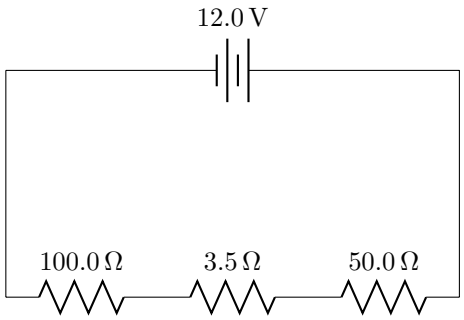
Name: _____

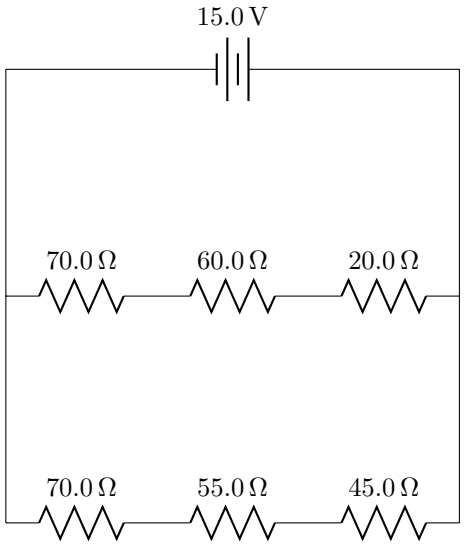
Answer the questions in the spaces provided on the question sheets. If you run out of room for an answer, continue on the back of the page.

1. If electrons are flowing towards the right of a segment of a wire, then the current is flowing towards
   - ◯ the right.
   - ◯ the left.
   - ◯ –neither left nor right.

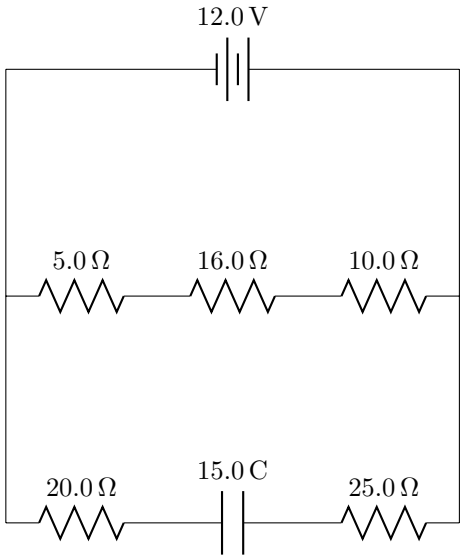
2. What is the charge on a wire that has a cross-section area of 0.00004m^3 with electrons drifting along with a drift velocity $v_d = 0.0156\text{m/s}$ and the density of the charges in the wire is $5.3 \times 10^{24}/\text{m}^3$. The charge of the electrons is, -1.602×10^{-19} C. What is the current?



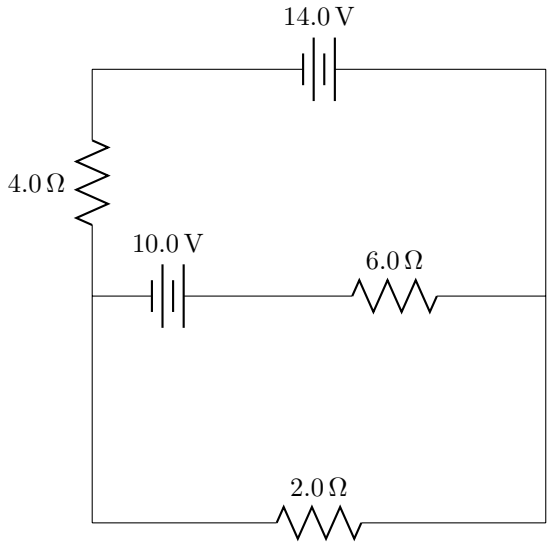
3. What is the equivalent resistance and current in the circuit shown above?



4. Find the equivalent resistor in the above circuit and the current in each branch of the circuit. *Hint: first treat each branch individually in series and find the equivalent resistor for each branch, then treat the parallel problem.*



5. When a circuit with a capacitor in it is first turned on, current flows as if there were no capacitor. After a very long period of time, the capacitor becomes fully charged and no current flows through the branch that has a capacitor on it. Using this knowledge, find the equivalent resistor for the entire circuit at time $t = 0$ when the circuit is first activated and at a long long time later. Find the current in each branch in both cases.



6. Using the loop and junction rules, find the current in each branch of the above circuit. Label each branch and give its current.