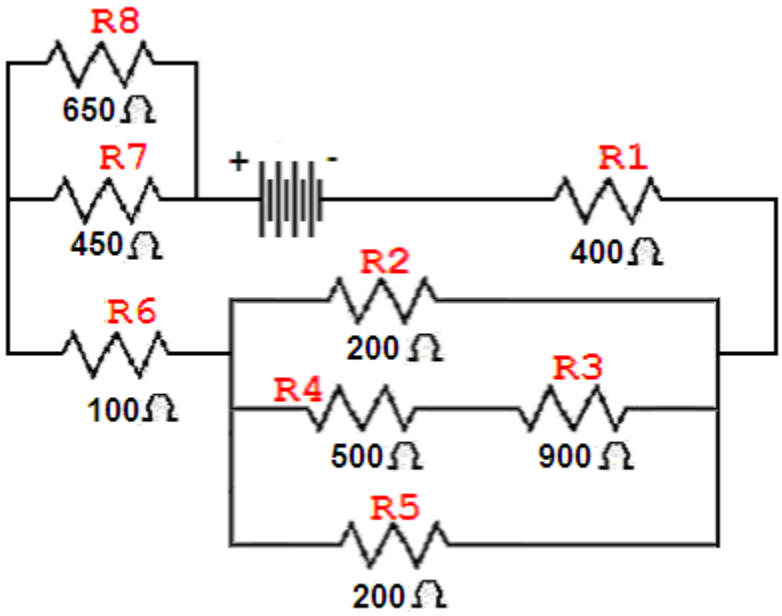
Combination Circuits Assignment

CASE #1

Josh loves resistors. On Friday nights, for fun, he randomly connects resistors together. The following is his latest circuit that he believes will one day allow him to take over a small country – or perhaps allow him to warm up a small cup of coffee.



QUESTION #1

Answer the following questions with one of the following statements. Be certain to complete the sentence with your reasoning.

i) The current is the same because …
ii) The current at … is greater than the current at … because …
iii) It is not possible to state any observation about the current at these two points because …

a) What can you say about that current leaving the battery and the current going through R1?

b) What can you say about the current going through R2 and the current going through R6?

c) What can you say about the current going through R2 and the current going through R5?

d) What can you say about I_3 and I_4?

e) What can you say about I_7 & I_8?

f) What can you say about I_2 & I_7?

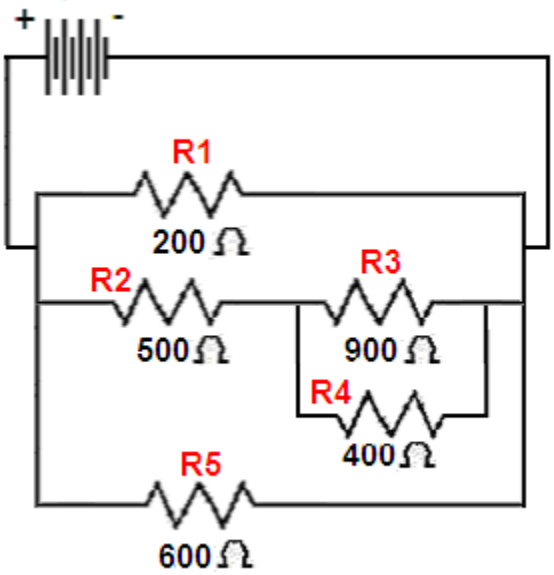
QUESTION #2

What is the total resistance of the circuit above?

CASE #2

Most people are bored by resistors. However, Mr. Smith and Mr. Boudreau love boring things. This explains their love for the Maple Leafs and the Bruins. One day in early April, when both teams are out of the playoffs (this is a yearly event), they get together and create the following circuit:

Voltage of battery: 9 volts



QUESTION #3

Consider the circuit in Case 2. Solve for all unknowns (all 18 of them).