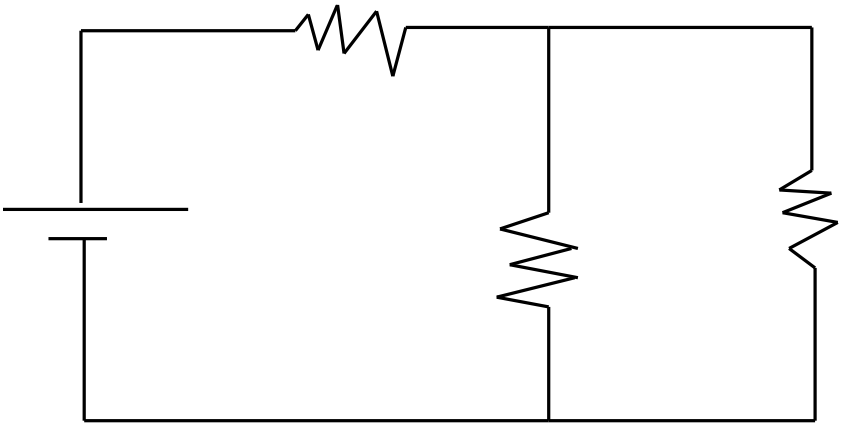
Lesson 5: Mixed Resistor Circuits

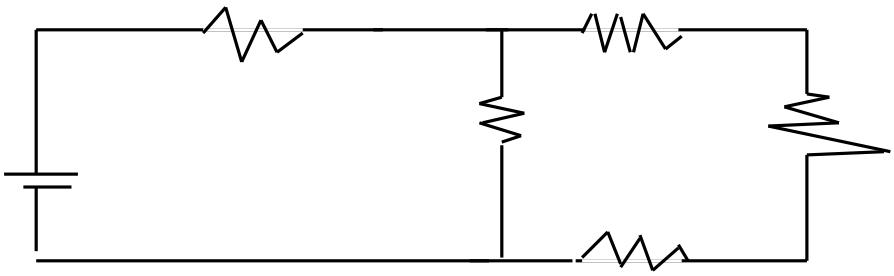
•Mixed circuits have series and parallel parts. To solve these circuits:

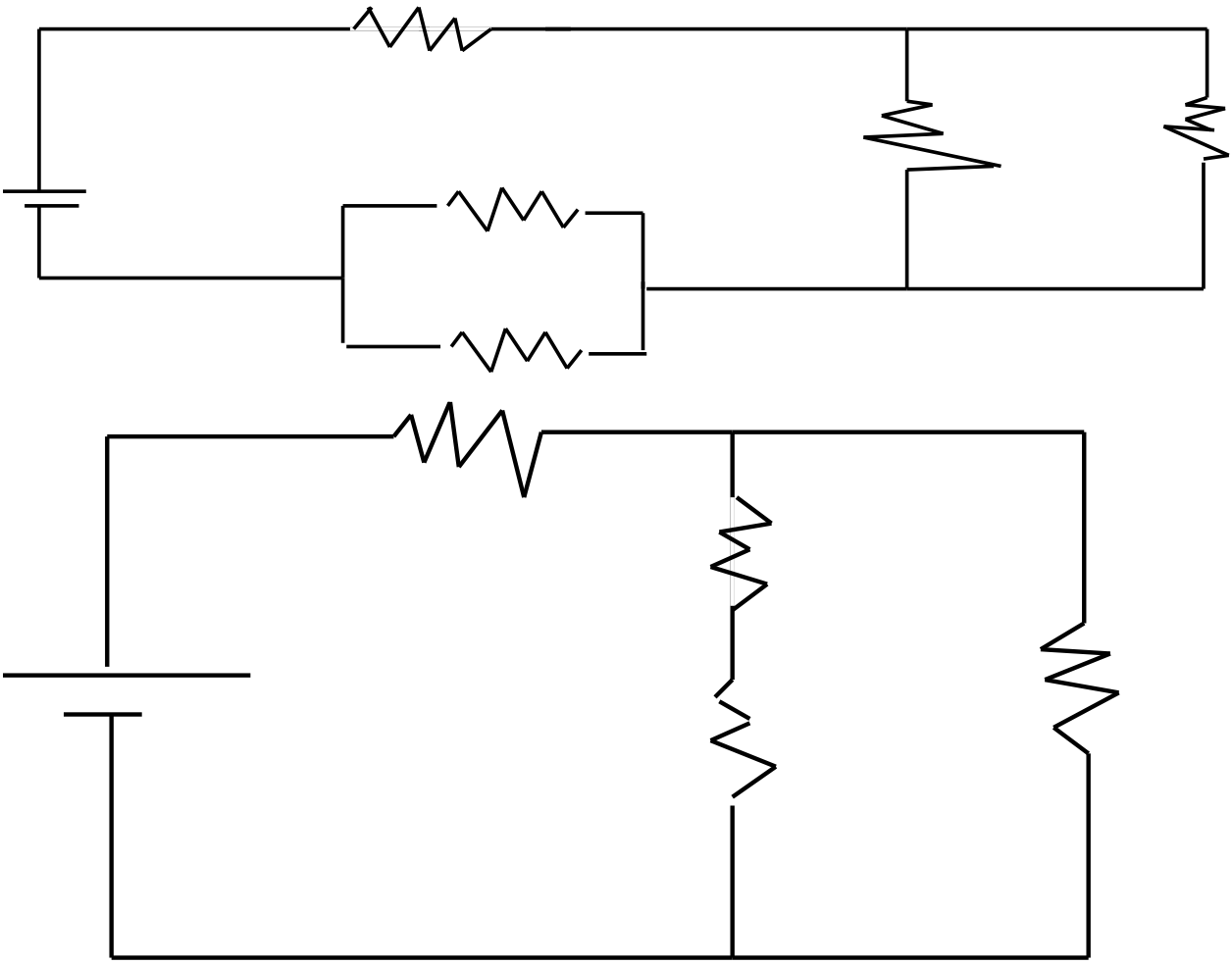
Steps for Solving Circuits

1. Label downhill
2. Try to find the total current leaving the battery
   -- if you find this, the question is going to fall apart
3. Look for any place in the circuit where you know 2 things
   -- "if we know 2 things, we know 4 things"
4. Ski (use Kirchhoff's Laws)
   -- anytime you find something, go to step 2 and 3
5. Rewrite the circuit in its simplest form

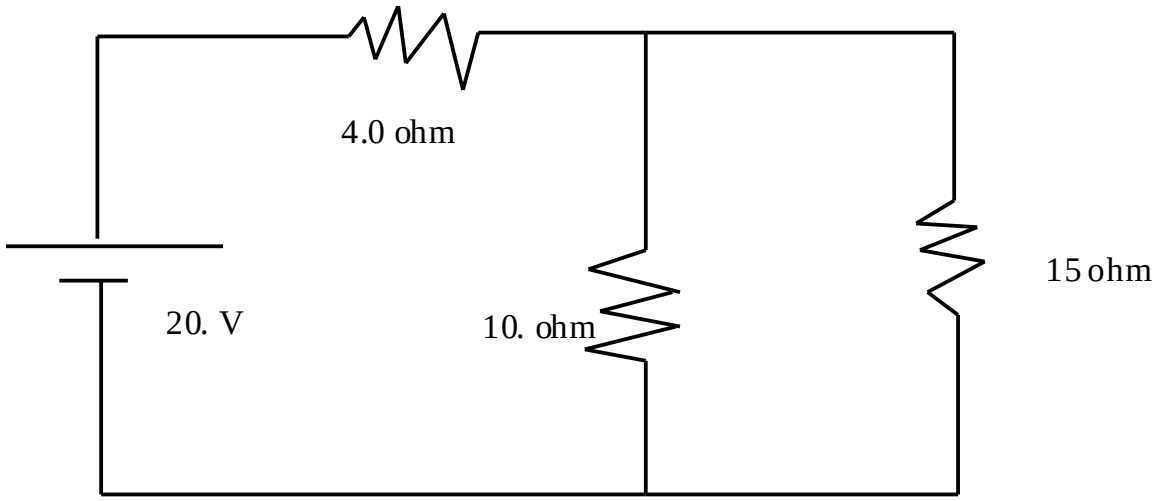
•example 1: identify resistors in series or parallel



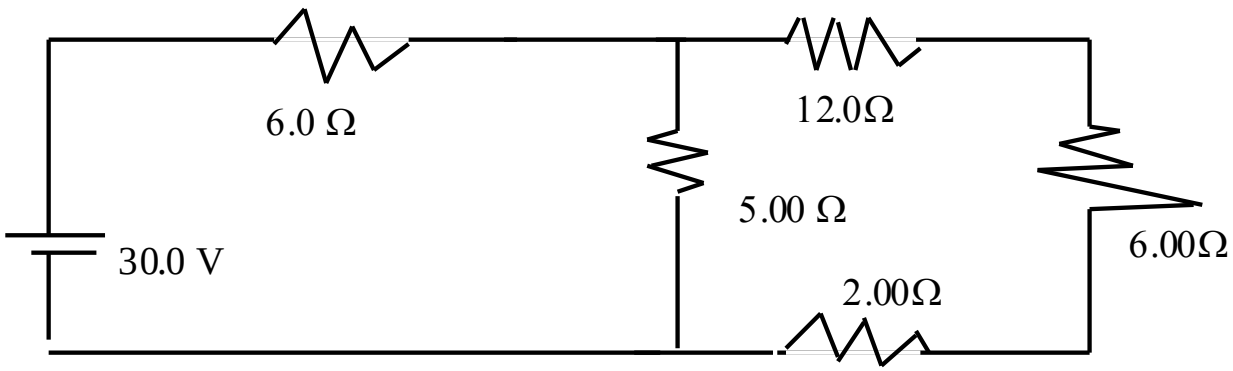




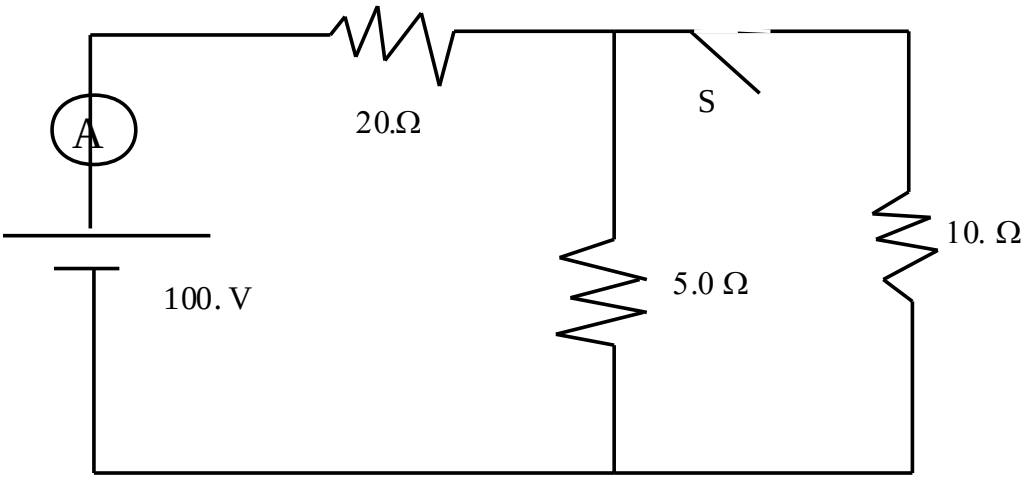
•example 2: find all voltages, currents, and power usage



•example 3: find all voltages, currents, and power usage



•example 4: What happens to the total current in this circuit (as measured by the ammeter) when the switch S is closed?



a) no change b) increases c) decreases

explain your answer using relevant concepts of physics

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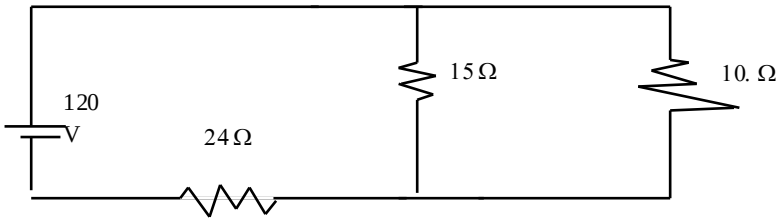
Unit 7 Lesson 5 Name:_____

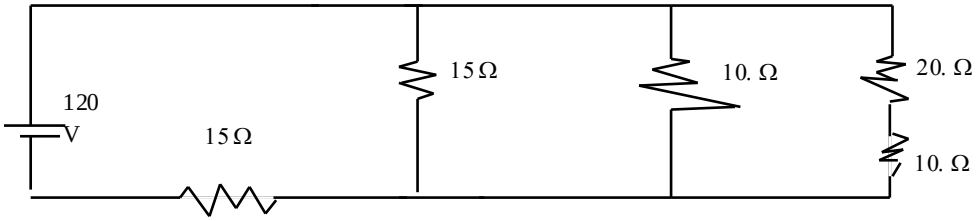
Lesson 5 Homework

1. Find R_t, I_t, then all voltages and currents

(30. Ω 4.0 A; 1.6 A, 24V; 2.4A, 24 V; 96V,4.0A)

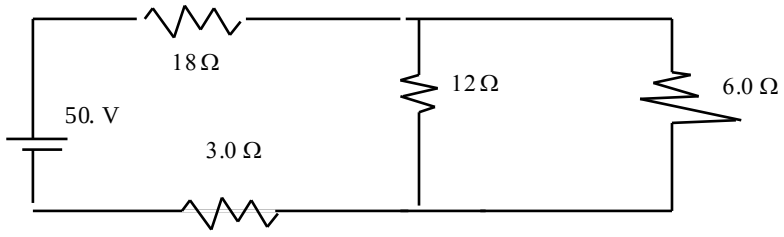


2. Find R_t, I_t, then all voltages and currents

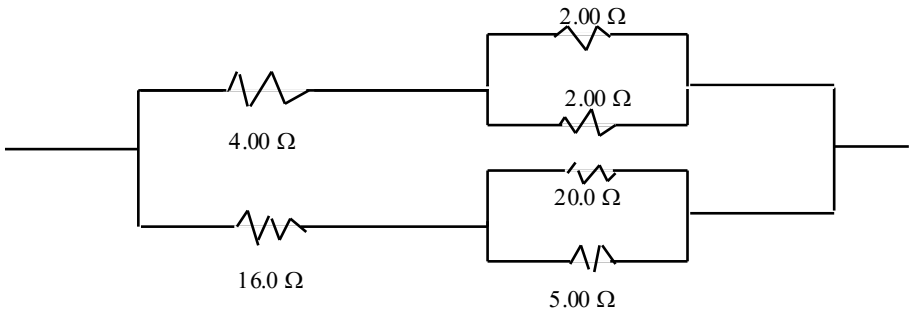


(20.Ω,6.0A; 90.V,6.0A;30.V,2.0A;30.V,3.0A;20V,1.0A;10.V,1.0A)

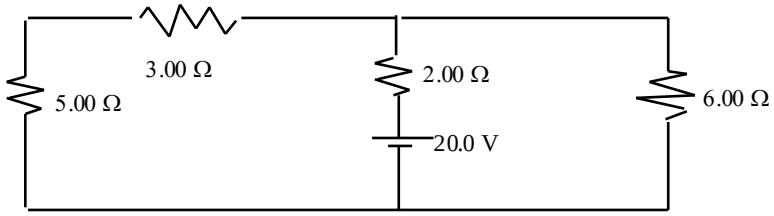
3. Find the current through the 6.0Ω resistor (1.3 A)



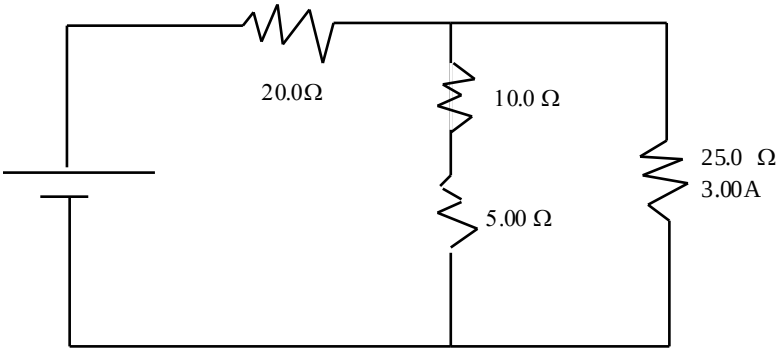
4. Find the total resistance of the circuit (4.00Ω)



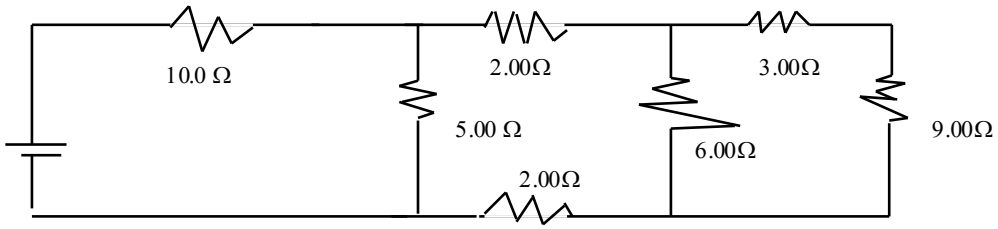
5. Find the voltage drop across the 6.00 ohm resistor (12.6 V)



6. Find the cell voltage (235 V)

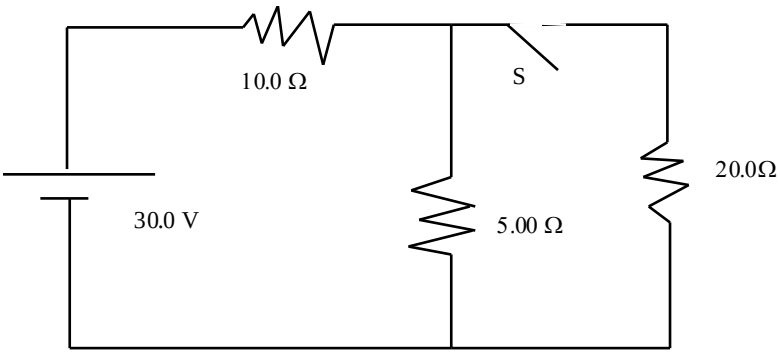


7. Find the cell voltage if 3.00A flows through the 6.00Ω resistor. (153 V)



8. find the total current in this circuit when the switch(S) is

a) open b) closed



(2.00A; 2.14 A)

9. A 2.00 kg object is dropped from the top of a tree. Air resistance is negligible

a) What is the acceleration of the falling object? ($9.80 m/s^2$)

b) what is the acceleration of the Earth? ($3.28\times10^{-24} m/s^2$)