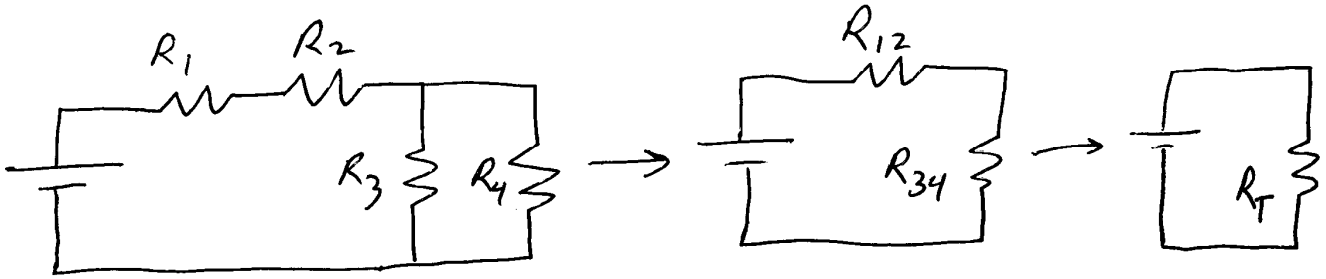
Circuits HW #2

You must draw intermediate steps (new circuits) when combining resistors.
Example (but you would include resistance values instead of R_1, R_2, R_{12}, R_{34}, R_T):



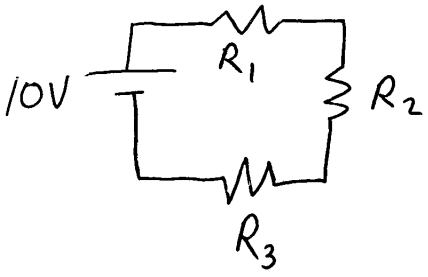
You must do it step by step and <u>you can not combine all resistors into R_T in one step</u>!

Remember:
<u>Series</u>: two resistors touch each other (and no other resistors) on one side.
R_2 and R_3 touch each other on one side, but they also touch R_4 on that side so they are NOT in series.
R_1 and R_2 are in series. R_{12} and R_{34} are in series.
Resistors in Series have the same current

<u>Parallel</u>: two resistors touch each other on both sides. It is ok if they touch more than each other.
R_3 and R_4 touch each other directly on both sides so they are in parallel. The fact that they both touch R_2 on the top side does not change the fact that they are in parallel with each other.
Resistors in parallel have the same voltage

You must show all your work (including your circuit drawings as you simplify) and attach it to this page. Transfer all answers to the blanks on this page.

1)

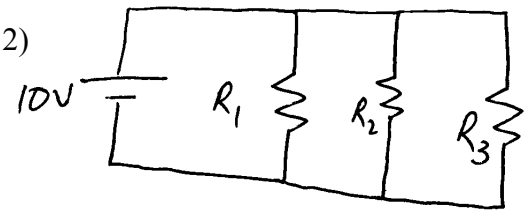


$R_1 = 10\Omega$ $R_T =$ _____ $I_1 =$ _____ $V_1 =$ _____

$R_2 = 20\Omega$ $I_T =$ _____ $I_2 =$ _____ $V_2 =$ _____

$R_3 = 70\Omega$ $I_3 =$ _____ $V_3 =$ _____

2)

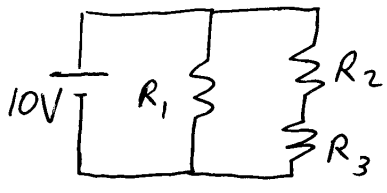


$R_1 = 20\Omega$ $R_T =$ _____ $I_1 =$ _____ $V_1 =$ _____

$R_2 = 30\Omega$ $I_T =$ _____ $I_2 =$ _____ $V_2 =$ _____

$R_3 = 40\Omega$ $I_3 =$ _____ $V_3 =$ _____

3)

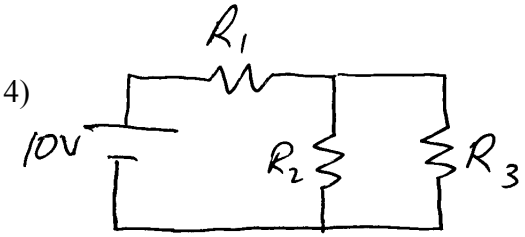


$R_1 = 100\Omega$ $R_T =$ _____ $I_1 =$ _____ $V_1 =$ _____

$R_2 = 20\Omega$ $I_T =$ _____ $I_2 =$ _____ $V_2 =$ _____

$R_3 = 30\Omega$ $I_3 =$ _____ $V_3 =$ _____

4)

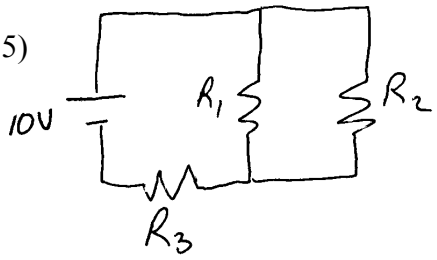


$R_1 = 80\Omega$ $R_T =$ _____ $I_1 =$ _____ $V_1 =$ _____

$R_2 = 200\Omega$ $I_T =$ _____ $I_2 =$ _____ $V_2 =$ _____

$R_3 = 150\Omega$ $I_3 =$ _____ $V_3 =$ _____

5)

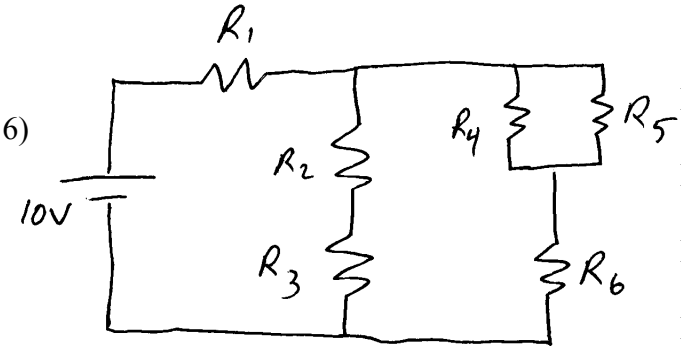


$R_1 = 10\Omega$ $R_T =$ _____ $I_1 =$ _____ $V_1 =$ _____

$R_2 = 40\Omega$ $I_T =$ _____ $I_2 =$ _____ $V_2 =$ _____

$R_3 = 5\Omega$ $I_3 =$ _____ $V_3 =$ _____

6)



$R_1 = 2\Omega$ $R_T =$ _____ $I_1 =$ _____ $V_1 =$ _____

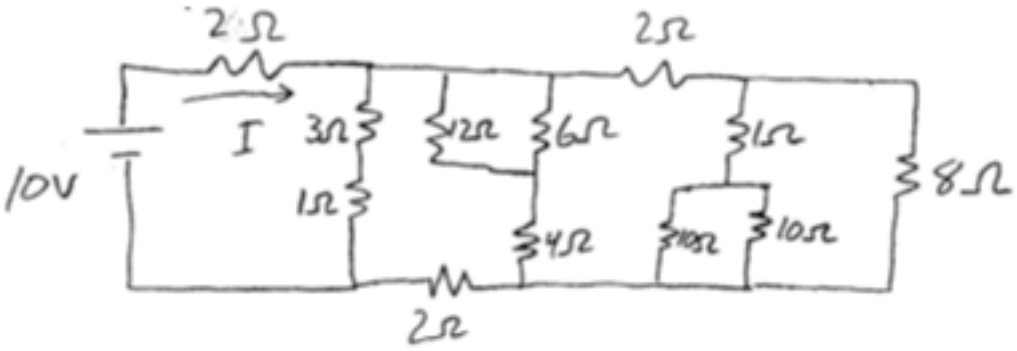
$R_2 = 6\Omega$ $I_T =$ _____ $I_2 =$ _____ $V_2 =$ _____

$R_3 = 4\Omega$ $I_3 =$ _____ $V_3 =$ _____

$R_4 = 10\Omega$ $I_4 =$ _____ $V_4 =$ _____

$R_5 = 40\Omega$ $I_5 =$ _____ $V_5 =$ _____

$R_6 = 12\Omega$ $I_6 =$ _____ $V_6 =$ _____



$R_T =$ _____

$I_T =$ _____