

### Advanced Reading Questions: Circuits Experiment

1. Draw a circuit diagram of two  $50\ \Omega$  identical light bulbs in series across a power supply providing 12 V. Use the equivalent resistance,  $R_s$ , of the two bulbs in series to find the current flowing through the circuit. From the current, calculate the power dissipated in each bulb.
2. Referring to Figure 4 in the manual, what is the value of  $R_1$  when  $i_2$  and  $i_3$  are measured to be 2 mA and 2.5 mA, respectively, and the voltage across  $R_1$  is measured to be 9 V?
3. You build a circuit consisting of a power supply and a resistor. How do you use an ammeter to measure the current in the already existing circuit?
4. In a voltage divider, how do the values of  $R_1$  and  $R_2$  compare when  $V_{\text{out}} = 1/2 V_{\text{in}}$ ?