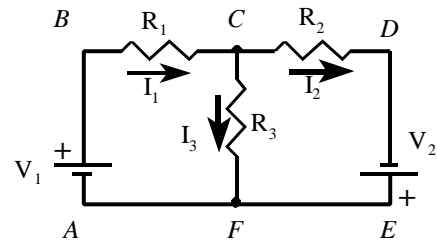


## Analog & Digital Electronics

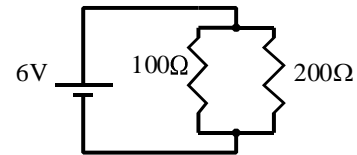
### Homework Assignment 1: Due Friday, February 9

- Write down the equations resulting from Kirchoff's rules for the circuit at the right. Use the two loops ABCDEFA and CDEFC. I'm not asking you to solve the equations, just write them down! (The currents are positive in the directions shown by the arrows!)

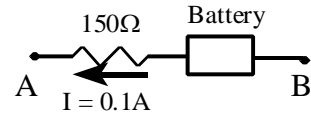


- If  $I_3 = 0$  in the problem above, find  $V_2/V_1$  in terms of  $R_1$  and  $R_2$ .

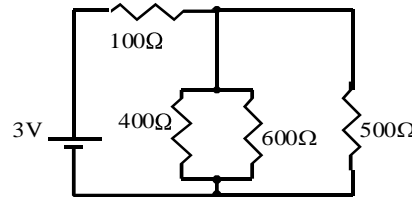
- Consider the circuit at the right.
  - Find the total current supplied by the battery.
  - What is the power supplied by the battery?



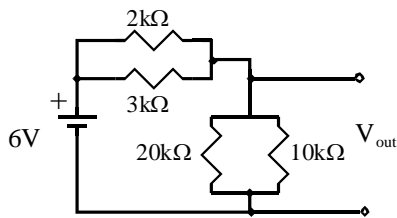
- If I measure that  $V_B - V_A = 6V$ . What is the EMF of the battery? Show its orientation in the circuit (draw it on your paper.)



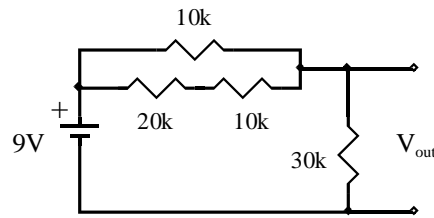
- Find the current supplied by the 3V battery in the circuit at the right.



- Find the output voltage and the output resistance for each circuit below? (This means that you should find the Thevenin equivalent circuit for each of these.)

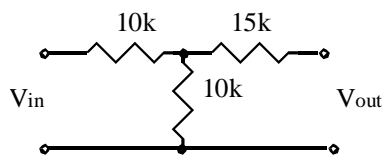


Problem 6a

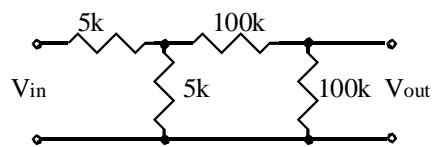


Problem 6b

- Make a voltage divider that divides the input voltage by 4 and has an output resistance of 1k.
- Find the Thevenin equivalent circuits for the two circuits below.



8a.



8b