PHY2250, Electronics & Circuit Theory
Activity: Parallel Circuits

Work in groups of three (or two). You may refer to your notes and your textbook.

1. If resistors of values 10Ω, $40\ \Omega$ and 8Ω are in parallel, calculate the total *conductance* in Siemens (S).
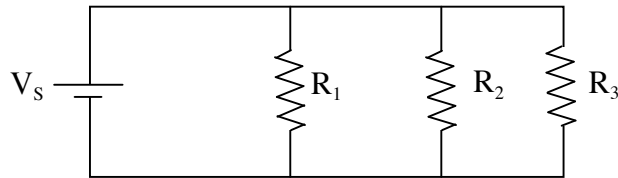
2. In the figure below, $V_S=100V$, $R1 = 30\Omega$, $R_2 = 20\ \Omega$, and $R_3 = 60\ \Omega$.
     a. Find the branch currents I_1, I_2, and I_3.
     b. Find the total resistance.
     c. Using Ohm's Law and the answer to part b, find the total current.
     d. Show that the total current equals the sum of the branch currents.

3. The *current divider* formula. For a simple circuit consisting of two resistors R_1 and R_2 in *parallel*, and source of total current I_T $(=V_s/R_T)$, find the current through R_2 as a function of I_T, R_1 and R_2.

4. Answer "Troubleshooting challenge" question 5-66 in the text. (You may answer on the back of this page).