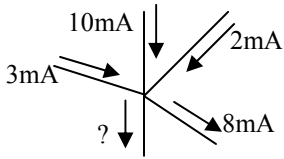


Name: \_\_\_\_\_

Period: \_\_\_\_\_

### PreAP Electricity In Class Review

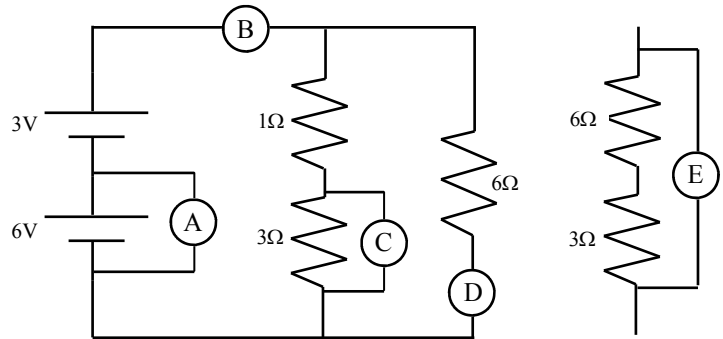
- Decide which of the wires has the most resistance.
  - A wire at 5°C OR a wire at 15°C.
  - A thick 2m wire OR a thick 2cm wire.
  - A thick 2cm long wire OR a thin 2cm long wire?
  - A wire made of silver OR a wire made of copper?
- What do we call a substance with no resistance at very low temperatures?



- What is the unknown current coming out of the junction?

- Series or Parallel?
  - \_\_\_ Devices have the same voltage.
  - \_\_\_ Resistors connected this way takes less current from the battery.
  - \_\_\_ If connected this way the light bulb with the least resistance is brightest.
  - \_\_\_ Resistors connected this way will draw more current from the battery.
  - \_\_\_ Devices have the same current.
  - \_\_\_ If connected this way the light bulb with the greatest resistance is brightest.
  - \_\_\_ Occur after a junction.

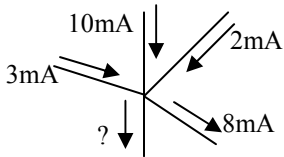
- Ammeter, voltmeter, or ohmmeter?
  - Meter A:
  - Meter B:
  - Meter C:
  - Meter D:
  - Meter E:
  - Is very fragile.
  - Is placed in series.
  - Is placed in parallel.
  - Will not work if a battery is connected.
- What does meter A read?
- What does meter B read?
- What does meter C read?
- What does meter D read?



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

### PreAP Electricity In Class Review

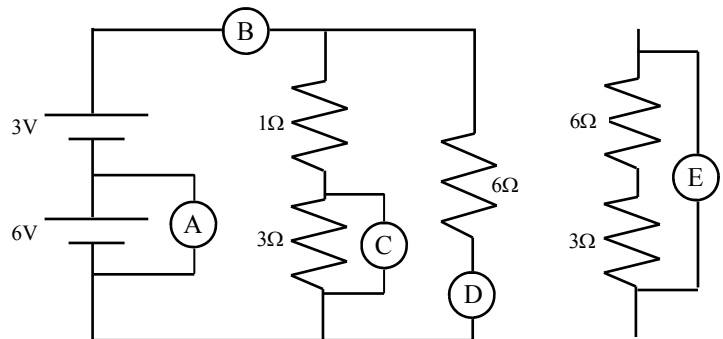
- Decide which of the wires has the most resistance.
  - A wire at 5°C OR a wire at 15°C.
  - A thick 2m wire OR a thick 2cm wire.
  - A thick 2cm long wire OR a thin 2cm long wire?
  - A wire made of silver OR a wire made of copper?
- What do we call a substance with no resistance at very low temperatures?

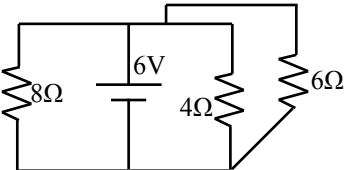
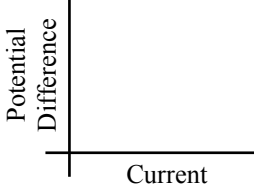


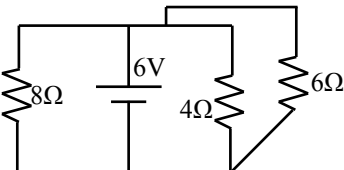
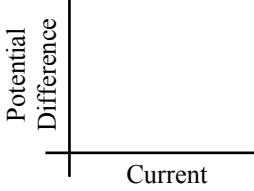
- What is the unknown current coming out of the junction?

- Series or Parallel?
  - \_\_\_ Devices have the same voltage.
  - \_\_\_ Resistors connected this way takes less current from the battery.
  - \_\_\_ If connected this way the light bulb with the least resistance is brightest.
  - \_\_\_ Resistors connected this way will draw more current from the battery.
  - \_\_\_ Devices have the same current.
  - \_\_\_ If connected this way the light bulb with the greatest resistance is brightest.
  - \_\_\_ Occur after a junction.

- Ammeter, voltmeter, or ohmmeter?
  - Meter A:
  - Meter B:
  - Meter C:
  - Meter D:
  - Meter E:
  - Is very fragile.
  - Is placed in series.
  - Is placed in parallel.
  - Will not work if a battery is connected.
- What does meter A read?
- What does meter B read?
- What does meter C read?
- What does meter D read?



<p>10. How much work is done by a 18 V battery to move 6 C of charge?</p>	<p>11. How long does it take a 100 W light bulb to use up 25 joules of electrical energy?</p>
<p>12. How much current flows thru a 6 kΩ resistor in 4 minutes if it is connected to a 9 V battery?</p>	<p>13. A circuit is protected by a 20 A fuse. What is the maximum charge that can move thru the fuse each second?</p>
<p>14. A 60 W light bulb is hooked up to a 120 V outlet.</p> <p>A. How big of a resistor is it?</p> <p>B. How much charge flows thru in 2 seconds?</p>	<p>15. A 100 Ω resistor has 0.5 A flowing thru it. How much energy does it dissipate each minute?</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>16. A. What is the equivalent resistance of the three resistors?</p> <p>B. What is the total power generated by the battery?</p> </div> </div>	<p>17. A. On the graph draw the function for a long wire that follows Ohm's Law.</p> <p>B. Draw a dotted line to show that same wire if it is made longer.</p> <div style="text-align: right;">  </div>
<p>18. Conductor vs. Insulator?</p> <p>A. ___ Has high resistance.</p> <p>B. ___ Has a lot of free electrons.</p> <p>C. ___ Allows current to flow easily.</p> <p>D. ___ Electrons cannot move easily.</p>	

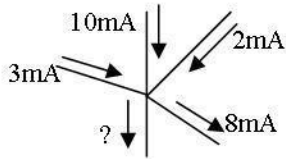
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Name: \_\_\_\_\_

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## PreAP Electricity In Class Review

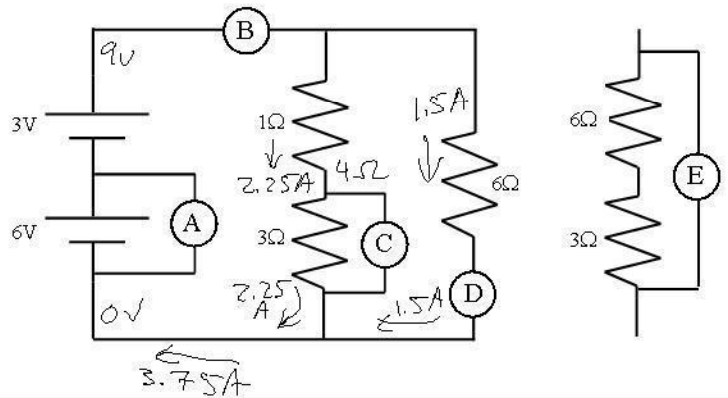
- Decide which of the wires has the most resistance.
  - A wire at  $5^{\circ}\text{C}$  OR a wire at  $15^{\circ}\text{C}$ .
  - A thick 2m wire OR a thick 2cm wire.
  - A thick 2cm long wire OR a thin 2cm long wire?
  - A wire made of silver OR a wire made of copper?
- What do we call a substance with no resistance at very low temperatures? *superconductor*



- What is the unknown current coming out of the junction?  
 $15 - 8 = 7\text{mA}$

- Series or Parallel?
  - P Devices have the same voltage.
  - S Resistors connected this way takes less current from the battery.
  - P If connected this way the light bulb with the least resistance is brightest.
  - P Resistors connected this way will draw more current from the battery.
  - S Devices have the same current.
  - S If connected this way the light bulb with the greatest resistance is brightest.
  - P Occur after a junction.

- Ammeter, voltmeter, or ohmmeter?
  - Meter A:  $\checkmark$
  - Meter B:  $\checkmark$
  - Meter C:  $\checkmark$
  - Meter D:  $\checkmark$
  - Meter E:  $\bigcirc$
  - Is very fragile.  $\checkmark$
  - Is placed in series.  $\checkmark$
  - Is placed in parallel.  $\checkmark$  (or Ohms)
  - Will not work if a battery is connected.  $\bigcirc$
- What does meter A read?  $6\text{V}$
- What does meter B read?  $3.75\text{A}$
- What does meter C read?  $3(2.25) = 6.75\text{V}$
- What does meter D read?  $1.5\text{A}$

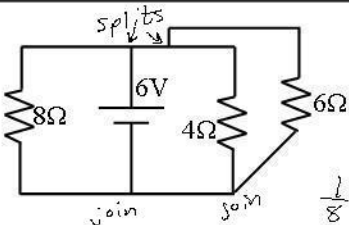


- How much work is done by a 18 V battery to move 6 C of charge?  
 $18\text{V} = \frac{18\text{J}}{1\text{C}} \left(\frac{6\text{C}}{1}\right) = 108\text{J}$
- How much current flows thru a 6 kΩ resistor in 4 minutes if it is connected to a 9 V battery?  
 $I = \frac{V}{R} = \frac{9}{6,000} = .0015\text{A}$  or  $15\text{mA}$   
*time does not matter*

- How long does it take a 100 W light bulb to use up 25 joules of electrical energy?  
 $P = \frac{W}{t} \Rightarrow t = \frac{W}{P} = \frac{25\text{J}}{100\text{W}} = 0.25\text{ sec}$   
 $S = \frac{J}{W}$
- A circuit is protected by a 20 A fuse. What is the maximum charge that can move thru the fuse each second?  
 $I = \frac{Q}{t} \Rightarrow Q = It = 20(1) = 20\text{ coul.}$   
*20A means 20C per sec.*

- A 60 W light bulb is hooked up to a 120 V outlet.
  - How big of a resistor is it?  
 $P = \frac{V^2}{R} \Rightarrow R = \frac{V^2}{P} = 240\ \Omega$
  - How much charge flows thru in 2 seconds?  
 $I = \frac{V}{R} = \frac{120}{240} = .5\text{A}$      $I = \frac{Q}{t}$  so  $Q = I(t) = 1\text{ coul.}$

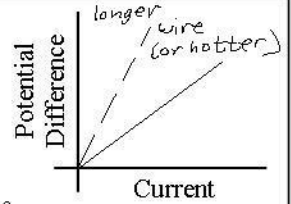
- A 100 Ω resistor has 0.5 A flowing thru it. How much energy does it dissipate each minute?  
*joules comes from watts*  
 $P = I^2R = .5^2(100) = 25\text{W}$   
 $25\frac{\text{J}}{\text{s}} \left(\frac{60\text{sec}}{1}\right) = 1500\text{ joules}$



- What is the equivalent resistance of the three resistors?  
*in parallel, so:*  
 $\frac{1}{8} + \frac{1}{4} + \frac{1}{6} = \frac{1}{R_T}$   
 $R_T = 1.85\ \Omega$

- What is the total power generated by the battery?  
 $P = \frac{V^2}{R} = \frac{6^2}{1.85} = 19.5\text{ watts}$

- On the graph draw the function for a long wire that follows Ohm's Law. *straight line*
  - Draw a dotted line to show that same wire if it is made longer. *move R, move slope*



- Conductor vs. Insulator?
  - I Has high resistance.
  - C Has a lot of free electrons.
  - C Allows current to flow easily.
  - I Electrons cannot move easily.