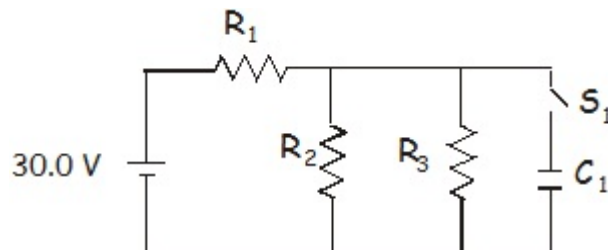


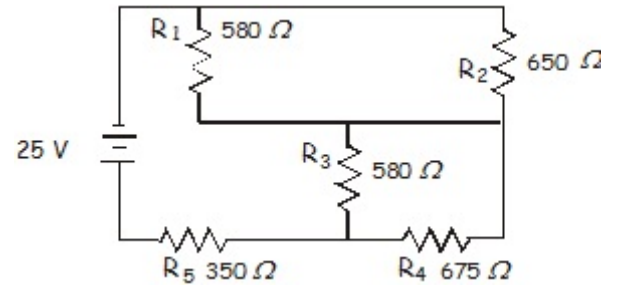
Name: _____

1. Three resistors are arranged in a circuit as shown. There is also a switch and a capacitor. R_1 is $25.0\ \Omega$, R_2 is $25.0\ \Omega$, R_3 is $45.0\ \Omega$, and C_1 has the value of $1.25\ \mu\text{F}$. (a) When S_1 is open, what is the total current? (b) What is the voltage drop for R_1 ? (c) Switch S_1 is now closed for a long time. What is the charge Q on the capacitor? (d) What is the potential energy stored in the capacitor?



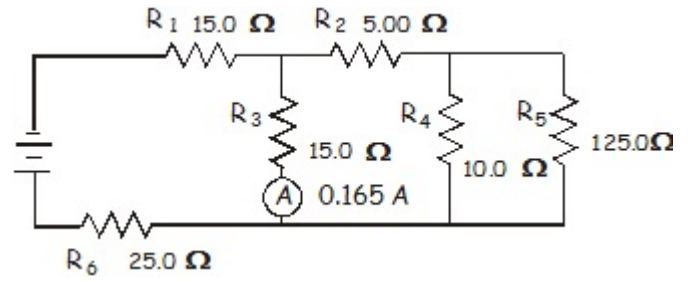
2. You are given a $12.0\ \text{V}$ battery, and four resistors with the following values: $100.0\ \Omega$, $30.0\ \Omega$, $20.0\ \Omega$, and $10.0\ \Omega$. You also have plenty of wire that has essentially zero resistance. (a) Draw a circuit in which each resistor has current flowing through it, but in which the current from the battery is as small as possible. (b) Now draw a circuit in which the current from the battery is as large as possible. (no short circuiting of the battery, however.)

3. Find the: (a) total current, (b) total resistance, (c) power dissipated by R_4 .



4. A proton has a velocity of 1.25×10^6 m/s. It travels into a magnetic field that has a strength of 1.50 T. What is the maximum force that the proton can experience?

5. A circuit is as shown. Find: (a) the total resistance, (b) the total current, (c) the voltage provided by the battery, and (d) the amount of energy that the battery puts out in 1.00 hours in kWh.



6. A circuit is arranged as shown. The battery has an internal resistance of 2.5Ω , the source of emf is 15 V . Find: (a) the total current in the circuit, and (b) The voltage provided by the battery.

