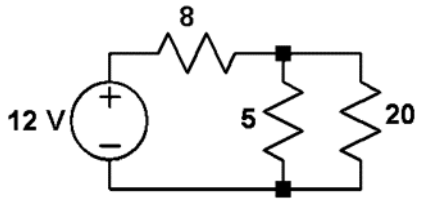
ECE 101: Homework assignment # 1

Topics we have covered up to this point: Orientation / introduction, electric circuits (Ohm's law, KVL, KCL), linear equations, design process, lab1 and lab2.

You do not have to turn in practice problems. They serve as "warm-ups" for the actual problems that you have to submit. We will likely work through practice problems during extra help sessions. Please note that I expect YOU to work through the practice problems – we will be there to help you get over the obstacles.

<u>Practice problems</u>

1. Find the power in the 20 Ohm resistor in the circuit below. This problem takes a couple of steps, and there is more than one way to do it. Hint: combine the two resistors on the right into a single equivalent resistor, and use voltage division to find the voltage V across the equivalent resistor. Then you can find P from V. (Solution: P=0.8 W)



2. Do example 1-5 (op-amps) from R&K on your own and compare with textbook solution.

<u>Turn in solutions to the following problems:</u>

1. DC circuits: Problem 1-18 from R&K
2. Linear equations: Problem 1-15 from R&K
3. Design process related questions:
    a. Identify five product, structure, or system designs you think can be improved. Pick one and write a preliminary problem statement (step 1) for the engineering design process. Use between 150 and 400 words for the problem statement (1 page). Two most intriguing and well stated problems will be discussed in class.
4. Each team should agree on the following items. Each team member should submit the following as part of this homework:
    a. Pick a team name and a team slogan.
    b. Write a one-sentence objective for your Rube Goldberg project.
    c. State a plan for meetings outside of class throughout the quarter