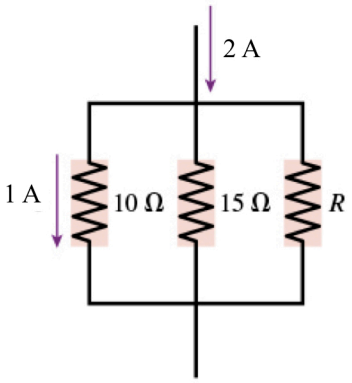
PHYS 234: Recitation 13
(Quiz: Apr 29, 2020)

1. **Estimation:** How many unique songs are played on a radio station in a year? *Clearly state your assumptions and how you came to the numbers you estimate.*

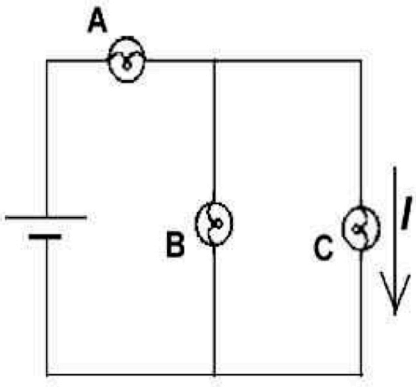
2. **Essay:** On a battery-powered string of decorative light bulbs, if one bulb burns out, all bulbs go dark. Explain why this happens from the perspective of current and circuits.



3. Find the resistance R in the circuit to the right, in Ohms (Ω).

4. Two resistors in series are connected to a 12 V battery (not shown). The current through the battery is 3 A. Then, the same two resistors are wired in parallel and connected to the same battery. The current is now 16 A. Find the resistances of the two resistors, in Ohms (Ω).

5. A battery and bulbs are connected as shown to the right. All of the bulbs have resistance R and the current through bulb C is I as indicated. Use Ohm's law and Kirchhoff's rules to find the following in terms of R and I:



A. The current through bulb A.

B. The current through bulb B.

C. The voltage drop across the battery.