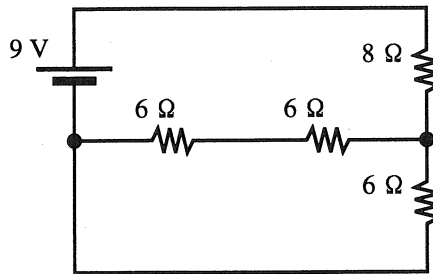


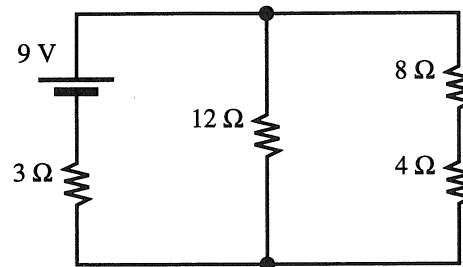
Problem 10.2

In the circuit at right, find the current through each element and the voltage across each element. Explain your reasoning.



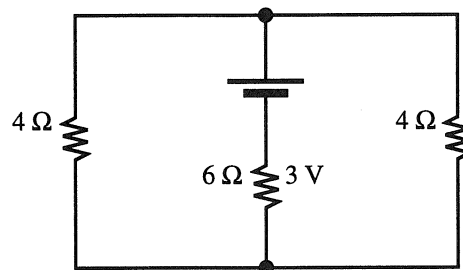
Problem 10.3

In the circuit at right, find the current through each element and the voltage across each element. Explain your reasoning.



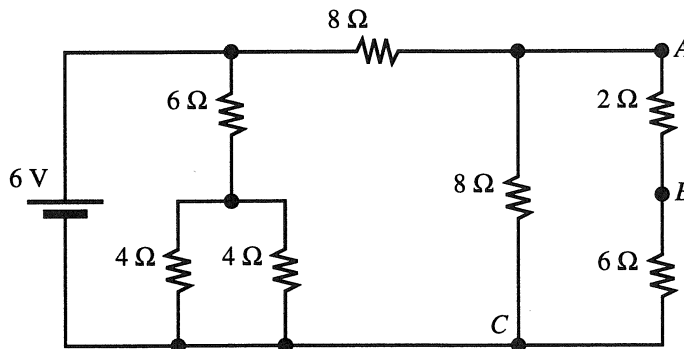
Problem 10.4

In the circuit at right, find the current through each element and the voltage across each element. Explain your reasoning.



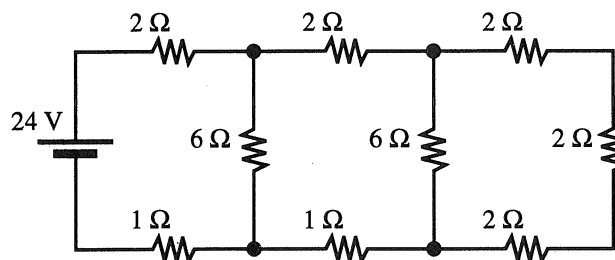
Problem 10.5

- A. In the circuit at right, find the voltage across nodes A and B.
- B. Find the current through the 8-ohm resistor connected between nodes A and C.



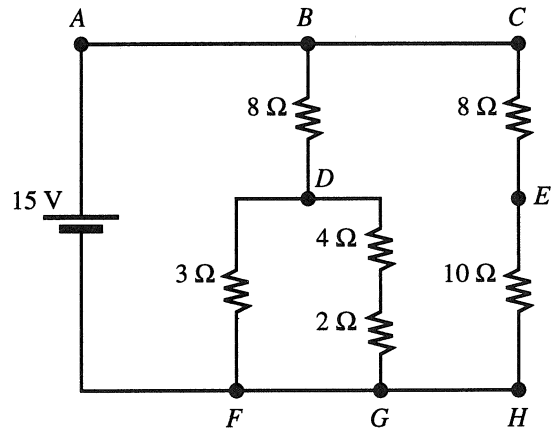
Problem 10.6

In the circuit at right, find the current through each element and the voltage across each element. Explain your reasoning.

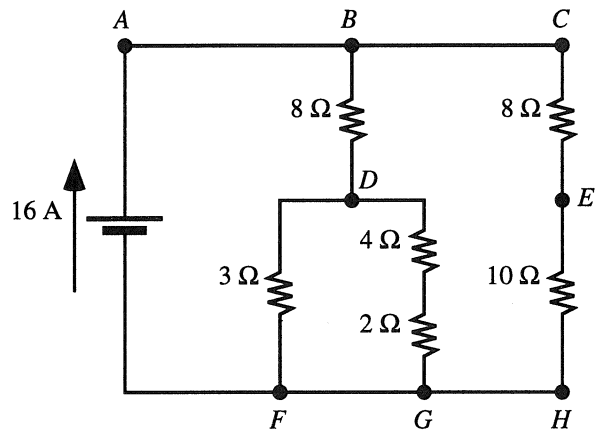


Problem 10.7

A. Find the voltage across each resistor in the circuit at right without calculating any currents. Explain your reasoning.



B. Find the current through each resistor in the following circuit without calculating any voltages. Explain your reasoning.

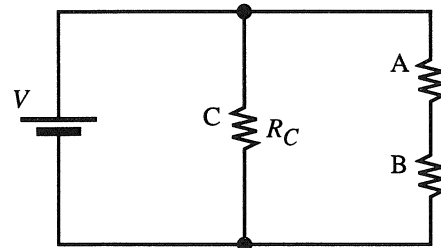


Problem 10.8

In the circuit at right, resistor A has 2.5 times as much current through it as resistor C and one-fourth as much voltage across it as resistor C.

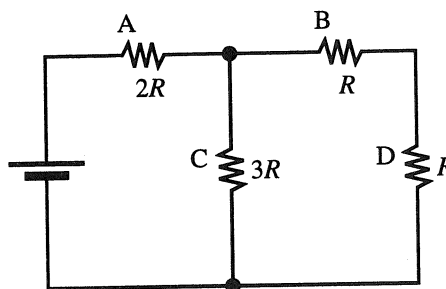
- A. Find the voltage across resistor B.
- B. Find the current through resistor B.
- C. Find the resistance of resistor B.

Express your answers in terms of V and R_C .



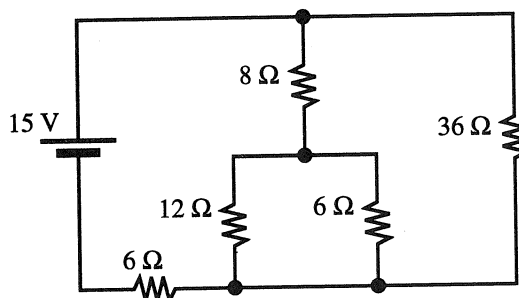
Problem 10.9

- A. In the circuit at right, rank the resistors according to the amount of current through them. Explain your reasoning.
- B. What happens to the current through each of the other resistors if the resistance of resistor C is increased? Explain your reasoning.



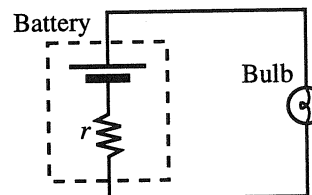
Problem 10.10

In the circuit at right, find the current through each element and the voltage across each element. Explain your reasoning.

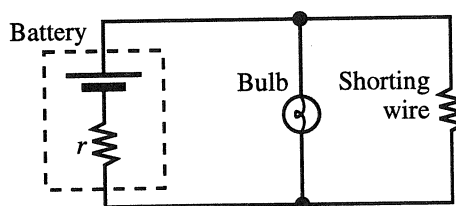


Problem 11.1

Consider a circuit in which a bulb is connected across a real battery. The battery has a constant internal resistance of 0.1Ω and an open-circuit voltage of 1.5 V . Assume that the bulb has a constant resistance of 5.0Ω and that the bulb is visibly lit only if the current through it is greater than 0.1 A .



- A. Find the current through the bulb. Is the bulb lit? Explain your reasoning.
- B. How many identical bulbs can be connected in parallel with the original bulb before the bulb goes out? Explain your reasoning.
- C. Now imagine that the battery is shorted by a wire as shown. Find the resistance of the wire for which the bulb will barely light.
- D. Suppose that the resistance of the shorting wire in Part C were increased. Would the brightness of the bulb increase, decrease, or remain the same? Explain your reasoning.



Problem 11.2

Suppose that you had at your disposal only a real battery, a voltmeter, an ammeter, a wire-cutter, and a piece of wire of unknown resistance.

Devise a method to determine the internal resistance of the battery. Explain your reasoning.