

**PROGRAMME: ICP
CENTRE: POINT FORTIN
COURSE: ELECTRICAL INSTALLATION
LEVEL # 1
INSTRUCTOR: MASLYN VERNE MENDEZ**



LESSON OBJECTIVE

At the end of this unit, the students will be able to:

- Identify the different types of measuring devices and their use.**
- List common measuring devices.**
- Use appropriate measuring devices to measure different objects accurately.**

VIDEO ON MEASURING DEVICES

<https://www.youtube.com/watch?v=pGyf1YxcdXc>

WHAT IS A MEASURING DEVICE/ INSTRUMENT?

- A measuring instrument is a device to measure a physical quantity. In the physical sciences, quality assurance, and engineering, measurement is the activity of obtaining and comparing physical quantities of real-world objects and events.



(Tenaquip, n.d.)

TYPES OF MEASURING DEVICES

- Calipers
- Micrometer
- Laser Measure
- Ruler
- Compass
- Square
- Measuring Tape
- Tailor's Measuring Tape
- Angle Gauge
- Level
- Tachometer
- Protractor
- Angle Locator
- Bubble Inclinator
- Pressure Gauge
- Thermometers
- Clocks
- Speedometers
- Odometers
- Measuring Cups
- Glucometer

THE USE OF CALIPERS AND MICROMETERS

▪ VERNIER CALIPERS

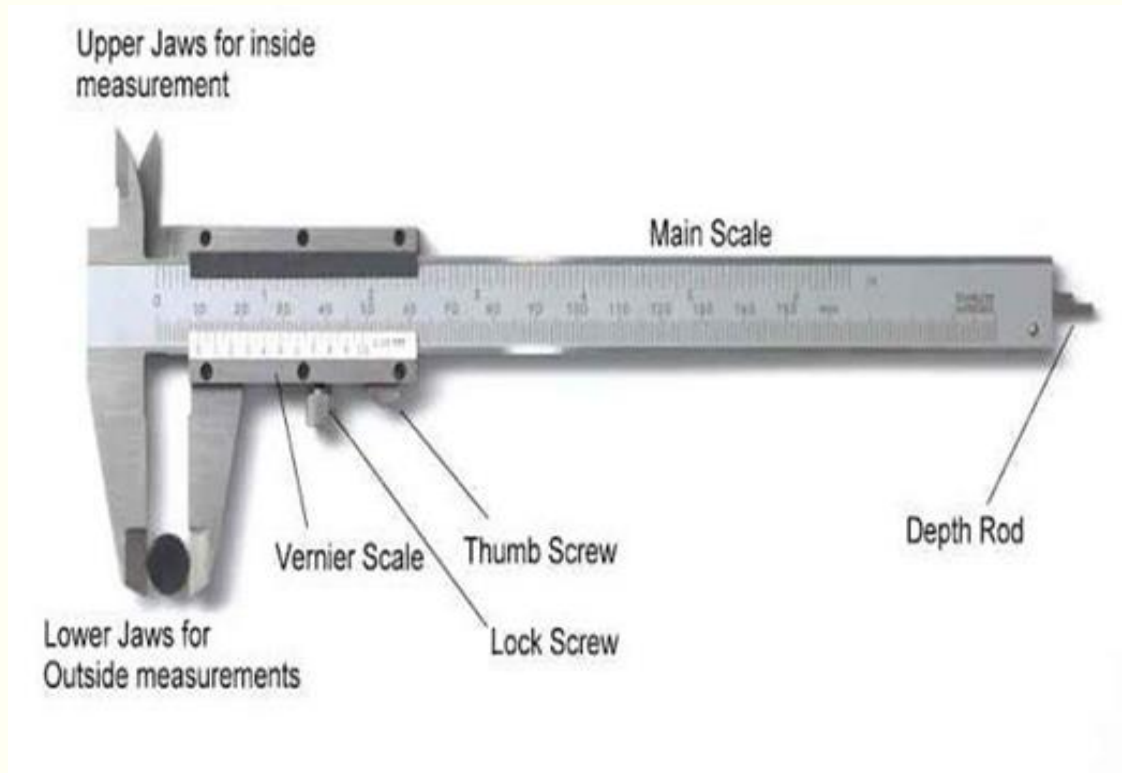
- A caliper is a type of measuring tool that measures the distance between two opposite sides of an object. Calipers are meant for measuring thicknesses and internal or external diameters inaccessible to a scale. This tool has been used for thousands of years, dating back to ancient Rome and China.

▪ MICROMETERS

- A micrometer is a measuring instrument that can make extraordinarily precise measurements. Most micrometers are designed to measure within one one-thousandth of an inch! That's a close fit. Exact measurements like this are necessary when even the smallest of space between objects can cause problems or difficulties.

THE USE OF CALIPERS AND MICROMETERS

VERNIER CALIPER



MICROMETER



(Misumi, n.d.)

LASER MEASURE AND RULER

▪ LASER MEASURE

- Laser tape measures are alternatives to traditional metal tape measures; they're used to calculate lengths, widths and heights of up to about 650 feet (198 meters). They're generally considered accurate to within an eighth of an inch (3 millimeters) when measuring a distance of up to 300 feet (91.5 meters).



(Borch, n.d.)

▪ RULER

- A ruler, sometimes called a rule or line gauge, is a device used in geometry and technical drawing, as well as the engineering and construction industries, to measure distances or draw straight lines.



(Vector Stock, 2019)

COMPASS AND SQUARE

- COMPASS

- A compass is a device that indicates direction. It is one of the most important instruments for navigation. This compass was used by Robert Peary to reach the North Pole, allegedly the first person to do so. A compass is a device that indicates direction.



(Map measure, n.d.)

- SQUARE

- A square is a tool used for marking and referencing a 90° angle, though mitre squares are used for 45° angles. Squares see common use in woodworking, metalworking, construction and technical drawing. Some squares incorporate a scale for measuring distances (a ruler) or for calculating angles.

(Walmart, n.d.)



MEASURING TAPE AND TAILOR'S MEASURING TAPE

▪ MEASURING TAPE

- A flexible ruler used to measure size or distance is a tape measure. The design allows for a measure of great length to be carried in a pocket or a toolkit and can be used to measure around curves or corners.



(Tenaquip, n.d.)

▪ TAILOR'S MEASURING TAPE

- Tape measures that were intended for use in tailoring or dressmaking were made from flexible cloth or plastic. They are named "sewing tape". These types of tape measures were mainly used for the measuring of the subject's waist line. The self-marking tape measure allows the user an accurate one hand measure.



(Vector Stock, n.d.)

ANGLE GAUGE AND LEVEL

- ANGLE GAUGE

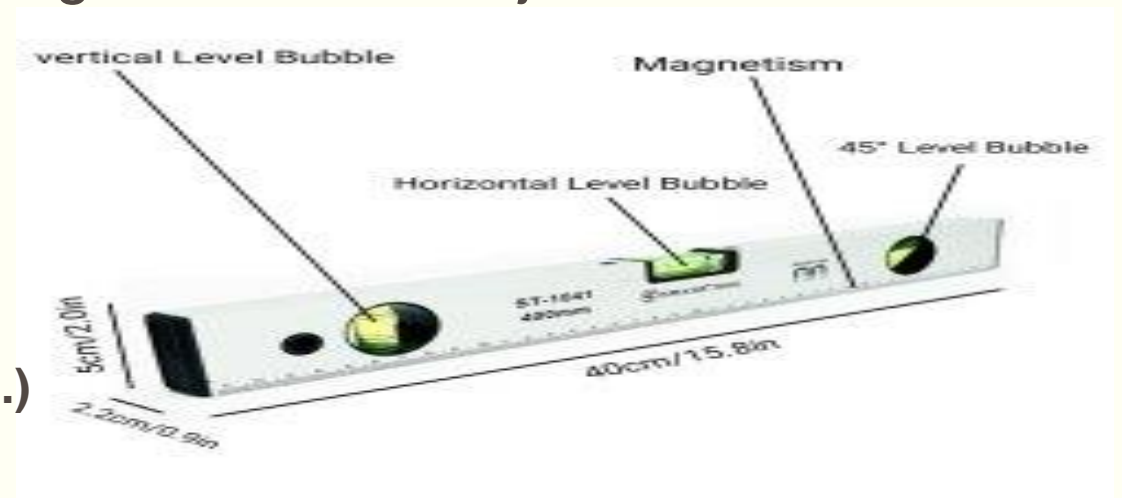
- An angle gauge is a tool used by foresters to determine which trees to measure when using a variable radius plot design in forest inventory. Using this tool a forester can quickly measure the trees that are in or out of the plot.



(Vector Stock, n.d.)

- LEVEL

- A level is an optical instrument used to establish or verify points in the same horizontal plane in a process known as levelling, and is used in conjunction with a levelling staff to establish the relative heights levels of objects or marks.



TACHOMETER AND SPEEDOMETER

■ TACHOMETER

- A tachometer is an instrument designed to measure the rotation speed of a shaft or disk. Tachometers generally measure rotations per minute (RPM) though some models also serve as rate meters and/or totalizers. Measuring the rotational speed of a spinning object is important for a number of reasons.



(Instruments, 2026)

(Limited, n.d.)

■ SPEEDOMETER

- Speedometer, instrument that indicates the speed of a vehicle, usually combined with a device known as an odometer that records the distance travelled.



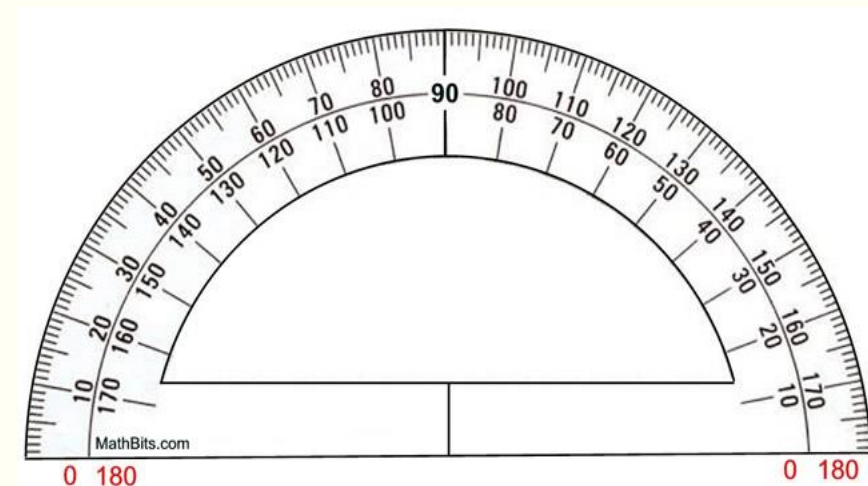
ANGLE LOCATOR AND PROTRACTOR

- ANGLE LOCATOR

- An angle finder is a great tool for measuring angles and for replicating the angle of an existing area. That's why it's often used by woodworkers and residential trim installers.

- PROTRACTOR

- Protractor, any of a group of instruments used to construct and measure plane angles. The simplest protractor comprises a semi-circular disk graduated in degrees—from 0° to 180° .



BUBBLE INCLINOMETER AND PRESSURE GAUGE

- BUBBLE INCLINOMETER

- Bubble Inclinator is a simple to use device for measuring range of motion in patients. The inclinometer can be used to measure range of motion in the neck, the hip, the elbow, the knee, the shoulder, the spine, the ankle, the wrist, and the MCP joint.



- PRESSURE GAUGE

- Pressure gauge, instrument for measuring the condition of a fluid (liquid or gas) that is specified by the force that the fluid would exert, when at rest, on a unit area, such as pounds per square inch or newtons per square centimetre.



(Instruments, 2026)

CLOCK AND THERMOMETER

- CLOCK

- A clock is a device used to measure, verify, keep, and indicate time. The clock is one of the oldest human inventions, meeting the need to measure intervals of time shorter than the natural units: the day, the lunar month, and the year.



(Vector Stock, n.d.)

- THERMOMETER

- A thermometer is a device used for measuring temperature. This ice-covered thermometer shows that the temperature is about 0 degrees Celsius, or 32 degrees Fahrenheit.



MEASURING CUPS AND ODOMETERS

- MEASURING CUP
- A measuring cup is a kitchen utensil used primarily to measure the volume of liquid or bulk solid cooking ingredients such as flour and sugar, especially for volumes from about 50 mL (2 fl oz) upwards.
- ODOMETER
- The odometer registers the distance travelled by the vehicle; it consists of a train of gears (with a gear ratio of 1,000:1) that causes a drum, graduated in 10ths of a mile or kilometre, to make one turn per mile or kilometre.



(Instruments, 2026)



GLUCOMETER AND MULTIMETER

GLUCOMETER

- A glucose meter, also referred to as a "glucometer", is a medical device for determining the approximate concentration of glucose in the blood. It can also be a strip of glucose paper dipped into a substance and measured to the glucose chart.



(Instruments, 2026)

MULTIMETER

- A Multimeter or DMM is a useful test instrument for measuring voltage, current and resistance, and some meters have a facility for testing transistors and capacitors. You can also use it for checking continuity of wires and fuses.



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DISCUSSION TIME



ASSIGNMENT

1. State what a measuring device is.
2. List three [3] types of measuring devices used in electrical works and state their purpose.
3. Discuss how a clock and thermometer is use for measurement.
4. Explain what a vernier caliper, multimeter, and pressure gauge are used to measure.
5. How can a compass device be used for measurement?
6. What can you use to measure small things?

ASSIGNMENT CONTINUED

7. What measuring tool would be efficient to measure larger objects?
8. What is the length of a notebook and pencil using inches and centimeters?