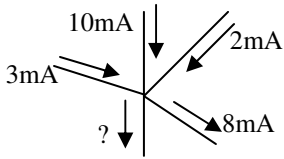


Name: _____

Period: _____

PreAP Electricity In Class Review

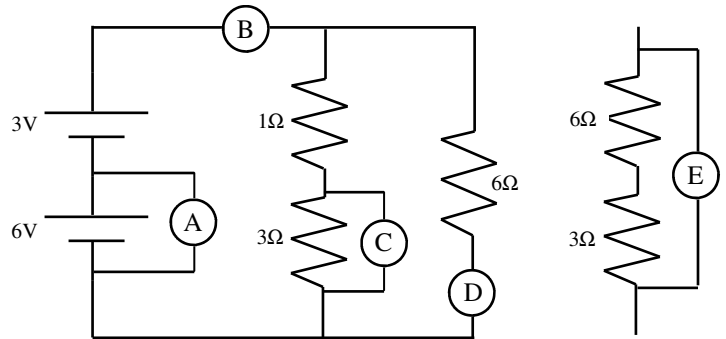
- Decide which of the wires has the most resistance.
 - A wire at 5°C OR a wire at 15°C .
 - A thick 2m wire OR a thick 2cm wire.
 - A thick 2cm long wire OR a thin 2cm long wire?
 - A wire made of silver OR a wire made of copper?
- What do we call a substance with no resistance at very low temperatures?



- 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?



- How much work is done by a 18 V battery to move 6 C of charge?

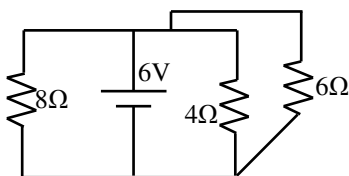
- How long does it take a 100 W light bulb to use up 25 joules of electrical energy?

- How much current flows thru a 6 kΩ resistor in 4 minutes if it is connected to a 9V battery?

- A circuit is protected by a 20 A fuse. What is the maximum charge that can move thru the fuse each second?

- A 60 W light bulb is hooked up to a 120 V outlet.
 - How big of a resistor is it?
 - How much charge flows thru in 2 seconds?

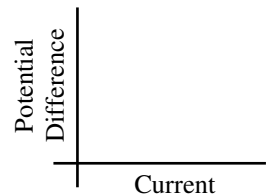
- A 100 Ω resistor has 0.5 A flowing thru it. How much energy does it dissipate each minute?



- What is the equivalent resistance of the three resistors?

- What is the total power generated by the battery?

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



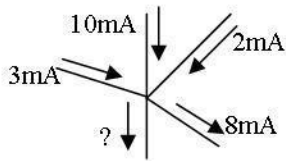
- Conductor vs. Insulator?
 - ___ Has high resistance.
 - ___ Has a lot of free electrons.
 - ___ Allows current to flow easily.
 - ___ Electrons cannot move easily.

Name: _____

Period: _____

PreAP Electricity In Class Review

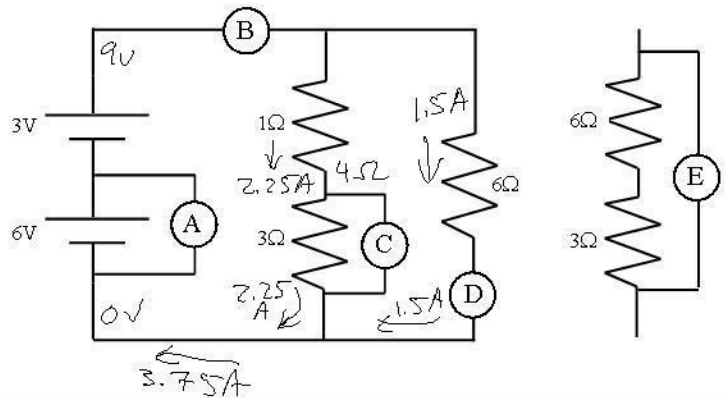
- Decide which of the wires has the most resistance.
 - A wire at 5°C OR a wire at 15°C .
 - A thick 2m wire OR a thick 2cm wire.
 - A thick 2cm long wire OR a thin 2cm long wire?
 - A wire made of silver OR a wire made of copper?
- What do we call a substance with no resistance at very low temperatures? *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? 6V
- What does meter B read? 3.75A
- What does meter C read? $3(2.25) = 6.75\text{V}$
- What does meter D read? 1.5A



- How much work is done by a 18V battery to move 6C of charge?

$$18\text{V} = \frac{18\text{J}}{1\text{C}} \left(\frac{6\text{C}}{1} \right) = 108\text{J}$$

- How long does it take a 100W light bulb to use up 25 joules of electrical energy?

$$P = \frac{W}{t} \Rightarrow t = \frac{W}{P} = \frac{25\text{J}}{100\text{W}} = .25\text{ sec}$$

- How much current flows thru a $6\text{ k}\Omega$ resistor in 4 minutes if it is connected to a 9V battery?

$$I = \frac{V}{R} = \frac{9}{6,000} = .0015\text{A} \text{ or } 1.5\text{mA}$$

time does not matter

- A circuit is protected by a 20A 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 60W light bulb is hooked up to a 120V 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?

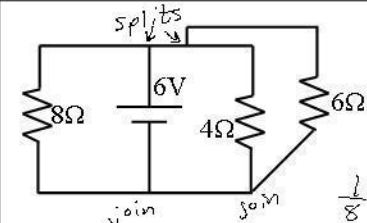
$$I = \frac{P}{V} = \frac{60}{120} = .5\text{A} \quad I = \frac{Q}{t} \text{ so } Q = I(t) = \Phi = 2(.5) = 1\text{ coul.}$$

- A 100Ω resistor has 0.5A flowing thru it. How much energy does it dissipate each minute?

joules comes from watts

$$P = I^2 R = (.5)^2 (100) = 25\text{W}$$

$$25 \frac{\text{J}}{\text{s}} \left(\frac{60\text{sec}}{1} \right) = 1500\text{ joules}$$



- What is the equivalent resistance of the three resistors?

in parallel, so:

$$\frac{1}{8} + \frac{1}{4} + \frac{1}{6} = \frac{1}{R_T}$$

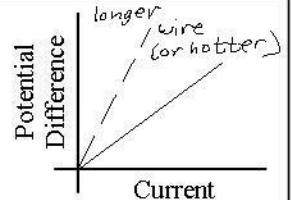
$$R_T = 1.85\Omega$$

- 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.

- 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.