

## Automotive Technology

### USING A DIGITAL VOLT-OHM-METER

(DVOM=Digital Volt-Ohm Meter, DMM=Digital Multi-Meter, VOM=Volt-Ohm Meter, or VM=Volt Meter)

\_\_\_\_\_

Name

\_\_\_\_\_

Date

\_\_\_\_\_

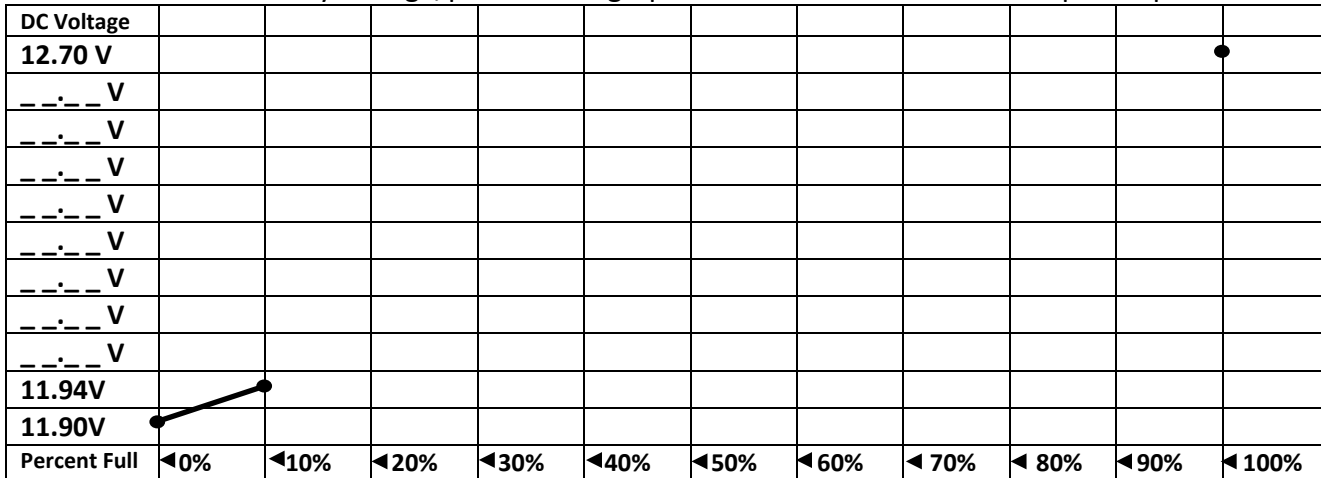
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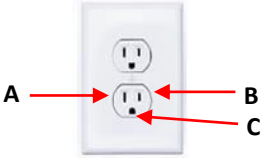
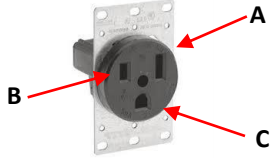
- Fill in the following blanks:
  - Electricity is the flow of \_\_\_\_\_ along a conductor.
  - \_\_\_\_\_ is the **force** that pushes the electrons along a conductor.
  - \_\_\_\_\_ is a measurement of the **volume** of electron flow.
  - \_\_\_\_\_ is the measurement of **resistance** to the flow of electrons.
- Fill in the symbols for the following:
  - Direct Current Voltage \_\_\_\_\_.
  - Alternating Current Voltage \_\_\_\_\_.
  - Ohms \_\_\_\_\_.
- DC voltage flows in only \_\_\_\_\_.
- AC voltage flows \_\_\_\_\_ & \_\_\_\_\_.
- Inspect VOM leads and determine where to hook up to VOM.  
Connect Black Lead to \_\_\_\_\_  
Connect Red Lead to \_\_\_\_\_
- Determine VOM Battery Location: \_\_\_\_\_
- Always estimate what readings you anticipate getting and then set the meter to a value \_\_\_\_\_ than what you are expecting to measure.
- Meters that have self-adjusting range settings are called \_\_\_\_\_.
- What scale would you use to test the voltage of a 12v battery? \_\_\_\_\_.
- To test the **continuity** or "connectedness" of a circuit, you should use what scale? **(circle one)** DC  
AC Amps Ohms.
- You should **never** use which scale when the power is on or a battery is connected to the circuit?  
**(circle one)** DC AC Amps Ohms.
- For instructional purposes electricity can be compared to \_\_\_\_\_?
- Car batteries are for \_\_\_\_\_ electricity, but they do not produce it.
- Milli-amp scales can be used for what test? \_\_\_\_\_
- A Diode is a \_\_\_\_\_ for electricity.

16. Define the following terms in relation to electrical current flow:

- What does "infinity ohms" mean? \_\_\_\_\_
- What does "open circuit" mean? \_\_\_\_\_
- What does "closed circuit" mean? \_\_\_\_\_
- What does "short circuit" mean? \_\_\_\_\_

17. Create a battery voltage/percent-full graph from the chart in the DVOM power point:



<p>18. Using three circuit boards, check the continuity (<math>\Omega</math>), and fill out the chart below:</p> <table border="1"> <tr><td>Board# _____</td></tr> <tr><td>1. _____</td></tr> <tr><td>2. _____</td></tr> <tr><td>3. _____</td></tr> <tr><td>4. _____</td></tr> <tr><td>5. _____</td></tr> <tr><td>6. _____</td></tr> <tr><td>Board# _____</td></tr> <tr><td>1. _____</td></tr> <tr><td>2. _____</td></tr> <tr><td>3. _____</td></tr> <tr><td>4. _____</td></tr> <tr><td>5. _____</td></tr> <tr><td>6. _____</td></tr> <tr><td>Board# _____</td></tr> <tr><td>1. _____</td></tr> <tr><td>2. _____</td></tr> <tr><td>3. _____</td></tr> <tr><td>4. _____</td></tr> <tr><td>5. _____</td></tr> <tr><td>6. _____</td></tr> </table>	Board# _____	1. _____	2. _____	3. _____	4. _____	5. _____	6. _____	Board# _____	1. _____	2. _____	3. _____	4. _____	5. _____	6. _____	Board# _____	1. _____	2. _____	3. _____	4. _____	5. _____	6. _____	<p>19. What setting on the VOM would you use to measure the voltage of a D cell battery? _____          Measure the voltage of a D cell battery and write down your measured voltage: _____</p>	<p>20. What setting on the VOM would you use to measure the voltage of an AA battery? _____          Measure the voltage of an AA battery and write down your measured voltage: _____</p>	<p>21. What setting on the VOM would you use to measure the voltage of a 9V battery? _____          Measure the voltage of a 9V battery and write down your measured voltage: _____</p>
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	<p>22. What setting on the VOM would you use to measure the voltage of a hearing-aid battery?          _____          Measure the voltage of a hearing-aid battery and write down your measured voltage: _____</p> 	<p>23. What setting would you use to measure voltage from a 110 outlet in the shop? _____</p>  <p><b><u>ONLY WITH INSTRUCTOR SUPERVISION,</u></b>          Measure the voltages:          From A to B _____          From A to C _____          From B to C _____</p>	<p>24. What setting would you use to measure voltage from a 220 outlet in the shop? _____</p>  <p><b><u>ONLY WITH INSTRUCTOR SUPERVISION,</u></b>          Measure the voltages:          From A to B _____          From A to C _____          From B to C _____</p>																					
	<p>25. Measure the battery voltage in a shop vehicle your instructor chooses and write voltage here _____. Using your battery voltage graph above, how full (%) is the battery? ____%</p>																							

Explain three things you determined about using the DVOM:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_