Practice with Simple and Series Circuits

1. A 1.5 volt battery is connected with wires to a 3Ω lightbulb. Compute the current, and the power the battery supplies. How much power does the bulb use?
2. The 3Ω lightbulb is now connected to a different battery, and this battery causes a current that is three times what you computed in #1. What is the voltage of the new battery? How much power does it supply?
3. Now, you must put several 3Ω lightbulbs in series with the new battery in #2 to cause the same current as in #1. How many 3Ω lightbulbs do you need to connect in series?

4. As the number of resistors in a series circuit increases, the overall resistance \_\_\_\_\_\_\_\_\_\_ (increases, decreases, remains the same) and the current in the circuit \_\_\_\_\_\_\_\_\_\_ (increases, decreases, remains the same).

5. Three identical (same resistance) light bulbs are connected to a D-cell as shown to the right. Which one of the following statements is true?

a. All three bulbs will have the same brightness.

b. The bulb between X and Y will be the brightest.

c. The bulb between Y and Z will be the brightest.

d. The bulb between Z and the battery will be the brightest.

6. Three small bulbs are connected in series. Their resistances are: 3.0, 6.0, and 9.0. They are placed in a circuit with a 12-volt power supply. Draw the circuit with an ammeter, and a voltmeter in position to measure the voltage across the first bulb. Determine the equivalent resistance, the current, the voltage drop across each resistor, power supplied by the battery, and power dissipated by each resistor. Which bulb glows brightest?

Practice with Simple and Series Circuits

1. A 1.5 volt battery is connected with wires to a 3Ω lightbulb. Compute the current, and the power the battery supplies. How much power does the bulb use?
2. The 3Ω lightbulb is now connected to a different battery, and this battery causes a current that is three times what you computed in #1. What is the voltage of the new battery? How much power does it supply?
3. Now, you must put several 3Ω lightbulbs in series with the new battery in #2 to cause the same current as in #1. How many 3Ω lightbulbs do you need to connect in series?

4. As the number of resistors in a series circuit increases, the overall resistance \_\_\_\_\_\_\_\_\_\_ (increases, decreases, remains the same) and the current in the circuit \_\_\_\_\_\_\_\_\_\_ (increases, decreases, remains the same).

5. Three identical (same resistance) light bulbs are connected to a D-cell as shown to the right. Which one of the following statements is true?

a. All three bulbs will have the same brightness.

b. The bulb between X and Y will be the brightest.

c. The bulb between Y and Z will be the brightest.

d. The bulb between Z and the battery will be the brightest.

6. Three small bulbs are connected in series. Their resistances are: 3.0, 6.0, and 9.0. They are placed in a circuit with a 12-volt power supply. Draw the circuit with an ammeter, and a voltmeter in position to measure the voltage across the first bulb. Determine the equivalent resistance, the current, the voltage drop across each resistor, power supplied by the battery, and power dissipated by each resistor. Which bulb glows brightest?