202: Principles of electrical science  
**Worksheet 3: Basic electrical circuits and Ohm’s law**

**Answer guide**

1. What potential is produced across a resistance of 15Ω if a current of 12A is flowing through it?

**180 volts**

1. A current of 10A flows through a resistor and a voltage of 150V is measured across it. Calculate the value of the resistor.

**15Ω**

1. When a current of 2.5A is flowing through a resistor, a voltage of 200V is measured across the resistor. Calculate the value of the resistor.

**80Ω**

1. What is the current flowing in the circuit when a voltage of 198V is present across a resistance of 3.3Ω?

**60A**

1. A voltage of 20V is measured across a resistor of 400Ω. Calculate the current flowing in the circuit.

**0.05A**

1. Complete the following table:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Voltage | 15 | 10 | 20 | **30** | 40 | 50 | **60** | 96 | **1** |
| Current | **0.125** | 1 | **2** | 3 | 4 | **2.5** | 5 | 8 | 0.1 |
|  | 120 | **10** | 10 | 10 | **10** | 20 | 12 | **12** | 10 |

1. A cable of resistance 0.043Ω carries a current of 139.5A. What will be the voltage drop in the cable?

**5.99V**

1. A certain cable has a resistance of 1.6Ω. What is the maximum current it can carry if the voltage drop is not to exceed 14.4 volts?

**9 amps**

1. Complete the following table:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Voltage | 84 | 10 | **4** | 230 | 0.7 | **0.125** | 110 | 0.02 | **15.936** |
| Current | **7** | 0.1 | 0.2 | **11.5** | 0.9 | 0.05 | **5.5** | 0.01 | 0.166 |
| Ohms | 12 | **100** | 20 | 20 | **0.77** | 2.5 | 20 | **2** | 96 |