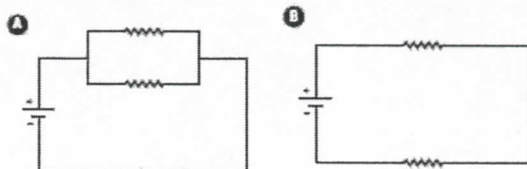
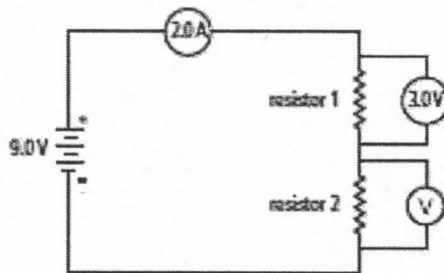


## Electrical Circuit Series and Parallel Review Questions

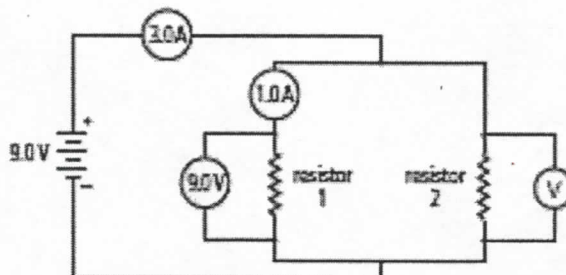
1. How is a parallel circuit different from a series circuit?
2. In a series circuit, how does the voltage supplied by the battery compare to the voltages on each load?
3. What happens to the total resistance of a series circuit when another resistor is added?
4. What happens to the total resistance of a parallel circuit when another resistor is added?
5. Two resistors are connected in parallel to a battery. What must be the voltage across these two resistors?
6. Is the current in one branch of a parallel circuit more than, less than, or equal to the total current entering the junction point of the circuit?
7. A 6.0V battery is connected to three resistors connected in series. What is the total voltage lost on the three resistors?
8. A battery and two light bulbs are all connected in series.
  - (a) What happens to the second light bulb if the first one "burns out"?
  - (b) Would the result be the same if the bulbs were connected in parallel? Explain.
9. For each circuit below, state if the resistors are connected in series or parallel. Give a reason for your answer.



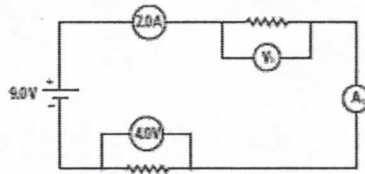
10. For the following circuit, find:
  - (a) the current through resistor 2
  - (b) the voltage across resistor 2



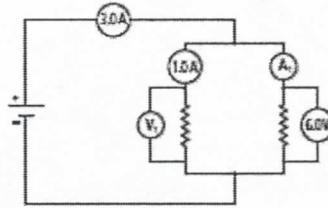
11. For the following circuit, find:
  - (a) the current through resistor 2
  - (b) the voltage across resistor 2



12. In the circuit below, what would be the readings on the voltmeter  $V_1$ , and the ammeter  $A_1$ ?



13. In the circuit below, what would be the reading on the voltmeter  $V_1$ , and the ammeter  $A_1$ ?

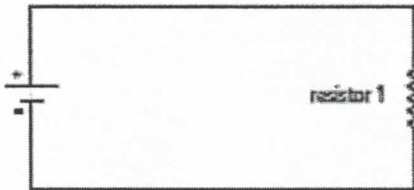


14. A battery is connected to a resistor and the current leaving the battery is measured. What would happen to the current leaving the same battery if another resistor was:

- Connected in series with the 1<sup>st</sup> resistor.
- Connected in parallel with the 1<sup>st</sup> resistor.

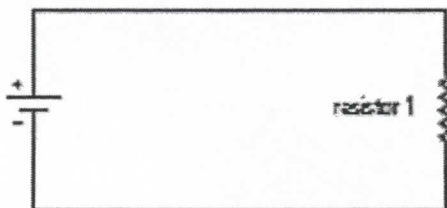
15. You are given the following circuit. A second resistor is now added in series with resistor 1.

- Draw the new circuit diagram.
- Comparing your new circuit to the original, describe the changes in:
  - total resistance
  - current leaving the cell
  - voltage across resistor 1



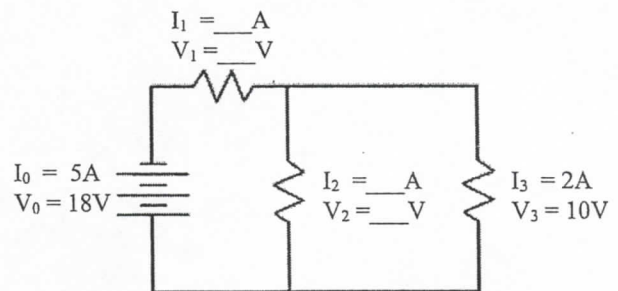
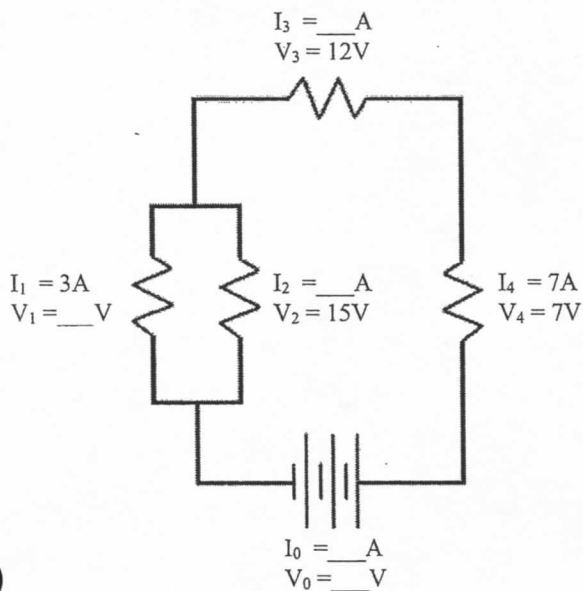
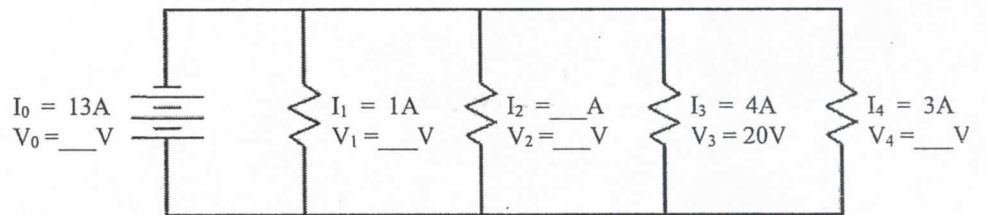
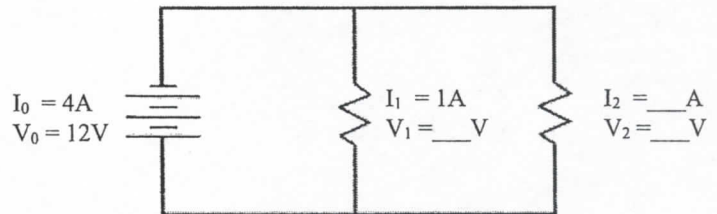
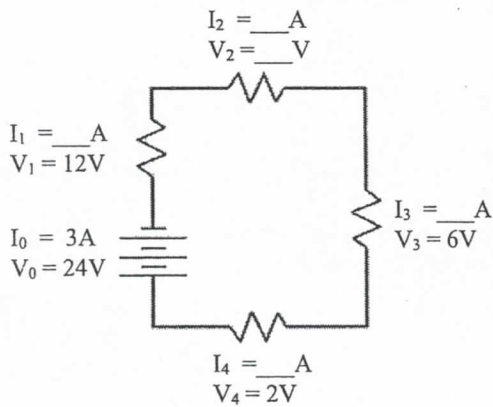
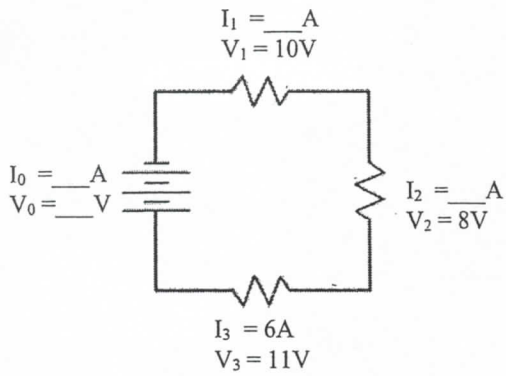
16. You are given the following circuit. A second resistor is now added in parallel with resistor 1.

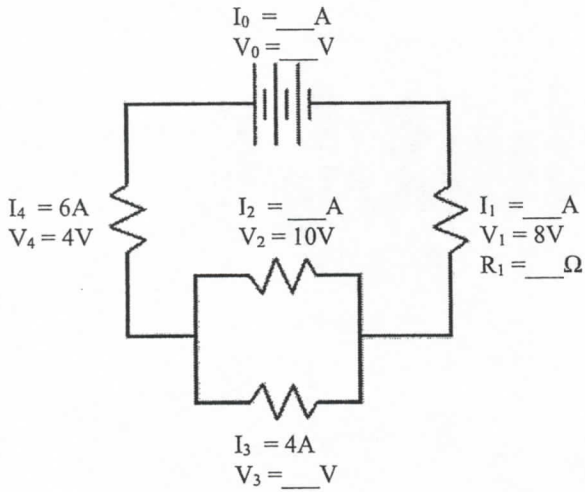
- Draw the new circuit diagram.
- Comparing your new circuit to the original, describe the changes in:
  - total resistance
  - current leaving the cell
  - voltage across resistor 1



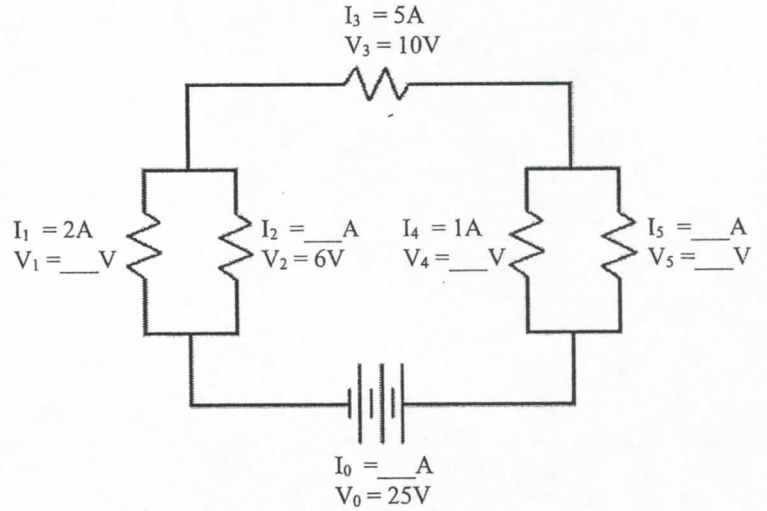
# Circuit Challenge

Name: \_\_\_\_\_

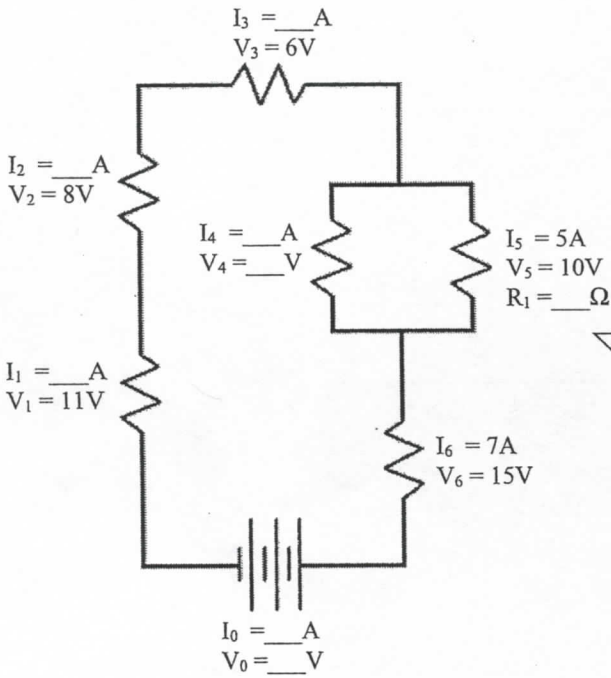




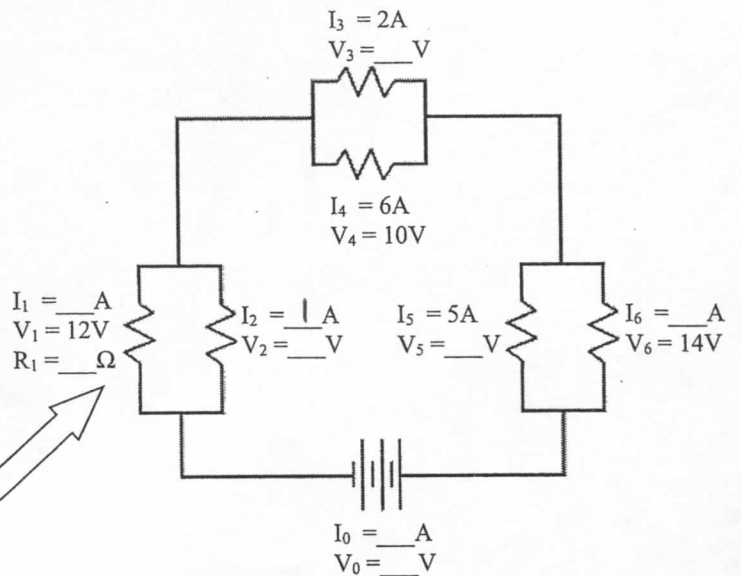
Calculate the resistance of this resistor.



Calculate the resistance of this resistor.



Calculate the resistance of this resistor.



## Electrical Circuit Series and Parallel Review Questions

1. How is a parallel circuit different from a series circuit?

*A parallel circuit has multiple pathways for e-, while series circuit only has one!*

2. In a series circuit, how does the voltage supplied by the battery compare to the voltages on each load?

*The voltages across each load add up to the total voltage supplied by the battery.*

3. What happens to the total resistance of a series circuit when another resistor is added?

*The total resistance of the circuit will increase.*

4. What happens to the total resistance of a parallel circuit when another resistor is added?

*The total resistance of the circuit will decrease.*

5. Two resistors are connected in parallel to a battery. What must be the voltage across these two resistors?

*The voltage across the two resistors will be equal.*

6. Is the current in one branch of a parallel circuit more than, less than, or equal to the total current entering the junction point of the circuit?

*the current in one branch of a parallel circuit will be less than the total.*

7. A 6.0V battery is connected to three resistors connected in series. What is the total voltage lost on the three resistors?

*The total voltage lost will be 6V.*

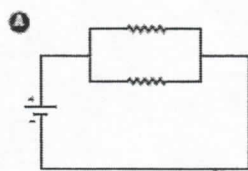
8. A battery and two light bulbs are all connected in series.

(a) What happens to the second light bulb if the first one "burns out"? *the second bulb won't light*

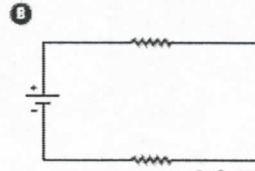
(b) Would the result be the same if the bulbs were connected in parallel? Explain.

*No, the second bulb would light because it's on a different path.*

9. For each circuit below, state if the resistors are connected in series or parallel. Give a reason for your answer.



*parallel  
2 paths*

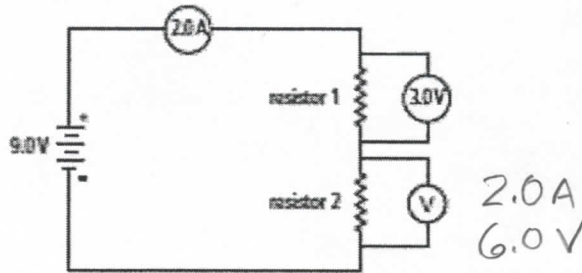


*series - 1 path*

10. For the following circuit, find:

(a) the current through resistor 2

(b) the voltage across resistor 2

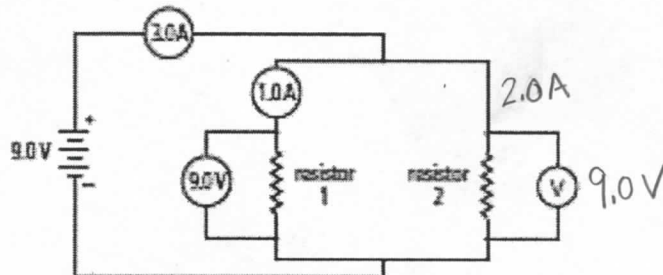


*2.0A  
6.0V*

11. For the following circuit, find:

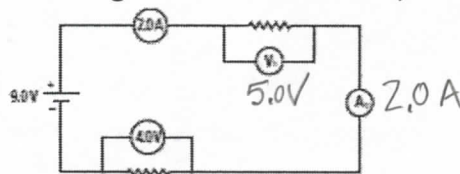
(a) the current through resistor 2

(b) the voltage across resistor 2

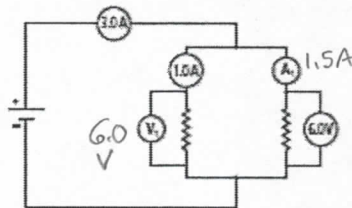


*2.0A  
9.0V*

12. In the circuit below, what would be the readings on the voltmeter  $V_1$ , and the ammeter  $A_1$ ?



13. In the circuit below, what would be the reading on the voltmeter  $V_1$ , and the ammeter  $A_1$ ?

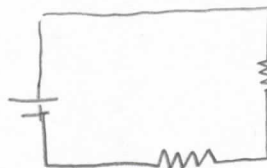
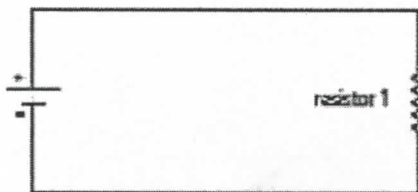


14. A battery is connected to a resistor and the current leaving the battery is measured. What would happen to the current leaving the same battery if another resistor was:

- (a) Connected in series with the 1<sup>st</sup> resistor. - the current would decrease.  
 (b) Connected in parallel with the 1<sup>st</sup> resistor. - the current would increase.

15. You are given the following circuit. A second resistor is now added in series with resistor 1.

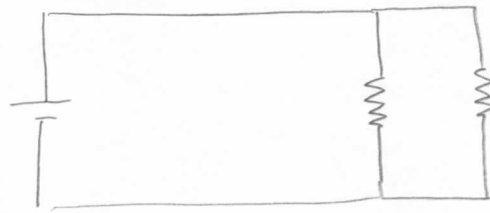
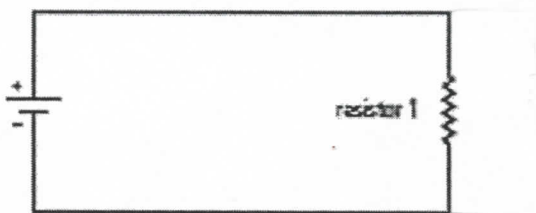
- (a) Draw the new circuit diagram.  
 (b) Comparing your new circuit to the original, describe the changes in:  
 (i) total resistance  
 (ii) current leaving the cell  
 (iii) voltage across resistor 1



- total resistance ↑
- current leaving cell ↓
- voltage across resistor 1 drops ↓

16. You are given the following circuit. A second resistor is now added in parallel with resistor 1.

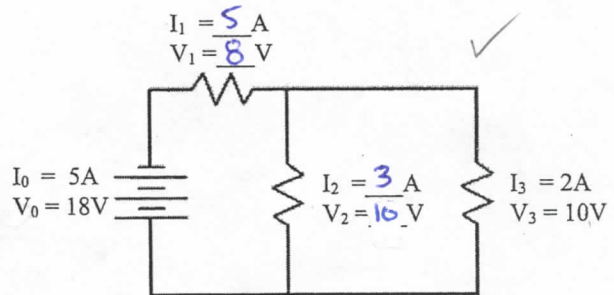
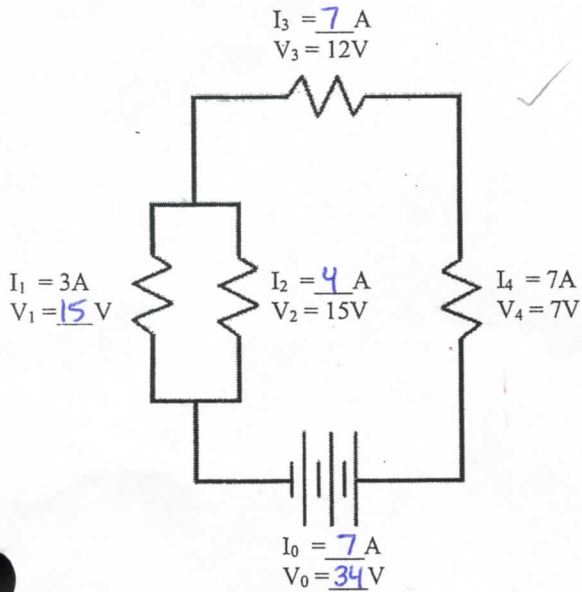
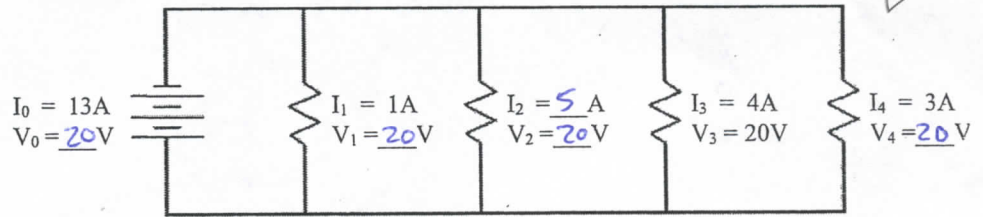
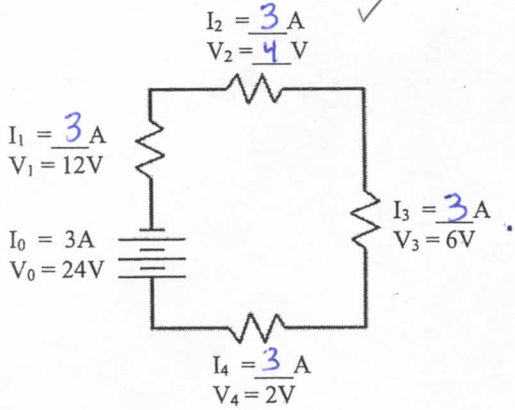
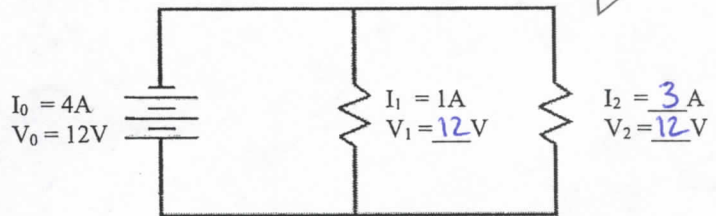
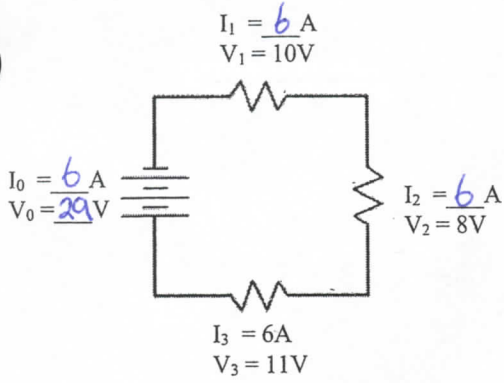
- (a) Draw the new circuit diagram.  
 (b) Comparing your new circuit to the original, describe the changes in:  
 (i) total resistance  
 (ii) current leaving the cell  
 (iii) voltage across resistor 1

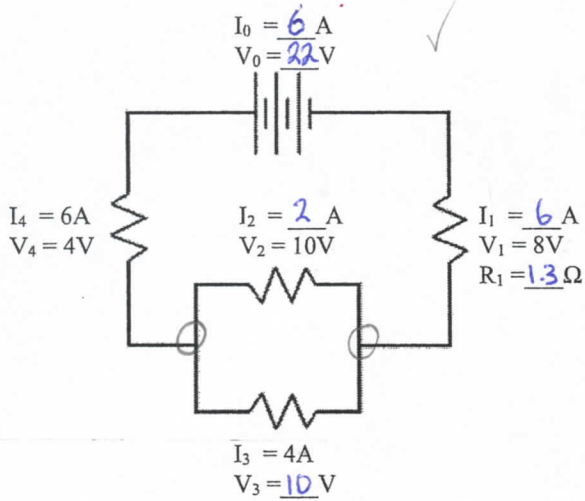


- total resistance will decrease
- current leaving cell will ↑
- voltage across the resistor 1 will stay the same

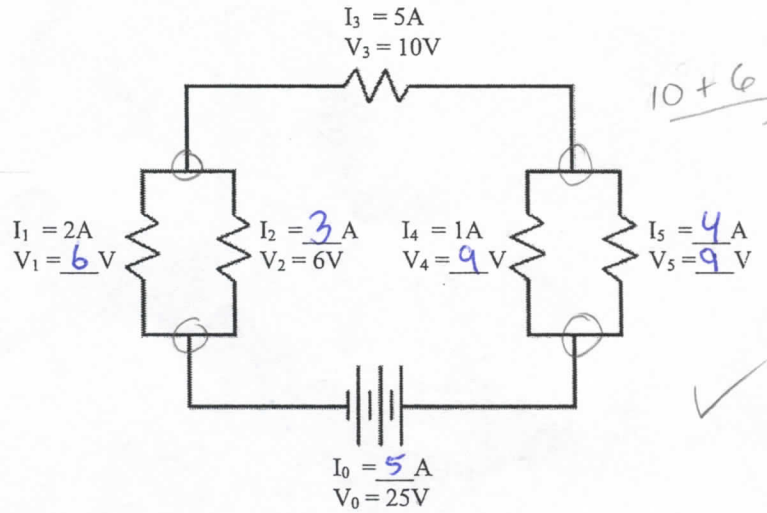
# Circuit Challenge

Name: \_\_\_\_\_

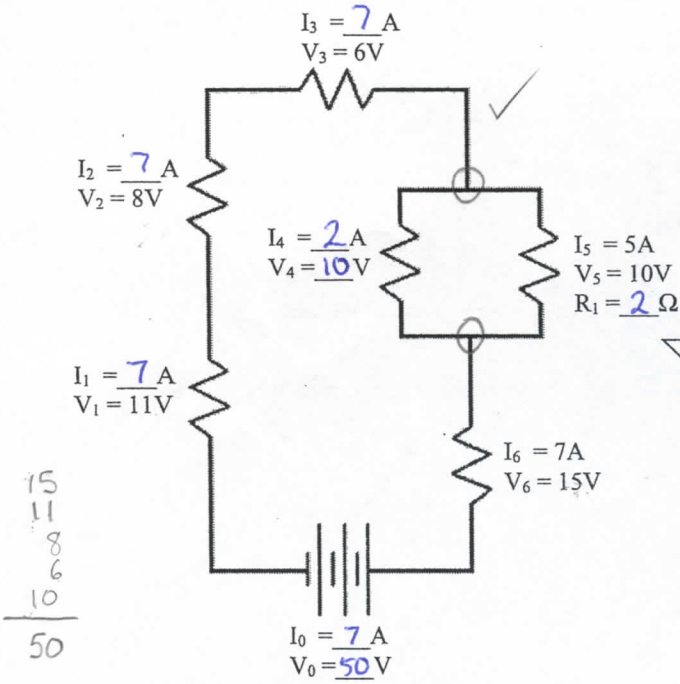




Calculate the resistance of this resistor.



Calculate the resistance of this resistor.



Calculate the resistance of this resistor.

