**CDX Distance Learning**

**Exercise #13**

**DMM Experiments, Part II**

**Student Name:** Click or tap here to enter text.

Click or tap the check box next to the answer choice that best completes the statement or answers the question. Viewing the animations will be required to answer the following question(s) correctly. Read the question and use the link provided to open the animation. Follow the directions in the questions and select the correct answer. When complete, close the animation window and move on to the next question(s).

[**Multimeter Animation 8**](https://www.jblearning.com/navigate/filelookup.ashx?fileid=81865e41-9f02-46dc-a01b-1573f5fc5a3f)

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| 1. What is the resistance of the lightbulb in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 12 ohms | |  | b. | 0.5 ohms | |  | c. | 0.5 watts | |  | d. | 67 ohms | |

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| 2. What is the resistance between the power source and the power side of the switch?   |  |  |  | | --- | --- | --- | |  | a. | 0.5 ohms | |  | b. | 67 V | |  | c. | 67 ohms | |  | d. | 5 ohms | |

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| 3. What is the voltage drop across the lightbulb?   |  |  |  | | --- | --- | --- | |  | a. | 12 V | |  | b. | 12 A | |  | c. | 0.5 V | |  | d. | 0.5 A | |

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| 4. What is the voltage drop across the relay (control) side of the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 5 V | |  | b. | 5 A | |  | c. | 12 V | |  | d. | 12 A | |

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| 5. What is the lightbulb circuit amperage?   |  |  |  | | --- | --- | --- | |  | a. | 12 A | |  | b. | 18 A | |  | c. | 0.5 A | |  | d. | 0.18 A | |

**[Multimeter Animation 25](https://www.jblearning.com/navigate/filelookup.ashx?fileid=7d79aaa5-02a3-4503-abbd-57e9ef09c733" \t "_blank)**

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| 6. What is the total measured circuit resistance?   |  |  |  | | --- | --- | --- | |  | a. | 0.2 ohms | |  | b. | 0.5 ohms | |  | c. | 2.2 ohms | |  | d. | 100 ohms | |

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| 7. What is the measured resistance of the resistor in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.2 ohms | |  | b. | 0.5 ohms | |  | c. | 2.2 ohms | |  | d. | 100 ohms | |

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| 8. What is the resistance of the larger bulb on the right of the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.2 ohms | |  | b. | 0.5 ohms | |  | c. | 2.2 ohms | |  | d. | 100 ohms | |

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| 9. What is the resistance of the smaller bulb in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.2 ohms | |  | b. | 0.5 ohms | |  | c. | 2.2 ohms | |  | d. | 1 ohm | |

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| 10. What is the resistance of the larger bulb on the right of the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.2 ohms | |  | b. | 0.5 ohms | |  | c. | 2.2 ohms | |  | d. | 1 k ohms | |
| 11. What is the voltage drop of the entire 12-volt circuit?   |  |  |  | | --- | --- | --- | |  | a. | 12 A | |  | b. | 12 V | |  | c. | 1 V | |  | d. | 1 A | |

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| 12. What is the voltage drop across each of the loads in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 1 V | |  | b. | 3 V | |  | c. | 4 V | |  | d. | 12 V | |

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| 13. What is the current flow of the entire circuit?   |  |  |  | | --- | --- | --- | |  | a. | 3980 A | |  | b. | 39.8 A | |  | c. | 398 A | |  | d. | 3.98 A | |

**[Multimeter Animation 26](https://www.jblearning.com/navigate/filelookup.ashx?fileid=b0b829c5-8d38-48bf-9150-0d0151dbf0b9" \t "_blank)**

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| 14. What is the total circuit resistance?   |  |  |  | | --- | --- | --- | |  | a. | 100 ohms | |  | b. | 190.1 ohms | |  | c. | 1 k ohms | |  | d. | 10 k ohms | |

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| 15. What is the resistance value of the single resistor in the series part of the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 100 ohms | |  | b. | 190.1 ohms | |  | c. | 1 k ohms | |  | d. | 10 k ohms | |

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| 16. What is the resistance value of the resistor on the left in the group of resistors in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 100 ohms | |  | b. | 190.1 ohms | |  | c. | 1 kohms | |  | d. | 10 k ohms | |

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| 17. What is the resistance value of the middle resistor in the group of resistors?   |  |  |  | | --- | --- | --- | |  | a. | 100 ohms | |  | b. | 190.1 ohms | |  | c. | 1 k ohms | |  | d. | 10 k ohms | |

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| 18. What is the resistance vale of the resistor on the right in the group of resistors?   |  |  |  | | --- | --- | --- | |  | a. | 10 k ohms | |  | b. | 1 kohms | |  | c. | 190.1 ohms | |  | d. | 100 ohms | |

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| 19. What is the voltage drop across the series part of the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 12 V | |  | b. | 6.31 V | |  | c. | 1 V | |  | d. | 5.69 V | |

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| 20. What is the voltage drop across the parallel part of the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 5.69 V | |  | b. | 6.31 V | |  | c. | 12 V | |  | d. | 0 V | |

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| 21. What is the current flow of the entire circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.063 A | |  | b. | 0.133 A | |  | c. | 1 A | |  | d. | 12 A | |

**[Multimeter Animation 27](https://www.jblearning.com/navigate/filelookup.ashx?fileid=0672bc78-072d-4a19-8425-4a514b0ab308" \t "_blank)**

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| 22. What is the highest resistance value of the variable resistor?   |  |  |  | | --- | --- | --- | |  | a. | 0 ohms | |  | b. | 154.1 ohms | |  | c. | 250 ohms | |  | d. | 2.5 k ohms | |

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| 23. What is the lowest resistance value of the variable resistor?   |  |  |  | | --- | --- | --- | |  | a. | 0 ohms | |  | b. | 1 ohms | |  | c. | 250 ohms | |  | d. | 1000 ohms | |

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| 24. What is the value of the fixed resistor in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0 ohms | |  | b. | 250 ohms | |  | c. | 2000 ohms | |  | d. | 20 k ohms | |

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| 25. What is the voltage drop across the variable resistor when it is set to 50 ohms?   |  |  |  | | --- | --- | --- | |  | a. | 0.05 V | |  | b. | 2.35 V | |  | c. | 11.95 V | |  | d. | 12 V | |

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| 26. What is the voltage drop across the variable resistor when it is set to 0 ohms?   |  |  |  | | --- | --- | --- | |  | a. | 0.05 V | |  | b. | 2.35 V | |  | c. | 11.95 V | |  | d. | 12 V | |

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| 27. What is the voltage drop across the variable resistor when it is set to 250 ohms?   |  |  |  | | --- | --- | --- | |  | a. | 0.05 V | |  | b. | 2.35 V | |  | c. | 11.95 V | |  | d. | 12 V | |

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| 28. What is the voltage drop across the fixed resistor in the circuit with the power source set to 12 volts?   |  |  |  | | --- | --- | --- | |  | a. | 0.05 V | |  | b. | 2.35 V | |  | c. | 11.95 V | |  | d. | 12 V | |

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| 29. What is the voltage drop across the fixed resistor in the circuit with the power source set to 24 volts?   |  |  |  | | --- | --- | --- | |  | a. | 0.1 V | |  | b. | 2.35 V | |  | c. | 11.95 V | |  | d. | 12 V | |

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| 30. What is the current flow through the 12-volt circuit?   |  |  |  | | --- | --- | --- | |  | a. | 12 A | |  | b. | 1 A | |  | c. | 0.048 A | |  | d. | 0.096 A | |

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| 31. What is the current flow in the 24-volt circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.05 A | |  | b. | 12 A | |  | c. | 0.096 A | |  | d. | 0.048 A | |

**[Multimeter Animation 28](https://www.jblearning.com/navigate/filelookup.ashx?fileid=2fa425db-e2a0-4b20-beee-47a26a121ea6" \t "_blank)**

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| 32. With the power source at 12 volts and the variable resistor set to 12.5 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 0.55 V | |  | b. | 4.55 V | |  | c. | 7.15 V | |  | d. | 10.45 V | |

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| 33. With the power source at 12 volts and the variable resistor set to 95.8 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 0.55 V | |  | b. | 4.55 V | |  | c. | 7.15 V | |  | d. | 10.45 V | |

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| 34. With the power source at 12 volts and the variable resistor set to 150 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 4.55 V | |  | b. | 7.15 V | |  | c. | 10.45 V | |  | d. | 11.95 V | |

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| 35. With the power source at 12 volts and the variable resistor set to 218.7 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 4.55 V | |  | b. | 7.15 V | |  | c. | 10.45 V | |  | d. | 11.95 V | |

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| 36. With the power source at 24 volts and the variable resistor set to 12.5 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 1.1 V | |  | b. | 9.1 V | |  | c. | 14.3 V | |  | d. | 20.9 V | |

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| 37. With the power source at 24 volts and the variable resistor set to 95.8 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 14.3 V | |  | b. | 20.9 V | |  | c. | 1.1 V | |  | d. | 9.1 V | |

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| 38. With the power source at 24 volts and the variable resistor set to 150 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 9.1 V | |  | b. | 7.5 V | |  | c. | 14.3 V | |  | d. | 10.45 V | |

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| 39. With the power source at 24 volts and the variable resistor set to 218.7 ohms, what is the voltage drop across it?   |  |  |  | | --- | --- | --- | |  | a. | 9.1 V | |  | b. | 10.45 V | |  | c. | 14.3 V | |  | d. | 20.9 V | |

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| 40. With the power source at 12 volts and the variable resistor set to 250 ohms, what is the current flow through the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.048 A | |  | b. | 2 A | |  | c. | 0.096 A | |  | d. | 12 A | |

**[Multimeter Animation 29](https://www.jblearning.com/navigate/filelookup.ashx?fileid=b66a716d-6c7c-4158-bd3f-56c8408fcad2" \t "_blank)**

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| 41. What is the resistance across the entire circuit?   |  |  |  | | --- | --- | --- | |  | a. | 1 ohm | |  | b. | 100 ohms | |  | c. | 20.09 k ohms | |  | d. | 20.09 M ohms | |

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| 42. What is the resistance value of the capacitor in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 1 ohm | |  | b. | 100 ohms | |  | c. | 20.09 M ohms | |  | d. | 20.09 k ohms | |

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| 43. What is the resistance value of the bulb in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 1 ohms | |  | b. | 100 ohms | |  | c. | 20.09 ohms | |  | d. | 12 ohms | |

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| 44. What is the rating value of the capacitor?   |  |  |  | | --- | --- | --- | |  | a. | 100 microF | |  | b. | 1000 microF | |  | c. | 1 microF | |  | d. | 10 kmicroF | |

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| 45. After turning the circuit on and waiting 10 seconds, what is the voltage drop across the capacitor?   |  |  |  | | --- | --- | --- | |  | a. | 0 V | |  | b. | 2 V | |  | c. | 0.5 V | |  | d. | 12 V | |

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| 46. After turning on the circuit and waiting 10 seconds, what is the voltage drop across the bulb in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 12 V | |  | b. | 5 V | |  | c. | 2 V | |  | d. | 0 V | |

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| 47. After turning on the circuit and waiting 10 seconds, what is the measured current flow in the circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0.005 A | |  | b. | 0.004 A | |  | c. | 0.002 A | |  | d. | 0 A | |

**[Multimeter Animation 30](https://www.jblearning.com/navigate/filelookup.ashx?fileid=972b395a-d13b-47cb-8f64-0bf5de323f82" \t "_blank)**

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| 48. Using the MIN/MAX function of the DMM with the circuit on and running, what is the minimum voltage at the 5-volt circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0 V | |  | b. | 2.5 V | |  | c. | 5 V | |  | d. | 12 V | |

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| 49. Using the MIN/MAX function of the DMM with the circuit on and running, what is the maximum voltage at the 5 volt circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0 V | |  | b. | 2.5 V | |  | c. | 5 V | |  | d. | 12 V | |

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| 50. Using the MIN/MAX function of the DMM with the circuit on and running, what is the average voltage at the 5 volt circuit?   |  |  |  | | --- | --- | --- | |  | a. | 0 V | |  | b. | 2.5 V | |  | c. | 5 V | |  | d. | 12 V | |