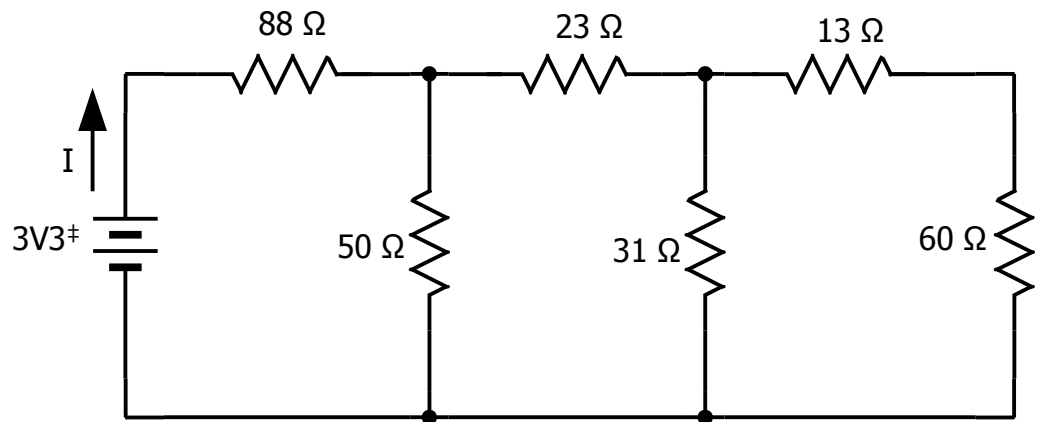


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## Practice Problems 2

1. This is the problem from Practice Problems 1. Using Node Voltage Analysis, determine the current  $I$ .



$$V_1 = 0.70 \text{ V}$$
$$V_2 = 0.34 \text{ V}$$

$\ddagger$  3V3 is shorthand for 3.3 V. You will see this often on schematics.

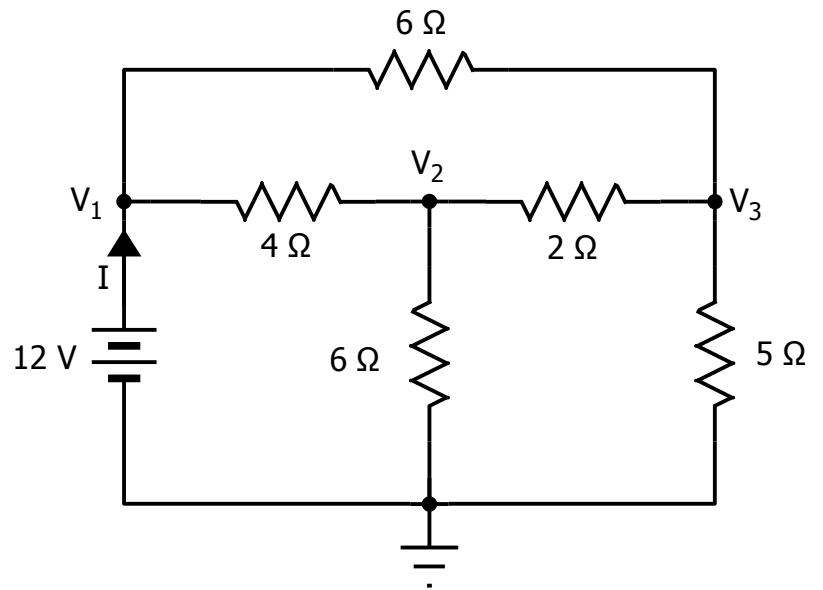
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## Practice Problems 2

2. This is the problem from Lecture 2.

Using Node Voltage Analysis,  $V_1$ ,  $V_2$ , and  $V_3$ .

Then find the current through the battery.



$$V_2 = 6.61 \text{ V}$$

$$V_3 = 6.12 \text{ V}$$

$$I = 2.33 \text{ A}$$

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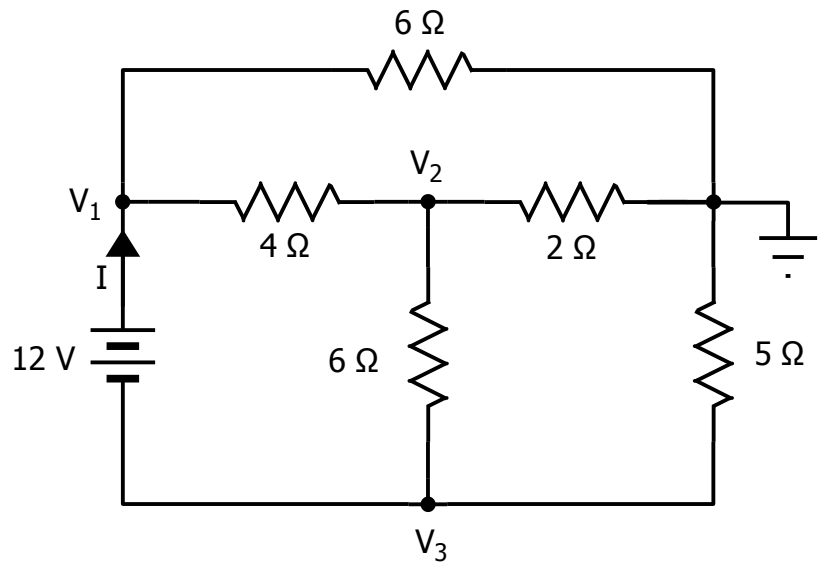
## Practice Problems 2

3. This is the same circuit as Problem 2. The reference node has moved.

Using Node Voltage Analysis, find  $V_1$ ,  $V_2$ , and  $V_3$ .

Then find the current through the battery.

(Note: with the ground at a different node, you now have 3 unknown nodes. But you also know the voltage relationship between 2 of them.)

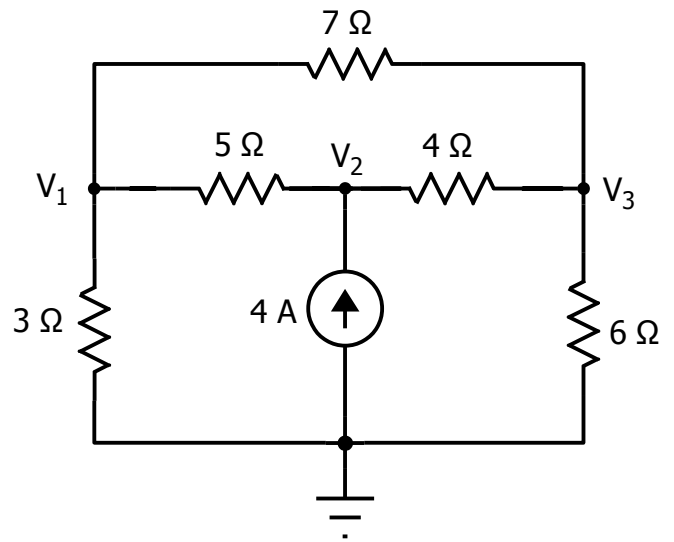


$$\begin{aligned}V_1 &= 5.88\text{ V} \\V_2 &= 0.49\text{ V} \\V_3 &= -6.12\text{ V} \\I &= 2.33\text{ A}\end{aligned}$$

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## Practice Problems 2

4. Find the three voltages. You may need to dig a little to work this problem.



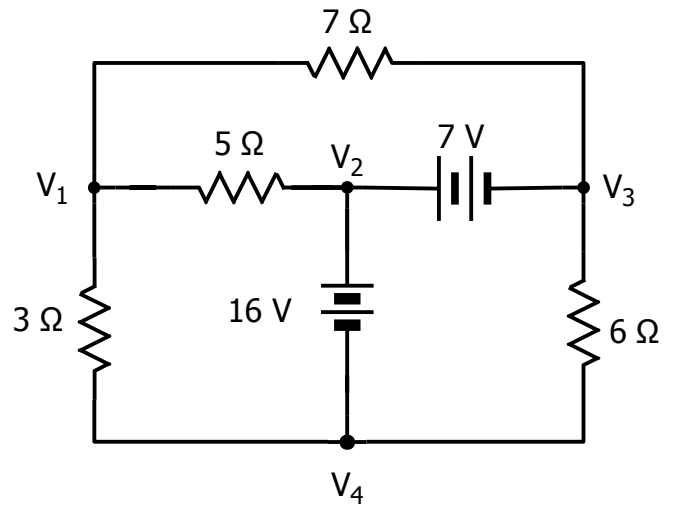
$$\begin{aligned}V_1 &= 7.2 \text{ V} \\V_2 &= 17.4 \text{ V} \\V_3 &= 9.6 \text{ V}\end{aligned}$$

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## Practice Problems 2

5. Choose (judiciously) a reference node. Then find the current through the 7 V battery.

You may need to dig a little to work this problem. Note: if you choose to solve this problem using Mesh Current Analysis, you are on your own.



CHOOSING  $V_4$  TO BE THE REFERENCE NODE,  
 $I_7 = -1.84$  A (left to right, into the node)

CHOOSING  $V_2$  TO BE THE REFERENCE NODE,  
 $I_7 = -1.84$  A (left to right, into the node)

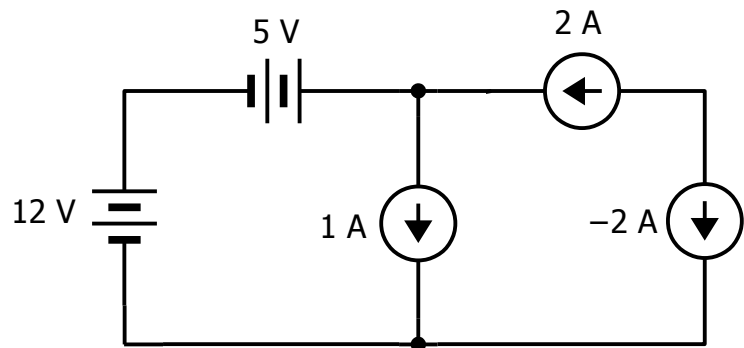
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## Practice Problems 2

These problems will exercise your knowledge of KVL and KCL. Be sure to watch the video. "Legal" means that KCL and KVL are satisfied.

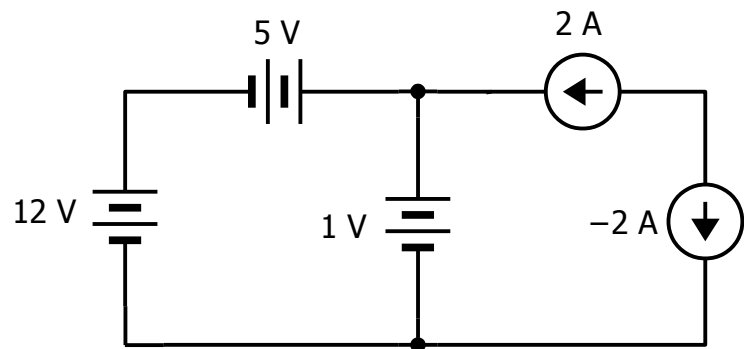
4. Is this a "legal" circuit? If not, why not?

Circuit is legal.



5. Is this a "legal" circuit? If not, why not?

Circuit is illegal.



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## Practice Problems 2