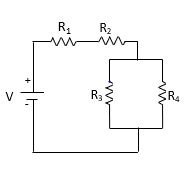
**Section 5 Questions**

1. How do electrons flow in a series circuit?
   1. Electrons flow in sequence through the resistors
   2. Electrons divide to pass through each resistor
   3. Electrons both divide and flow in sequence through resistors
   4. Electrons neither divide nor flow in sequence through resistors
   5. Electrons do not flow in a series circuit
   6. Electrons flow in a large group
2. How do electrons flow in a parallel circuit?
   1. Electrons flow in sequence through the resistors
   2. Electrons divide to pass through each resistor
   3. Electrons both divide and flow in sequence through resistors
   4. Electrons neither divide nor flow in sequence through resistors
   5. Electrons do not flow in a series circuit
   6. Electrons flow in a large group
3. Is it possible to have both a series and parallel circuit?
   1. Yes
   2. No
4. When analyzing circuits, resistors are combined into a single value known as the\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Total resistance
   2. Complete resistance
   3. Resistance
   4. Equivalent resistance
   5. Big resistance
   6. Torque
5. If five resistors are in series, how is the equivalent resistance calculated?
   1. By adding the inverse of the resistance
   2. By adding all five resistors together
   3. By adding a fraction of each resistor
   4. By multiplying all five resistors together
   5. By multiplying each resistor by the current and then dividing them by the voltage
   6. None of the above
6. What is the equivalent resistance of the circuit below?

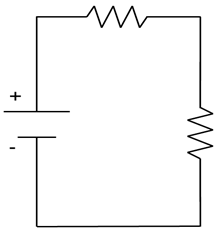


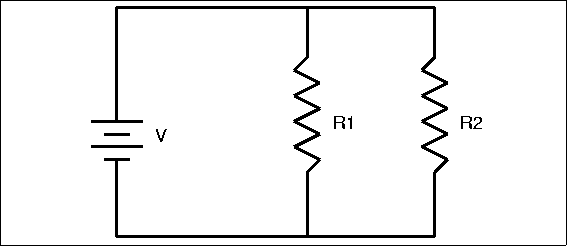
1. 890Ω
2. 740Ω
3. 710Ω
4. 690Ω
5. 50Ω
6. 38Ω

R1&2= 1/(1/100Ω+1/100Ω) = 50Ω

Req= 470Ω+220Ω+ R1&2

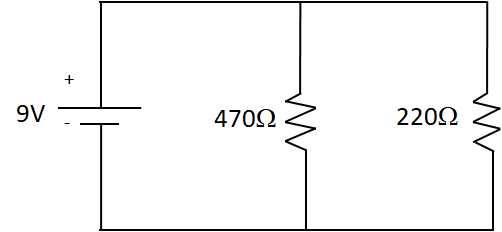
Req=470Ω+220Ω+50Ω= 740

1. What is the value of a yellow, violet, brown resistor?
   1. 470Ω
   2. 220Ω
   3. 560Ω
   4. 1000Ω
   5. 700Ω
   6. 630Ω
2. What is the value of a red, red, brown resistor?
   1. 470Ω
   2. 220Ω
   3. 560Ω
   4. 1000Ω
   5. 700Ω
   6. 630Ω
3. Is the circuit below in series, parallel, neither, or both?
   1. Series
   2. Parallel
   3. Neither
   4. Both
4. What should the dial be set to on a multimeter when measuring voltage around a loop?
   1. ACmA
   2. Ω
   3. ACV
   4. DCV
   5. DCmA
   6. DC10A
5. A power source is a voltage\_\_\_\_\_\_\_\_\_\_.
   1. Low
   2. High
   3. Drop
   4. Rise
   5. Balance
   6. Imbalance
6. A resistor is a voltage\_\_\_\_\_\_\_\_\_\_\_.
   1. Low
   2. High
   3. Drop
   4. Rise
   5. Balance
   6. Imbalance
7. Voltage rises must \_\_\_\_\_\_\_\_\_\_\_ voltage drops.
   1. Resist
   2. Occupy
   3. Lower
   4. Raise
   5. Balance
   6. Subtract
8. Is the circuit below in series, parallel, neither, or both.



* 1. Series
  2. Parallel
  3. Neither
  4. Both

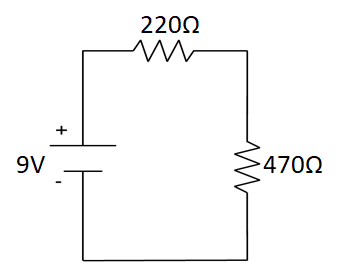
1. In a parallel circuit the voltage rises \_\_\_\_\_\_\_\_the voltage drops\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Balance, in each resistor
   2. Balance, in each loop
   3. Balance, in the wire
   4. Imbalance, in each resistor
   5. Imbalance, in each loop
   6. Imbalance, in the wire
2. According to Kirchhoff's Voltage Law the algebraic \_\_\_\_\_\_ of voltages around any \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ in a circuit is \_\_\_\_\_\_\_.
   1. Product, open loop, one
   2. Sum, open loop, zero
   3. Difference, open loop, one
   4. Product, closed loop, zero
   5. Sum, closed loop, zero
   6. Difference, closed loop, zero
3. In the following circuit, what is the voltage drop across the 220Ω resistor?



* 1. 2.87V
  2. 3.00V
  3. 4.23V
  4. 5.12V
  5. 9.00V
  6. 13.21V

In parallel voltage drop is the same through each loop.

1. In the following circuit, what is the voltage drop across the 470Ω resistor.



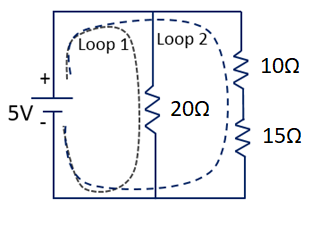
* 1. 2.87V
  2. 3.00V
  3. 4.21V
  4. 6.13V
  5. 9.00V
  6. 13.21V

Req= 470+220=690Ω

Use Ohm's law to find the current I=V/R

I= 9V/690Ω= 0.01304A

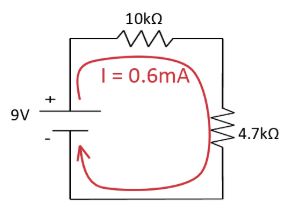
Using V=IR==Vdrop470=0.01304A\*470Ω= 6.13V

1. What is the equivalent resistance of the circuit below?
   1. 5.03Ω
   2. 10.43Ω
   3. 11.11Ω
   4. 20Ω
   5. 25Ω
   6. 45Ω

Add resistors in loop 2 together so R=25Ω

Req= 1/(1/20+1/25)= 100/9Ω= 11.11Ω

1. When measuring current, the multimeter becomes part of the circuit.
   1. True
   2. False
2. The multimeter becomes part of the circuit when measuring:
   1. Voltage
   2. Power
   3. Current
   4. Equivalent resistance
   5. All of the above
   6. None of the above
3. When measuring current, the values on the multimeter are given in:
   1. V
   2. Ω
   3. W
   4. J
   5. Hz
   6. mA
4. Current leaves the power source at a value and stays the same through each component in the loop.
   1. True
   2. False
5. Current leaves the power source at a value and changes through each component in the loop.
   1. True
   2. False
6. Current follows the path of **least** resistance.
   1. True
   2. False
7. Current follows the path of **most** resistance.
   1. True
   2. False
8. The current entering a node equals the sum of current leaving the node.
   1. True
   2. False
9. The current entering a node is twice as much as the current leaving the node.
   1. True
   2. False
10. Does the following circuit contain a node?



1. Yes
2. No

11. Electrical current behaves like:

1. Hail
2. Water in a river
3. A car engine
4. A whirlpool
5. An ant colony
6. The solar system
7. If the component(s) enters and leaves through the same node, no current passes through it and you can treat that portion like it isn’t there.
8. True
9. False

For questions 13-21 use the image below.



1. What setting, on a multimeter, do you measure DC volts?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
2. What setting, on a multimeter, do you use to measure AC volts?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
3. What setting, on a multimeter, do you use to measure resistance?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
4. What setting, on a multimeter, do you use to test diodes?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
5. What setting, on a multimeter, do you use to test continuity between two points?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
6. What setting, on a multimeter, do you use to test small batteries?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
7. What setting, on a multimeter, do you use to measure DC current in mA (0-200mA)?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
8. What setting, on a multimeter, do you use to measure DC current in MA (0-10A)?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
9. What setting, on a multimeter, do you use to measure AC current in mA 0-200mA)?
   1. A
   2. B
   3. C
   4. D
   5. E
   6. F
   7. G
   8. H
   9. I
10. Where do you plug your red lead in the multimeter, when you’re measuring current larger than 200mA?

Left side labeled DC10

1. Where do you plug your red lead in the multimeter, when you’re measuring DC10?

Left side labeled DC10

1. Where do you plug your black lead in the multimeter?

COM/ground (middle)

1. Where do you plug your red lead in the multimeter, when you’re measuring anything (except DC10)?

Right side

1. What are the two most common ways to blow a fuse on a multimeter?
   1. Measuring the current in parallel.
   2. Measuring the current in series.
   3. When your measuring a current greater than 200mA and your red lead isn’t plugged into the DC10 port.
   4. When you're measuring a current lower than 200mA and your red lead isn’t plugged into the DC10 port
   5. Measuring the voltage in parallel.
   6. Measuring the voltage in series.
2. What is the difference between pinchers and probes for a multimeter?

Probes must be held with hands and you must touch the end of the probe on the wire/metal being measured.

Pinchers are hands free and the pinchers clip on to the wire/metal being measured.

1. Match the settings, on the multimeter, with what they do?

Tests small batteries \_\_A\_\_

Measures AC Current in mA (0-200mA) \_\_E\_\_

Measures Resistance \_\_D\_\_  
 Measure DC Volts \_\_B\_\_

Tests Diodes \_\_F\_\_  
 Measures DC10A Current in MA (0-10A) \_\_I\_\_

Measures AC Volts \_\_C\_\_

Tests Continuity Between Two Points \_\_G\_\_

Measures DC Current in mA(0-200mA) \_\_H\_\_

