Department of Education
SPTVE
Exploratory 7
Electrical Installation and Maintenance
Select Measuring Tools and Instruments
Quarter 2: Week 3 Module

Rodrigo N. Niadas Jr.
Writer

Gerry V. Domalanta
Validator

Dr. Armando N. Romero
Dr. Rosendo E. Sangalang
Joaquin O. Basijan
Quality Assurance Team

Schools Division Office – Muntinlupa City
Student Center for Life Skills Bldg., Centennial Ave., Brgy. Tunasan, Muntinlupa City
(02) 8805-9935 / (02) 8805-9940

Expectations

At the end of the module, you should be able to:
1. identify the different measuring tools and instruments;
2. describe the use of each instruments; and
3. value the importance of measuring tools and instruments

Pre-Test

Direction. Read each question carefully. On a separate sheet of paper write the word/s of the correct answer.

1. An instrument used to measure the amount of electrical current intensity in a circuit.
   A. Ammeter
   B. Micrometer
   C. Ohmmeter
   D. Voltmeter

2. A pocket sized tool used to test the line wire or circuit if there is current in it.
   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

3. A measuring tool used to measure the length of an object in centimeter and inches.

   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

4. It is used to measure the diameter of wires/conductors in circular mils. It can measure small and big sizes of wires and cables.
   A. Ammeter
   B. Micrometer
   C. Ohmmeter
   D. Voltmeter

5. It is used to measure the voltage, resistance and current of a circuit. It is also connected in parallel or series with the circuit depending on what to measure.
   A. Ammeter
   B. Volt-Ohm-Milliammeter
   C. Ohmmeter
   D. Voltmeter

6. It is also called tong tester. It is used to measure current flowing in a conductor.
   A. Ammeter
   B. Clamp Ammeter
   C. Ohmmeter
   D. Volt-Ohm-milliammeter

7. It is used in determining the size of wires and conductors.
   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

8. It is a measuring tool used to measure length, width and thickness of short flat object and in sketching straight lines.
   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

9. It is an instrument used to measure electrical pressure or voltage of a circuit.
   A. Ammeter
   B. Micrometer
   C. Ohmmeter
   D. Voltmeter

10. The science of measurement is called:
   A. Numerology
   B. Metrology
   C. Astrology
   D. Measurology

LOOKING BACK

The previous lesson has taught you when receiving and inspecting freight shipments.

Activity 1. "COMPLETE ME!"

Directions: Complete the following questions whenever you receive a shipment. And write a brief description for each.

1. Is it _____?

   _____
   _____
   _____

2. Is it _____?

   _____
   _____
   _____

3. Is the _____?

   _____
   _____
   _____

Activity 2. "CAN YOU IDENTIFY ME?"

Directions: Tell whether the statement belongs to Damage Notations, Shortage Notations or Signatures. Write your answer before the number.

_____ 1. Write your agency's name, your full name, the date, and the time of day.

_____ 2. Write down the number of pieces missing and note them as "short."

_____ 3. Write down the number and identity of the damaged pieces.

Brief Introduction

Electrical measuring tools and instruments are important because it measures elements in electrical works like currents, voltages, wattage and resistances. One has to know their uses and applications.

Activities

MEASURING TOOLS AND INSTRUMENTS

Measurement is the process or the result of determining the ratio of a physical quantity, such as a length, time, temperature, etc., to a unit of measurement, such as the meter, second or degree Celsius. The science of measurement is called metrology.

The English word measurement originates from the Latin mēnsūra and the verbmetiri through the Middle French *mesure.*

Electrical measuring tools and instruments are sensitive and delicate so extra care is necessary in handling them. These are used to measure currents, voltages, resistances, wattages and other important elements in electrical works. This topic, will tackle the function/use of each measuring tool and instrument used in doing a electrical task. Different kinds of measuring tools and precision measuring instruments are as follows:

Measuring tool/instrument	Description
 	***Test Light*** is a pocket size tool used to test the line wire or circuit if there is current in it.
	***Micrometer*** is used to measure the diameter of wires/conductors in circular mils. It can measure small and big sizes of wires and cables.
	***Wire Gauge*** is used in determining the size of wires/conductors. The gauge ranges from 0 to 60 awg (American wire gauge).
	**Ruler/foot rule** is a measuring tool used to measure length, width and thickness of short flat object and in sketching straight lines
	**A ruler/rule is a tool used in, for example, geometry, technical drawing, engineering, and carpentry, to measure lengths or distances or to draw straight lines. Strictly speaking, the ruler is the instrument used to **rule** straight lines and the calibrated instrument used for determining length called a measure. However, common usage calls both instruments rulers and the special name straight edge is used for an unmarked rule.*

 	***Pull-Push Rule*** is a measuring tool used to measure the length of an object in centimeter and inches .
 	***Ammeter*** is an instrument used to measure the amount of electrical current intensity in a circuit. The unit of measure is ampere (a). It is connected along or series to the circuit ***Voltmeter*** is an instrument used to measure electrical pressure or voltage of a circuit. The unit of measure is volt (v). This is connected across or parallel to the circuit.
 	***Clamp Ammeter*** is also called tong-tester. It is used to measure current flowing in a conductor. It is clamped or hanged in a conductor. ***Volt-Ohm-Milliammeter (VOM)*** otherwise called as Multi-tester; is used to measure the voltage, resistance and current of a circuit. It is connected in parallel or series with the circuit depending on what to measure.

Remember

- ✓ There are different kinds of measuring tools and instruments in electricity that you can select that could measure currents, voltages, resistances, wattages and other important elements in electrical works
- ✓ Volt-ohm-milliammeter is also called multi-tester. The most common instrument in doing electrical testing.

Checking Your Understanding

I. Directions: Match the electrical measuring tools and instruments in Column A to their descriptions in Column B. Write the letter of your answer in the space provided before each number.

Column A	Column B
_____1. 	A. Voltmeter
_____2. 	B. Volt-ohm-milliammeter
_____3. 	C. Micrometer
_____4. 	D. Clamp Ammeter

_____5. 	E. Wire gauge
_____6. 	F. Ruler
_____7. 	G. Ammeter
_____8. 	H. Test light
_____9. 	I. Pull-push rule

Post-Test

Directions: Read the questions carefully and choose the correct answer. Write the word/s of your choice on your answer sheet.

1. A measuring tool used to measure the length of an object in centimeter and inches.
   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

2. It is used to measure the voltage, resistance and current of a circuit. It is also connected in parallel or series with the circuit depending on what to measure.
   A. Ammeter
   B. Volt-Ohm-Milliammeter
   C. Ohmmeter
   D. Voltmeter

3. The science of measurement is called:
   A. Astrology
   B. Measurology
   C. Metrology
   D. Numerology

4. An instrument used to measure the amount of electrical current intensity in a circuit.
   A. Ammeter
   B. Micrometer
   C. Ohmmeter
   D. Voltmeter

5. It is an instrument used to measure electrical pressure or voltage of a circuit.
   A. Ammeter
   B. Micrometer
   C. Ohmmeter
   D. Voltmeter

6. It is a measuring tool used to measure length, width and thickness of short flat object and in sketching straight lines.
   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

7. A pocket-sized tool used to test the line wire or circuit if there is current in it.
   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

8. It is also called tong tester. It is used to measure current flowing in a conductor.
   A. Ammeter
   B. Clamp Ammeter
   C. Ohmmeter
   D. Volt-Ohmmeter

9. It is used to measure the diameter of wires/conductors in circular mils. It can measure small and big sizes of wires and cables.
   A. Ammeter
   B. Micrometer
   C. Ohmmeter
   D. Voltmeter

10. It is used in determining the size of wires and conductors.
   A. Pull-push rule
   B. Ruler
   C. Test light
   D. Wire gauge

ANSWER KEY:

Pre-Test:

1. Ammeter
2. Test light
3. Pull-Push rule
4. Micrometer
5. Volt-Ohm-Milliammeter
6. Clamp Ammeter
7. Wire gauge
8. Ruler
9. Voltmeter
10. Metrology

Looking back:

Complete Me

1. For me
   Check the delivery for the consignee's name and address
2. Damaged
   Do not sign the receipt before inspecting for damage. Check for holes, water, stains and tears.
3. Piece count correct
   Count the pieces and match the number on the delivery receipt to the number you have counted.

Can you identify me

1. Signatures
2. Short Notations
3. Damage notations

Checking Your Understanding:

1. Micrometer
2. Wire gauge
3. Voltmeter
4. Volt-Ohmmeter
5. Clamp Ammeter
6. Pull-push rule
7. Test light
8. Ammeter
9. Ruler

Post Test:

1. Pull-Push rule
2. Volt-Ohm-Milliammeter
3. Metrology
4. Ammeter
5. Voltmeter
6. Ruler
7. Test light
8. Clamp Ammeter
9. Micrometer
10. Wire gauge

References

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