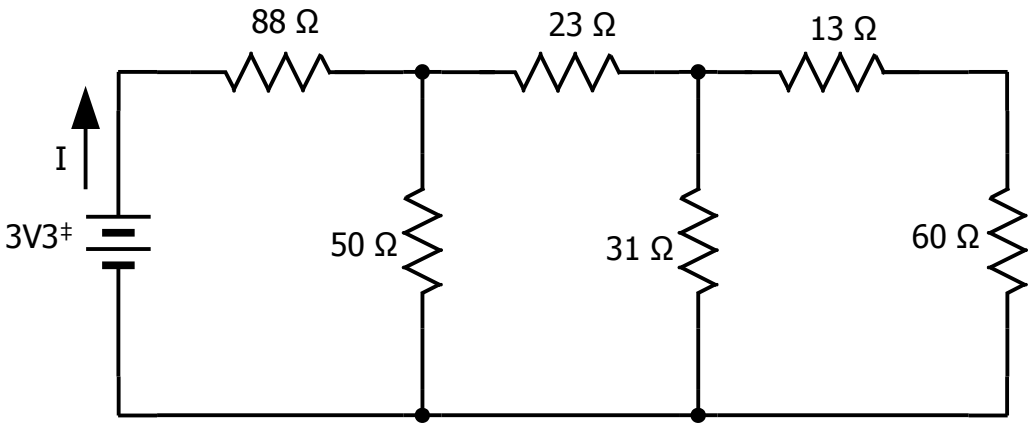
ECE3 Summer 2021
Practice Problems 1

1. Using your knowledge of series and parallel equivalents that you learned on p. 23 of the Week 1 lab, determine the current I.

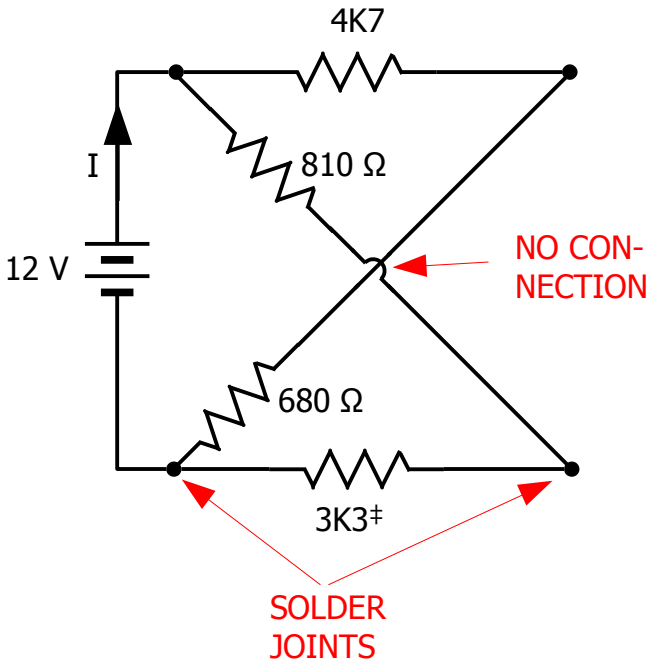


$I = 0.0296\ \text{A} = 29.6\ \text{mA}$

‡ 3V3 is shorthand for 3.3 V. You will see this often on schematics.

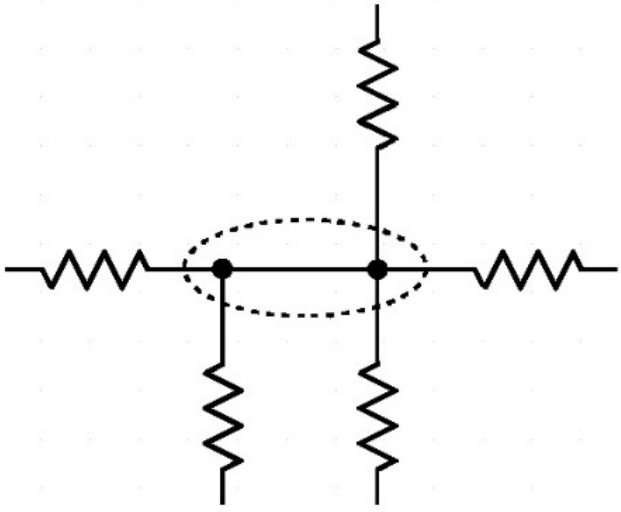
ECE3 Summer 2021
Practice Problems 1

2. Using your knowledge of series and parallel equivalents, determine the value of I.



$I = 0.00515\ \text{A} = 5.15\ \text{mA}$

3. This question may require a little digging on your part.



The circuit fragment inside the dotted ellipse is:

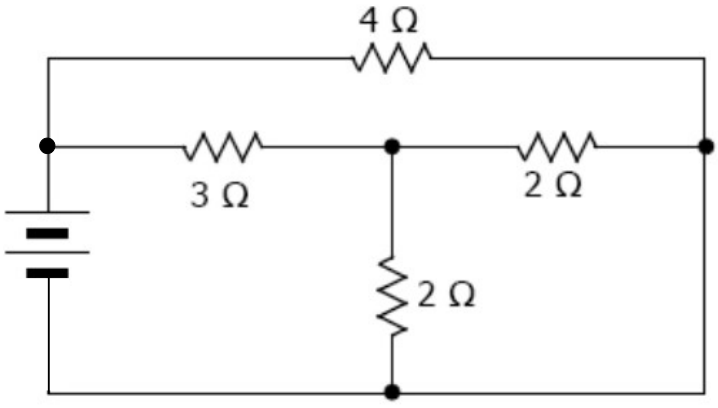
Choose one answer.

- a. not a node
- b. 1 node
- c. 2 nodes

‡ 3K3 is shorthand for 3.3KΩ. You will see this often on schematics.

ECE3 Summer 2021
Practice Problems 1

4.



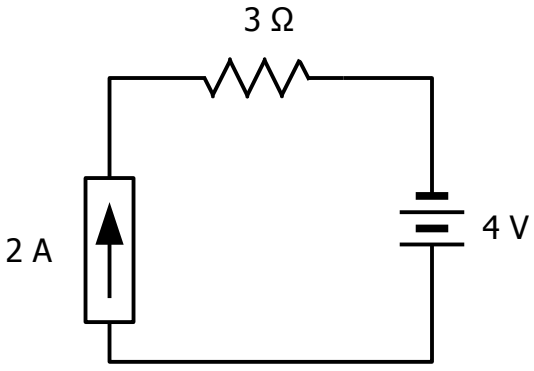
This circuit can be reduced to a voltage source and one resistor. What is the value of that one final resistor?

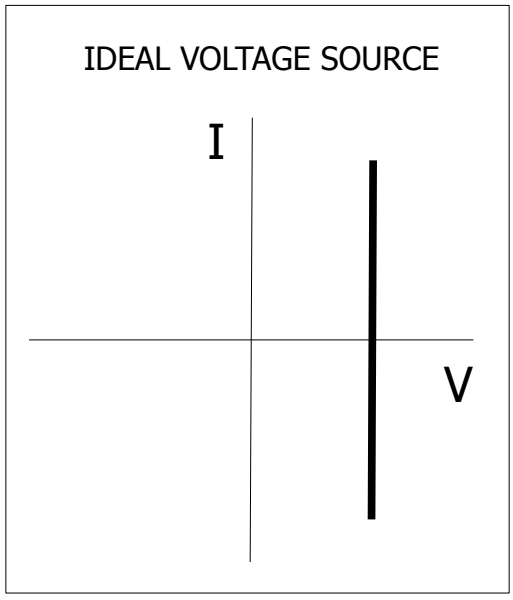
Challenge: try to do this one in your head: no paper/pencil, no calculator/computer. If you understand series and parallel, you can do it.

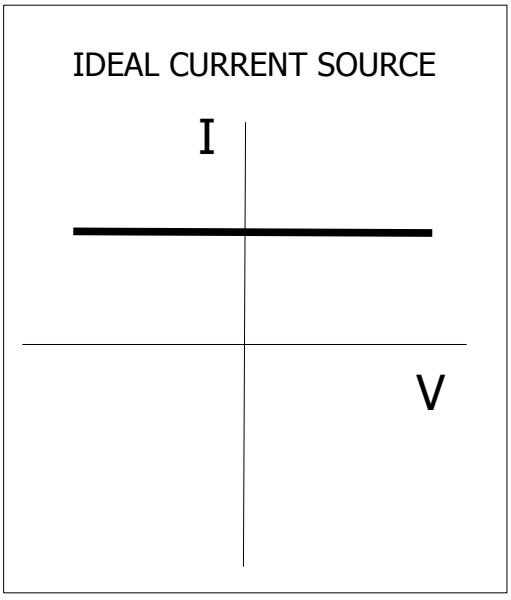
2 Ω

ECE3 Summer 2021
Practice Problems 1

5. Study the Khan Academy post on Passive Sign Convention. Then, using your knowledge of the I-V curves for voltage and current sources as explained in the YouTube videos, plus your knowledge of the Passive Sign Convention, determine if the 4 V battery is providing or absorbing power.

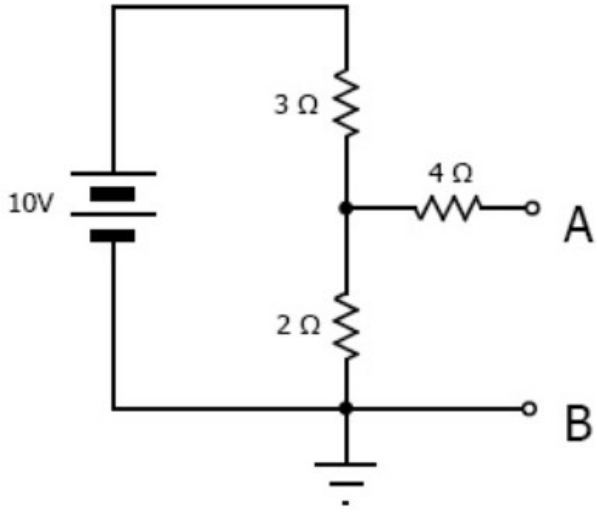






ECE3 Summer 2021
Practice Problems 1

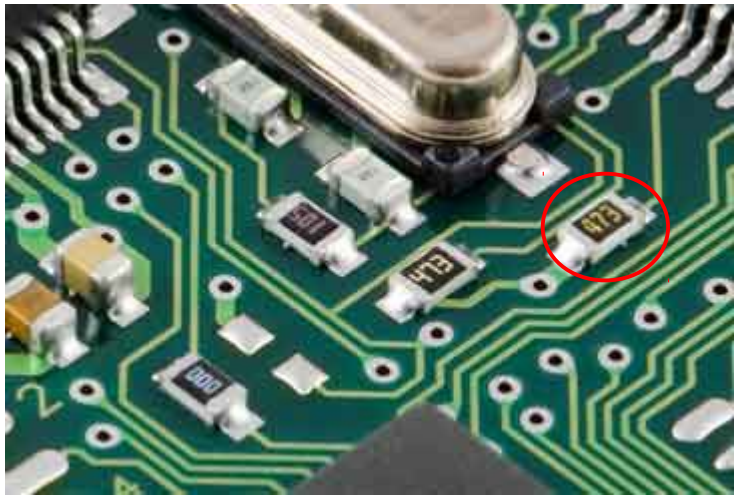
6. What is the voltage across the 4 Ω resistor? NOTE: you may consider this to be a trick question, but it has real meaning.



Choose one answer.

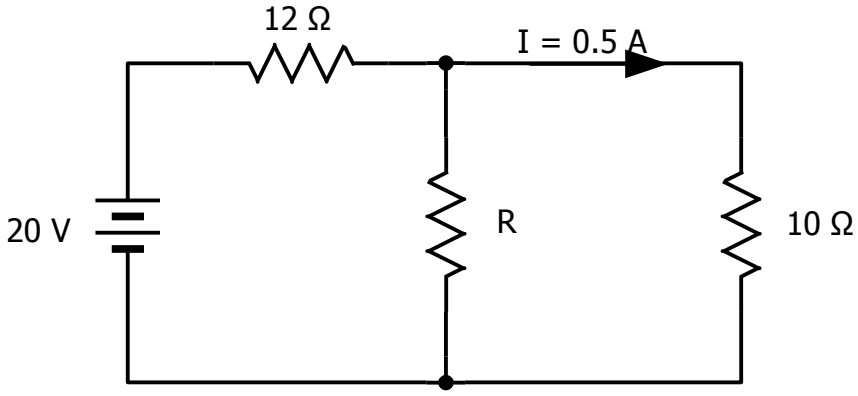
- a. 2.67 V
- b. 0.00 V
- c. 5.71 V
- d. 10.00 V
- e. 4.00 V

7. This is the picture of a surface mount resistor (labeled 473) on a PC board. Assuming that the three numbers correspond to the first three colors of a regular resistor, what is the resistance of this surface mount resistor?



ECE3 Summer 2021
Practice Problems 1

8. Using your knowledge of series and parallel equivalents plus the Voltage Divider equation, determine the value of R.



$R = 6.67\ \Omega$