be measured across points D and E? (**d**) How much voltage would be measured across points F and G?

5–73 Assuming that the circuit is operating normally, how much voltage would be measured across, (**a**) the fuse F_1; (**b**) the switch S_1?

5–74 If the branch resistor R_3 opens, (**a**) How much voltage would be measured across R_3? (**b**) How much current would be indicated by M_1 and M_3?

5–75 If the wire between points B and C breaks open, (**a**) How much current will be measured by M_1 and M_3? (**b**) How much voltage would be measured across points B and C? (**c**) How much voltage will be measured across points C and H?

Answers to Self-Reviews

5–1 **a.** 1.5 V
b. 120 V
c. two each

5–2 **a.** 10 V
b. 1 A
c. 10 V
d. 2 A

5–3 **a.** 6 A
b. 3 A
c. 1.2 A

5–4 **a.** 1.57 MΩ
b. 1.2 MΩ
c. 5 Ω

5–5 **a.** 6 S
b. 0.75 μS, 1.33 MΩ
c. 0.25 MΩ

5–6 **a.** 480 W
b. 660 W
c. 30 W

5–7 **a.** 120 V
b. 4 A
c. 7 A

5–8 **a.** 120 V
b. 0 Ω
c. 6 A
d. 0 V, 120 V
e. 120 V

Laboratory Application Assignment

In this lab application assignment you will examine the characteristics of a simple parallel circuit. You will also determine the required resistance values in a parallel circuit having random unknowns.

Equipment: Obtain the following items from your instructor.

- Variable dc power supply
- Assortment of carbon-film resistors
- DMM

Parallel Circuit Characteristics

Examine the parallel circuit in Fig. 5–38. Calculate and record the following values:

I_1 = ____, I_2 = ____, I_3 = ____, I_T = ____, R_{EQ} = ____