SPH3U0 **Ohm’s Law Calculations** Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Sample Problems:**

1. A heating element operates at 115 V. If it has a resistance of 12.0 Ω, what current passes through the element?
2. A coffee pot operates on 12.0 V. If it draws 2.50 A, find the resistance.
3. An electric heater draws a maximum current of 14.0 A. If its resistance is 15.7 Ω, to what voltage should it be connected?
4. What is the potential difference across a toaster if it has a resistance of 17.6 Ω and a current of 12.5 A passing through it?

Answers: 1. 9.58 A 2. 4.80 Ω 3. 2.20 x 10 2 V 4. 2.20 x 10 2 V

**Circuit diagram practice**:

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| 1. Draw a circuit diagram for a battery source connected in series with a fuse, a switch and two light bulbs. (You may need to look up the symbol for fuse!) | 1. Draw two cells connected in parallel which are connected to two lamps also in parallel with the cells. There is a voltmeter connected to measure the potential difference across one of the bulbs. |
| 1. Draw 3 cells connected in series with 4 lights connected in parallel and a switch that turns off TWO of the lights. | |

**Ohm’s Law Problems**

1. Find the resistance of an electric light bulb if there is a current of 0.80 A when the potential difference across the bulb is 120.0 V. (150 Ω)
2. What is the potential difference across a toaster of resistance 13.7 Ω when the current is 8.75 A? (1.20 x 10 2 V)
3. What is the current through an electric baseboard heater with a resistance of 38 Ohms when the potential difference across it is 240 V? (6.3 A)
4. A portable radio is connected to a 9.0 V battery and draws a current of 25 mA. What is the resistance of the radio? (360 Ω)
5. An electric clothes dryer is connected to a 230 V source. If the dryer has a resistance of 9.2 Ω, calculate the current it draws. ( 25 A)
6. An old-fashioned tube television set has a resistance of 5.00 x 10 4 Ω and draws a current of 160 mA. What is the potential difference across the tube? (8.0 x 10 3 V)