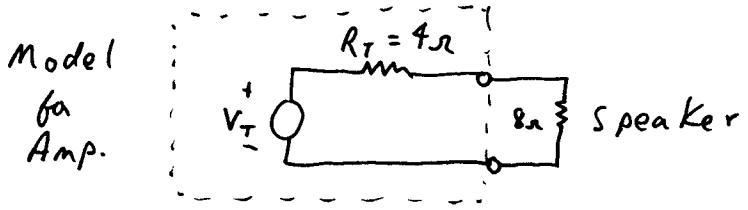
ELEC 101
Prof. Rich Kozick

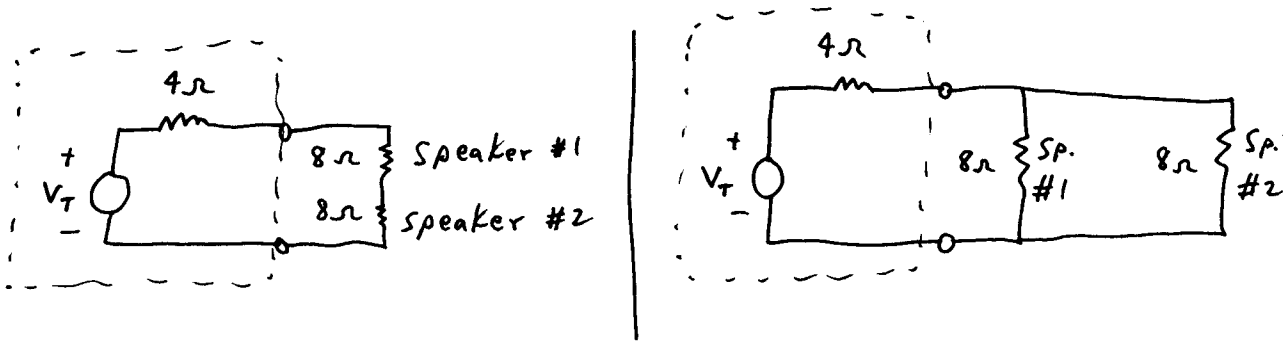
In-Class Exercises on Thevenin Models

1. Consider an audio amplifier that can be modeled by a Thevenin circuit with a resistance of $R_T = 4\Omega$. Suppose the *maximum* voltage the amplifier can produce is $V_T = 30$ V.

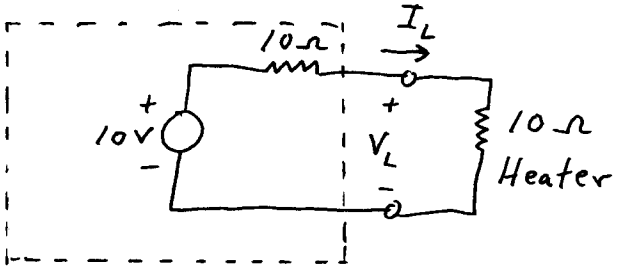
   (a) What is the *peak* power that is delivered to one 8 Ω speaker connected to the amplifier, as shown below?



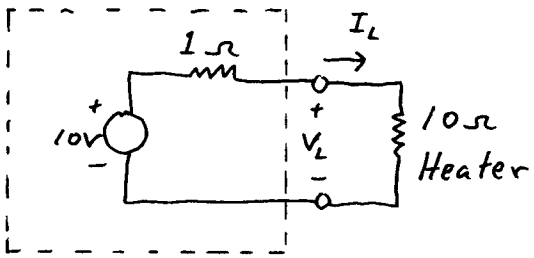
   (b) Suppose that two 8Ω speakers are to be driven by this amplifier. The speakers can be connected in series or in parallel, as shown below. How much power is delivered to each speaker in the series connection? What about the parallel connection? Which connection is "better"?



Suppose you are choosing a battery that will be used to power a 10 ohm heating element. Two batteries are under consideration. Both batteries deliver 10 volts when no load is attached (open circuit), but the batteries have different internal resistance values. The Thevenin model for each battery is shown below.



Battery #1



Battery #2

Which battery will supply more power **to the heating element**? Please explain your answer. You may want to compute the power **that is delivered to** the heating element by each battery.