**Datasheet for Lab 2: Safety, Breadboards, DMM**

Name(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PRELAB** – Watch the Video: 1 – Overview, and 2 – Kit Inventory, which you can find in the [Lab 2 Video Playlist](https://www.youtube.com/playlist?list=PLhNcB8XKcGiKUCqKIpxAODRGvuKFnlnps)

MATCHING -- Electronics Lab Safety Rules. Watch the Video: 3 - Safety

Put the letter that best completes the safety rule in the space provided

|  |  |  |
| --- | --- | --- |
| Safety Rule Start | Letter | Safety Rule End |
| 1) Never work on a circuit |  | a) dry. |
| 2) Do not connect power to a circuit |  | b) pay attention to the task you are working on. |
| 3) If you smell anything burning, immediately disconnect the power and |  | c) while power is applied. |
| 4) Keep your work area |  | d) email a photograph of the circuit for inspection. |
| 5) Always use common sense and |  | e) until the circuit is finished and you have carefully checked your work. |
| 6) If at any time you are not sure how to handle a particular situation, |  | f) examine your circuit to find out what went wrong. |
| 7) Online students should |  | g) ask the instructor for advice. |

**Table 1. Resistor Values and Color Codes – Watch the Video: 4 – Resistor Color Bands**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A) For these resistors, determine the nominal, min and   max values they should be | | | | B) For these nominal resistor values,  determine the color bands | |
| Resistor | Nominal Value | Min Value | Max Value | Nominal Value | List the Resistor Color Bands  (R,V,W, etc) |
|  |  | 64.6 Ω |  | 5.3 MΩ | G, O, |
|  |  |  |  | 940 KΩ |  |
|  |  |  |  | 2.6 KΩ |  |

Watch the Video: 5 - Breadboarding

Breadboard Quiz Answers – Enter the letter of the:

2. Correct Breadboard \_\_\_\_\_\_\_\_\_\_

3. Incorrect Breadboard \_\_\_\_\_\_\_\_\_\_

**IN LAB** – Complete these exercises while in the lab

**Table 2. Resistor Measurements - Watch the Video: 6 - Ohmmeter**

|  |  |  |  |
| --- | --- | --- | --- |
| **Nominal Value (coded)** | **Min-Max Range (coded)** | **DMM Value** | **Within Spec**  **(Yes/No)** |
| 220 |  |  |  |
| 470 |  |  |  |
| 1000 |  |  |  |

**Table 3. Voltage Measurements – Watch the Video: 7 - Voltmeter**

|  |  |  |  |
| --- | --- | --- | --- |
| Vs | V1 | V2 | -Vs + V1 + V2 |
|  |  |  |  |

**Table 4. Current Measurements – Watch the Video: 8 - Ammeter**

|  |  |  |  |
| --- | --- | --- | --- |
| I1 | I2 | I3 | I1 – I2 – I3 |
|  |  |  |  |

**Watch the Video: 9 – Challenge Problem**

**Challenge Problem:** Leaving your last circuit in place (re-insert the resistor you removed to do current measurement), create a second identical”Bizarro” circuit on the right side of the breadboard with the only difference being the layout of the second circuit – it should visually look as different from the first circuit as possible, while still exhibiting the same voltage drop across R1 as the original circuit. Extra points if you can make a “letter” or “face” or other recognizable figure and still have the circuit work as before.

**Insert Photo of Challenge Breadboard here**

Make sure to include a photo of the voltmeter across “Bizarro” R1 showing approximately the same value as the original circuit.

**Online Lab Checkoff**

Online Students - Please either demo your work for checkoff during the Sunday evening online office hour, OR paste a link here to a video showing a walkthrough of your measurments for verifying KVL and KCL.

Only submit one lab datasheet per team, making sure both team member names are in the datasheet.