2010 Electricity 6

Name: _____

Use the "Current, Voltage, and Resistance" notes:

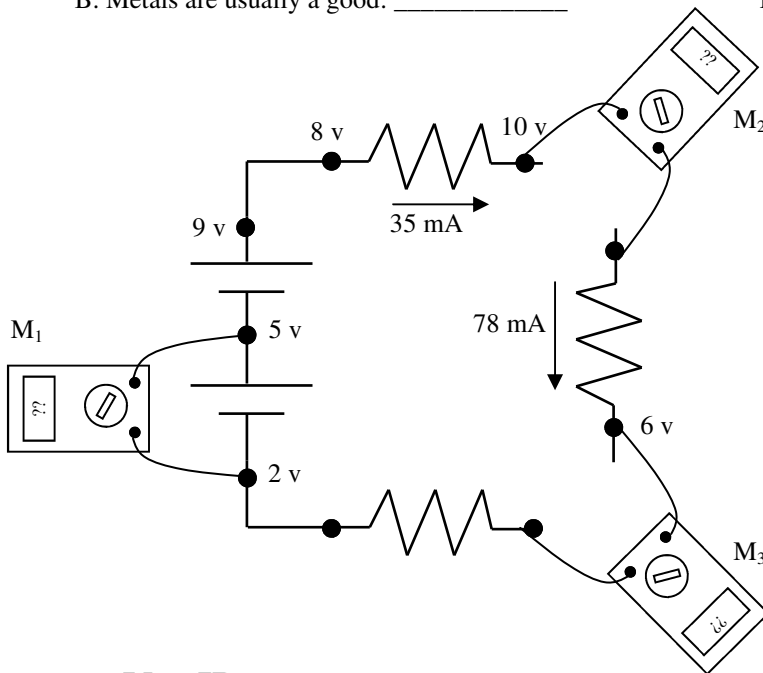1. Voltage (V), Current (I), or Resistance (R).

   A. ___ Flowing electrons.
   B. ___ Pushes electricity in circuits.
   C. ___ Like a water pump.
   D. ___ Measured in Ω.

   E. ___ Measured in A.
   F. ___ How much water flows.
   G. ___ A battery gives this.
   H. ___ Slows down current in a circuit.

   I. ___ Measured in V.
   J. ___ 12 ohms
   K. ___ 36 volts.
   L. ___ 5 amps.

2. Voltage (V), Current (I), or Resistance (R)?

   A _____ If you increase resistance what decreases?
   B. _____ If you increases voltage what increases?
   C. _____ If the current decreased what increased?
   D. _____ If current increased what increased?

   E. _____ If current increased what decreased?
   F. _____ If resistance is decreased, what increases?
   G. _____ More batteries will increase these two quantities.
   H. _____ More light bulbs will increase this.

3. Conductor or Insulator?

   A Wood is a bad: _____

   B. Metals are usually a good: _____

   C. Plastic is a good: _____

   D. 20 Ω is a worse _____ than 100 Ω resistor.

4. The diagram at the left is from our lab in class.
   A. Which meter or meters is an ammeter (measuring current)?
   B. Which meter or meters is a voltmeter (measuring voltage)?
   C. Which meter or meters is an ohmmeter?
   D. Find three mistakes with the voltage around the circuit. Be sure to explain why.
      1.

      2.

      3.

   E. Find one mistake with the current in the circuit. Be sure to explain why.
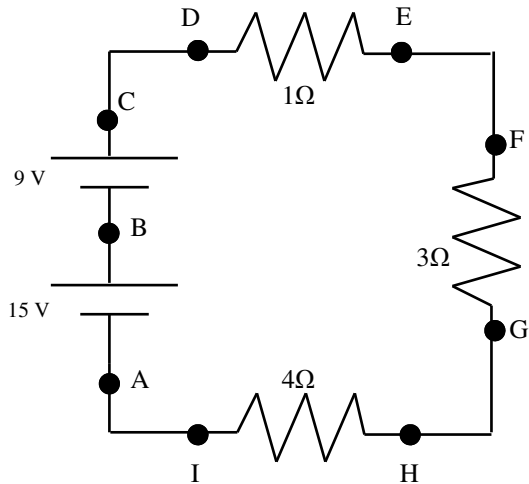
$$V = IR$$

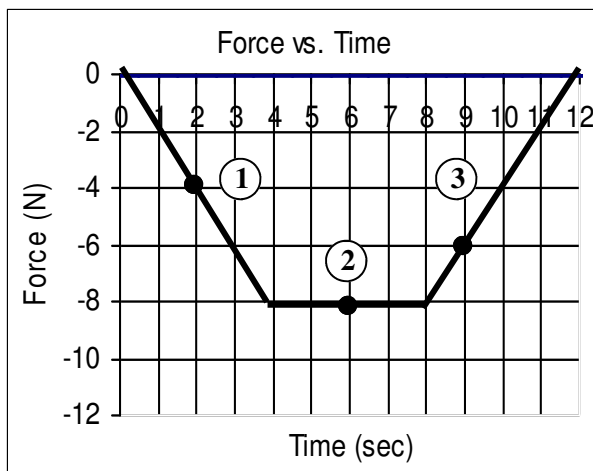5. Use the circuit at the left to answer the following.
   A. How many paths are there for the electricity to flow?
   B. How much current is flowing thru the 6Ω resistor?
   C. How much current is flowing thru the 8Ω resistor?
   D. How much current is flowing thru the 9v battery?
   E. What is the total resistance of the circuit?
   F. What is the total voltage of the circuit?
   G. Look at the close up of the 6Ω resistor. How much voltage does it use?

   The 3v battery is then removed, leaving only the 9V battery.
   H. How will the total voltage change?
   I. How will the total resistance change?
   J. How will the current change?

*BIG HINT: This easiest way of doing the following problem is to **work the circuit first**, then answer the questions. Figure out the voltages, etc, on the diagram first. Also, this circuit is a large part of the test. Get help if you need it.*

6. A. What is the total voltage?
    B. What is the total resistance?
    C. What is the total current?
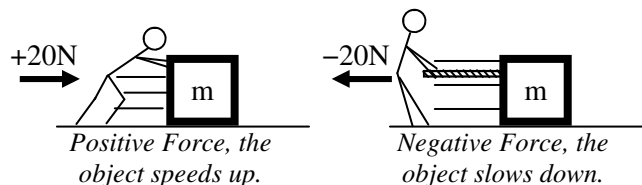
    D. What is the voltage at point A?
    E. What is the voltage at point B?
    F. What is the voltage at point C?
    G. How much voltage is lost from C to D?
    H. How much current is flowing thru the 1Ω resistor?
    I. How much voltage is used by the 1Ω resistor?

    J. How much voltage is left at point E?

    K. How much current is flowing thru the 3Ω resistor?
    L. How much voltage is used by the 3Ω resistor?

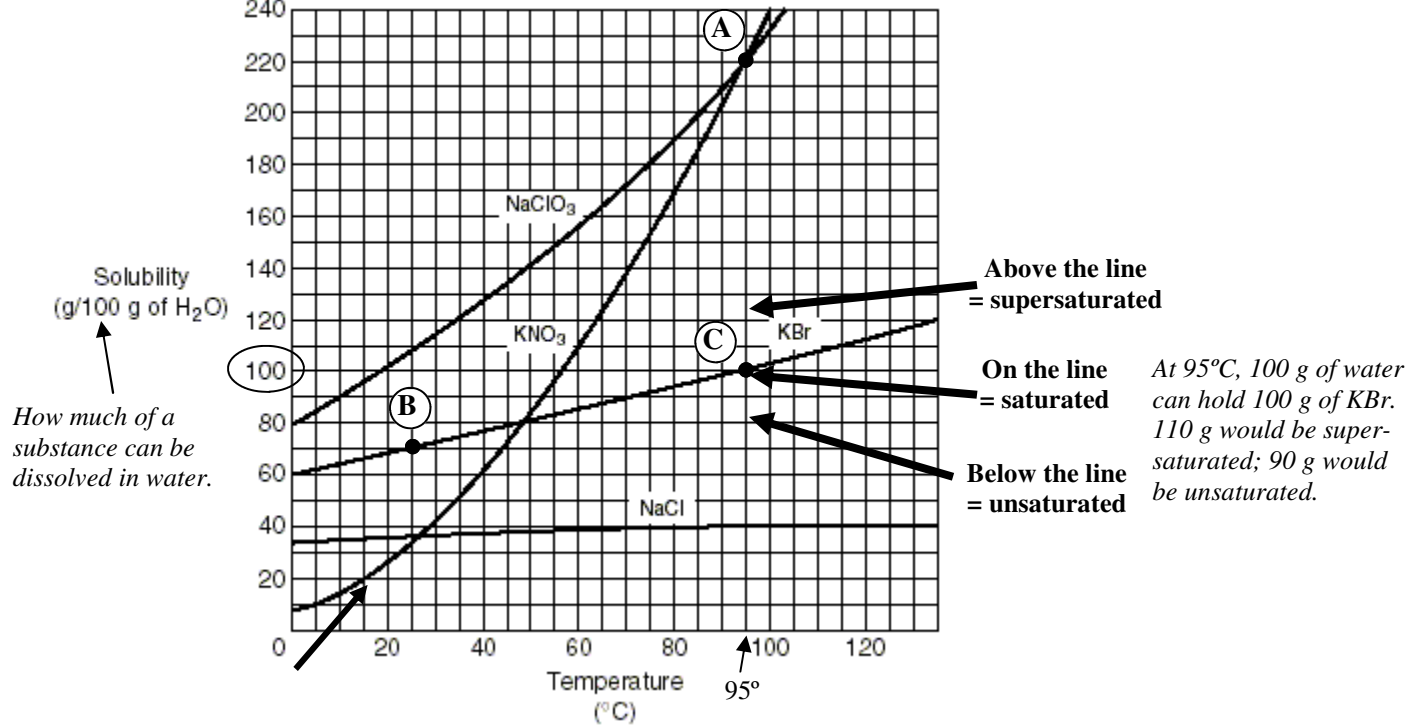   M. Using the equation at the left, how much power is used by the 3Ω resistor?

    N. Using the total voltage and current, how much power is used by the entire circuit?

Power (in *watts [w]*) → **P = VI** ← Voltage (in *volts [V]*), Current (in *amps [A]*)

TAKS: Predicting trends and making inferences from data and graphs. Be sure to actually read the data (not just the shape). If a graph is given the answer is actual on the graph.

Positive Force, the object speeds up. +20N → m

Negative Force, the object slows down. −20N ← m

Notice above the difference between positive and negative forces.

7. Use the graph at the left to answer the following.
    A. Looking at circle 1:
        i. Is circle 1 a positive or negative force?
        ii. How much force is acting?
        iii. Is the object speeding up or slowing down at this point?

    B. Looking at circle 3:
        i. How much force is acting?
        ii. Is it a positive or negative force?
        iii. Is the object speeding up or slowing down at this point?

Force vs. Time graph (Force (N) vs. Time (sec))

Again, look at the number NOT the shape!

Solubility
(g/100 g of H₂O)

How much of a substance can be dissolved in water.

Above the line = supersaturated

On the line = saturated

Below the line = unsaturated

At 95ºC, 100 g of water can hold 100 g of KBr. 110 g would be super-saturated; 90 g would be unsaturated.

95º

Temperature (°C)

The above solubility graph has been on the TAKS test a couple of times. Don't be confused by all of the lines. There are multiple lines for you to be able to compare the four compounds. Take the time to read the graph and you will notice it is not so hard to read. The following gives the sequence you should use with a new graph.

8. A. What is the x-axis variable?
    B. What is the y-axis variable?
    C. Which compound does not seem to be affect much by temperature?
    D. Which compound is most affected by temperature?
    E. At which temperature does NaCl and KNO_3 have the same solubility?
    F. Which of the following statements can be supported by the graph?
        i.   As the temperature increases water can dissolve less table salt.
        ii. If the water is stirred more salt is able to be dissolved.
        iii. Between 0ºC and 40ºC KNO_3 has the greatest increase in solubility.
        iv. Smaller particles of $NaClO_3$ causes faster dissolution.

When finding trends in data often you must calculate the trend.

9. Use the data table at the left to answer the following.

Time (sec)	Distance (m)
0	0
0.5	1.6
1	3.2
1.5	4.8
2	6.4

difference

A. Next to the graph, calculate the difference between each set of data (between each set of distances).

B. Does the amount of distance traveled each second increase, decrease, or stay constant?

C. If the object's motion does not change, how far will it have travelled in 3 seconds? (*To answer this, continue the table by writing your own rows below and following the trend.*)

Continue the table on your own.