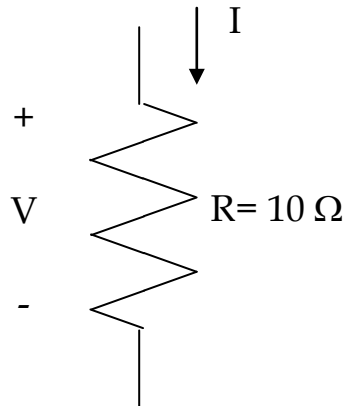


SHOW YOUR WORK: Correct answer with no work shown may not receive credit.  
Wrong answer with work shown may receive partial credit.

**1. (5 points)**

If  $V = +20$  volts, what is the current  $I$  ?

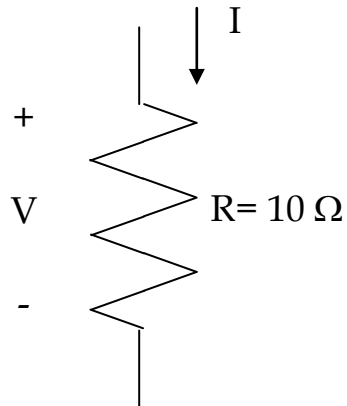
- 2 amps
- 10 amps
- 2 amps
- 10 amps



**2. (5 points)**

If  $I = -5$  amps, what is the voltage  $V$  ?

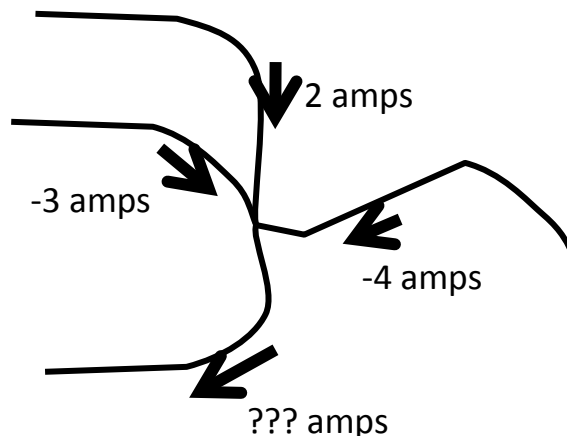
- 50 volts
- 10 volts
- 50 volts
- 10 volts



**3. (5 points)**

What is the unknown current in the connection shown?

- 5 amps
- 7 amps
- 5 amps
- 7 amps

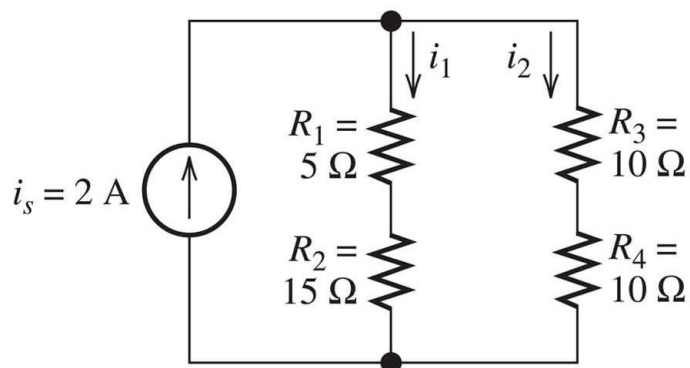


4. (10 points) SHOW YOUR WORK

What are the currents  $i_1$  and  $i_2$ ?

$i_1 =$  \_\_\_\_\_

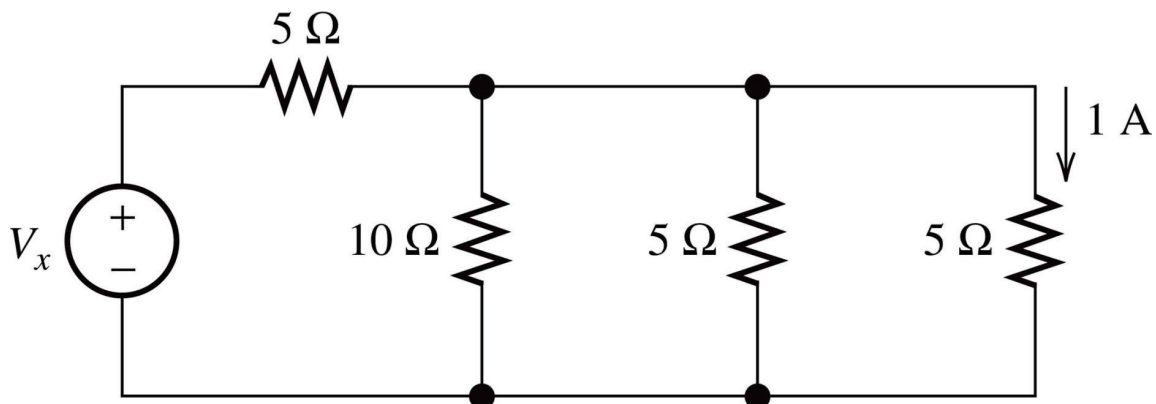
$i_2 =$  \_\_\_\_\_



5. (10 points) SHOW YOUR WORK

What is the voltage  $V_x$ ?

$V_x =$  \_\_\_\_\_

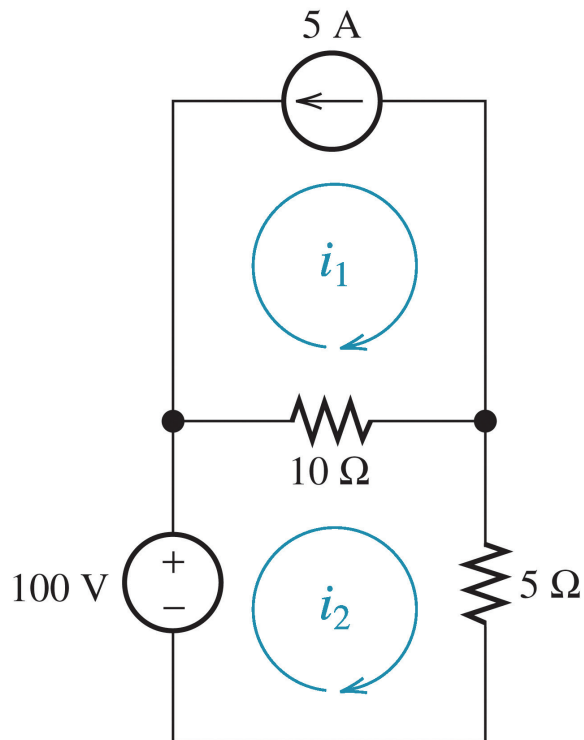


**6. (20 points) SHOW YOUR WORK**

For the circuit shown below, determine the two indicated mesh currents  $i_1$  and  $i_2$ .

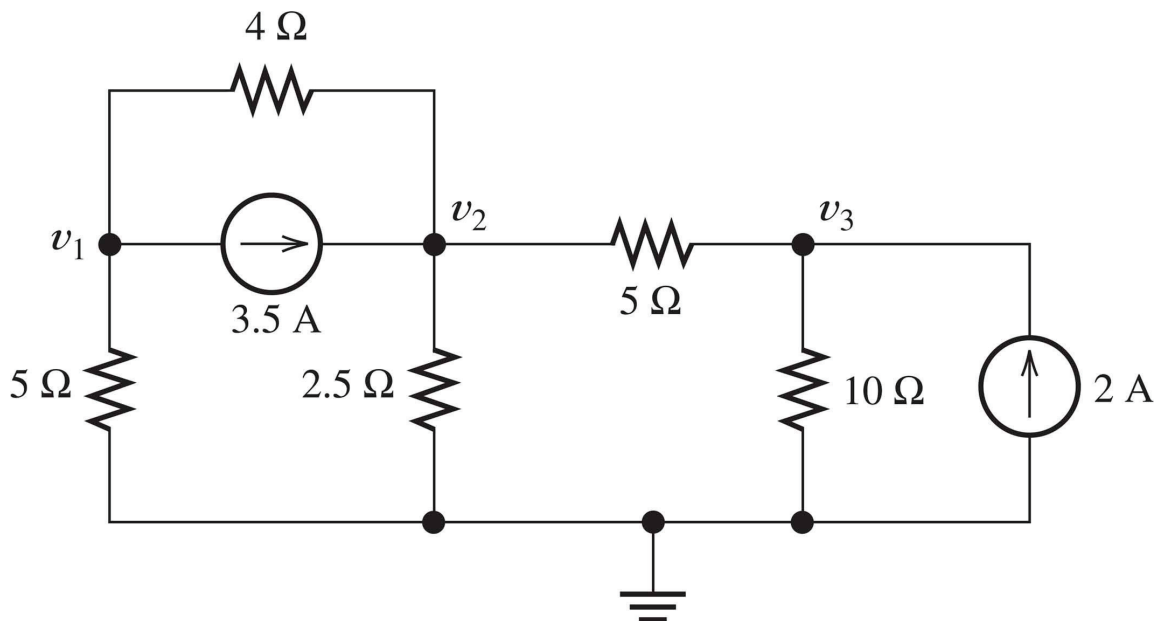
$$i_1 = \underline{\hspace{2cm}}$$

$$i_2 = \underline{\hspace{2cm}}$$



## 7. (25 points)

For the circuit shown below, complete the table for the three node voltage coefficients based on applying KCL at each node and collecting terms. YOU DO NOT NEED TO SOLVE THE EQUATIONS.



At node 1:

$$\underline{\hspace{1cm}} \cdot V_1 + \underline{\hspace{1cm}} \cdot V_2 + \underline{\hspace{1cm}} \cdot V_3 = \underline{\hspace{1cm}}$$

At node 2:

$$\underline{\hspace{1cm}} \cdot V_1 + \underline{\hspace{1cm}} \cdot V_2 + \underline{\hspace{1cm}} \cdot V_3 = \underline{\hspace{1cm}}$$

At node 3:

$$\underline{\hspace{1cm}} \cdot V_1 + \underline{\hspace{1cm}} \cdot V_2 + \underline{\hspace{1cm}} \cdot V_3 = \underline{\hspace{1cm}}$$