**Series Circuit with Faults**

Consider these problems as if you were making the measurements with a DMM. You will not be able to measure power so calculate it based on your theoretical measurements.

1. In the space to the right, ***neatly***draw the schematic for a *series* circuit containing the following components:
* 9V DC supply
* R1 = 3Ω
* R2 = 10Ω
* R3 = 15Ω

2. Enter the values of voltage, current and resistance you would theoretically measure using a DMM. Calculate the power based on these values.

|  |
| --- |
| **CALCULATED VALUES (No circuit faults)** |
|   | Voltage | Current | Resistance | Power |
| R1 |   |   |   |   |
| R2 |   |   |   |   |
| R3 |   |   |   |   |
| Total |   |   |   |   |

1. Suppose R2 has burned up, i.e., it has opened. Enter the values of voltage, current and resistance you would expect to measure using a DMM. Calculate the power based on these values.

|  |
| --- |
| **CALCULATED VALUES (R2 open)** |
|   | Voltage | Current | Resistance | Power |
| R1 |   |   |   |   |
| R2 |   |   |   |   |
| R3 |   |   |   |   |
| Total |   |   |   |   |

1. Now suppose R2 has been short circuited (bypassed). Enter the values of voltage, current, and resistance you would expect to measure using a DMM. Calculate the power based on these values.

|  |
| --- |
| **CALCULATED VALUES (R2 shorted)** |
|   | Voltage | Current | Resistance | Power |
| R1 |   |   |   |   |
| R2 |   |   |   |   |
| R3 |   |   |   |   |
| Total |   |   |   |   |

**Parallel Circuit with Faults**

Consider these problems as if you were making the measurements with a DMM. You will not be able to measure power so calculate it based on your theoretical measurements.

1. In the space to the right, ***neatly***draw the schematic for a parallel circuit containing the following components:
* 9V DC supply
* R1 = 3Ω
* R2 = 10Ω
* R3 = 15Ω
	1. Enter the values of voltage, current and resistance you would theoretically measure using a DMM. Calculate the power based on these values.

|  |
| --- |
| **CALCULATED VALUES (No circuit faults)** |
|   | Voltage | Current | Resistance | Power |
| R1 |   |   |   |   |
| R2 |   |   |   |   |
| R3 |   |   |   |   |
| Total |   |   |   |   |

* 1. Suppose R2 has burned up, i.e., it has opened. Enter the values of voltage, current and resistance you would expect to measure using a DMM. Calculate the power based on these values.

|  |
| --- |
| **CALCULATED VALUES (R2 open)** |
|   | Voltage | Current | Resistance | Power |
| R1 |   |   |   |   |
| R2 |   |   |   |   |
| R3 |   |   |   |   |
| Total |   |   |   |   |

* 1. Now suppose R2 has been short circuited (bypassed). Enter the values of voltage, current, and resistance you would expect to measure using a DMM. Calculate the power based on these values.

|  |
| --- |
| **CALCULATED VALUES (R2 shorted)** |
|   | Voltage | Current | Resistance | Power |
| R1 |   |   |   |   |
| R2 |   |   |   |   |
| R3 |   |   |   |   |
| Total |   |   |   |   |