Grade 9 Academic Science – Unit 4 Physics (Electricity)

**Solving Problems with Ohm’s Law (V = IR) - Answers**

V = I R

* V = potential difference in volts (V)
* I = current in amperes (A)
* R = resistance in ohms (Ω)

|  |  |  |
| --- | --- | --- |
| **Potential difference (V)** | **Current (A)** | **Resistance (Ω)** |
| **125** | 2.5 | 50 |
| 80 | **1.3** | 60 |
| **36 000** | 900 | 40 |
| 85 | 120 | **0.71** |
| 960 | **13.7** | 70 |
| 72 | 2.8 | **27.9** |
| 700 | **2.3** | 300 |
| 4.0 | 175 | **0.02** |

1. Find the resistance of an electric light bulb if a current of 0.80 A flows when the potential difference across the bulb is 120 V.

**150 Ω**

1. What is the potential difference across a toaster of resistance 13.7 Ω when the current flowing through it is 8.75 A?

# 120 V

1. What current is flowing through an electric baseboard heater with a resistance of 38 Ω when the potential difference across it is 240 V?

**6.3 A**

1. An iron designed for use at 120 V and 5.0 A is connected to a power source of 240 V. Calculate the current the iron will draw at the higher potential. State what will happen to the iron.

## 10 A

1. What potential difference is required to produce a current a 8.0 A in a load having a resistance of 64 Ω?

## 512 V

1. An electric toaster has a resistance of 12 Ω. What current will it draw from a power supply of 120 V?

**10 A**

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1. Find the resistance of an electric light bulb if a current of 0.80 A flows when the potential difference across the bulb is 120 V.
2. What is the potential difference across a toaster of resistance 13.7 Ω when the current flowing through it is 8.75 A?
3. What current is flowing through an electric baseboard heater with a resistance of 38 Ω when the potential difference across it is 240 V?
4. An iron designed for use at 120 V and 5.0 A is connected to a power source of 240 V. Calculate the current the iron will draw at the higher potential. State what will happen to the iron.
5. What potential difference is required to produce a current a 8.0 A in a load having a resistance of 64 Ω?
6. An electric toaster has a resistance of 12 Ω. What current will it draw from a power supply of 120 V?