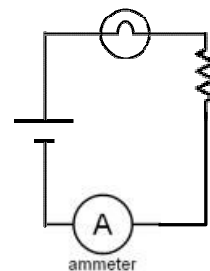


Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: **B**

Graded problems are worth 2 points each. This assignment is not graded out of \_\_\_ points.

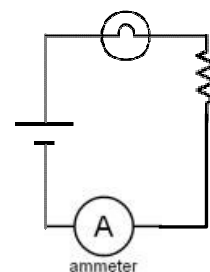
For questions 1) through 5): The dry cell has a potential difference of 4.5 V; the bulb has a resistance of 2 Ω; the resistor has a resistance of 1.5 Ω.

- 1) What is the same for every device in this circuit?
- 2) What is the total resistance in the circuit?
- 3) What is the value on the ammeter (how much current is flowing through the circuit)?
- 4) What is the voltage drop across the bulb? The resistor?
- 5) What would the ammeter read if the resistor were replaced with a piece of wire?



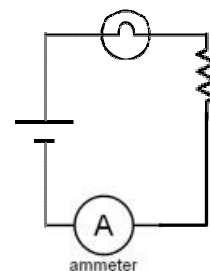
For question 6) : The ammeter reads 3 A. The voltage drop across the bulb is 6 V. The resistance of the resistor is 2 Ω.

- 6) Find the following (in whatever order you can):
  - a. The voltage of the dry cell
  - b. The resistance of the bulb
  - c. The voltage drop across the resistor
  - d. The power consumed by the bulb
  - e. The power consumed by the resistor



For question 7) : The electrical potential of the dry cell is 6 V. The resistance of the bulb is 0.5 Ω. The voltage drop across the bulb is 3 V.

- 7) Find the following (in whatever order you can):
  - a. The current through the circuit
  - b. The resistance of the resistor
  - c. The voltage drop across the resistor
  - d. The power consumed by the bulb
  - e. The power consumed by the resistor

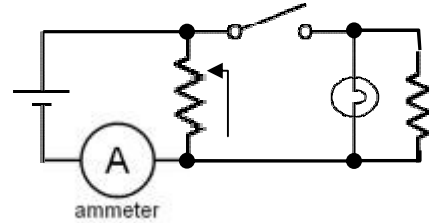


- 8) A circuit is hooked up to a variable voltage source. The current is measured as the voltage is changed, generating the information below.

Voltage (V)	0.2	0.4	0.6	0.8	1.0
Current (A)	1.7	3.4	5.1	6.8	8.5

- a. On a separate sheet of graph paper, graph the data above. (choose the correct independent/dependent variables and graph type.)
- b. Calculate the slope of the line you graphed. Write it on the graph.
- c. What does the slope of the line represent?

See diagram to the right for questions 9) through 11). The variable resistor is set to  $1.5 \Omega$ ; the resistance of the bulb is  $0.5 \Omega$ ; the other resistor has a resistance of  $1.25 \Omega$ . The cell creates a potential difference of  $9 \text{ V}$ .



9) What is the same in every branch of the circuit?

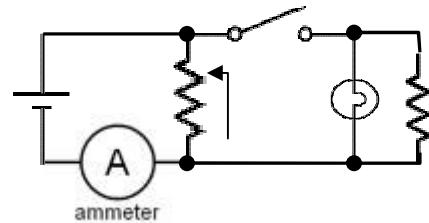
10) If the switch is OPEN:

- What is the total current in the circuit?
- What is the total resistance of the circuit?
- What is the voltage drop across the variable resistor?
- How much power is consumed by the variable resistor?

11) If the switch is CLOSED:

- What is the current in each device? (variable resistor, bulb, and static resistor.)
- What is the total current of the circuit?
- What is the total resistance of the circuit?
- What is the voltage drop across each device?
- How much power is consumed by each device?
- What effect will the bulb burning out have on the other devices?

See diagram to the right for questions 12) through 14): The variable resistor is set to  $2.5 \Omega$ ; the resistance of the bulb is  $0.5 \Omega$ ; the dry cell creates a potential difference of  $8.5 \text{ V}$ . The ammeter reads  $25 \text{ A}$ . The switch is closed.



12) Find, in whatever order you can:

- The current through each device
- The total current of the circuit
- The resistance of each device
- The total resistance of the circuit
- The voltage drop across each device
- The power consumption of each device

13) What will the effect on the circuit be if the resistance of the variable resistor is DECREASED? What if it is INCREASED? Describe what happens to:

- The total current in the circuit
- The total resistance in the circuit
- The total voltage of the current
- The power consumption of each device

14) What will the effect on the circuit be if the switch is opened? Describe what happens to:

- The total current in the circuit
- The total resistance in the circuit
- The total voltage of the current
- The power consumption of each device

