Name _____ Date _____

Honors Physics Electric Circuits WS #8H

Period _____ Mrs. Nadworny

Circuits Review

Directions: Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

1. A circuit contains three resistors (R_1 is 4.5 ohms, R_2 and R_3 are unknown) in series with a 9.0 volt battery. A voltmeter attached to R_1 reads 3.0 volts. A voltmeter attached to R_2 reads 2.5 volts.
    a. Draw a circuit schematic of the circuit detailed above. Remember to use proper schematic symbols and label it.

    b. Calculate the potential drop across resistor R_3

    c. Calculate the current that passes through R_1.

    d. Determine the current that passes through R_2 and R_3.

    e. Calculate the resistances of R_2 and R_3.

    f. Calculate the equivalent resistance of the circuit.

2. How many charges flow through a circuit if a 24 A current is allowed to flow for 2.70 minutes?

3. When a 43 Ω resistor is connected to a battery, the current in the circuit is 0.54 A. What is the voltage of the battery?

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4. A circuit contains three resistors (R_1 is 15 ohms, R_2 is 25 ohms, and R_3 is 35 ohms) in parallel with a 15.0 volt battery.
    a. Draw a circuit schematic of the circuit detailed above. Remember to use proper schematic symbols and label it. Also include an ammeter capable of reading the total current in the circuit and a voltmeter capable of reading the potential difference across the 25 ohm resistor.

    b. Determine the potential difference across each resistor.

    c. Calculate the current flowing through each resistor.

    d. Calculate the total current flowing through the circuit.

    e. Calculate the equivalent resistance of the circuit.

5. A tungsten wire that is 4.0 meters long with a *diameter* of 2.6 mm at 20^0 C. It is part of a circuit connected to a 7.5 volt battery.
    a. Calculate the resistance of the wire.

    b. Calculate the current in the wire.

    c. Calculate the power used by the circuit.

    d. Calculate the energy required to power the circuit if it runs for 4.5 minutes.

Answers in size order: 0.042, .43, .60, .67, .67, 1.0, 2.0, 3.5, 3.7, 5.2, 7.4 or 7.5, 13.4, 15.0, 23, 180, 1300 or 1400, 2.4×10^{22}, 3.5×10^5 or 3.8×10^5