



Introduction to Measurement Tools





Activity

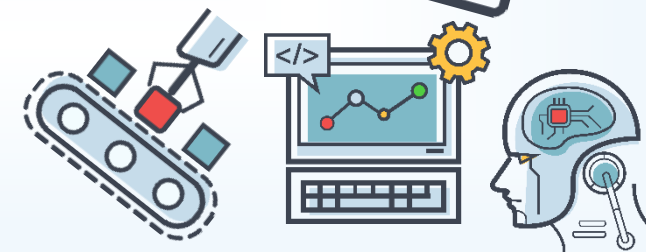
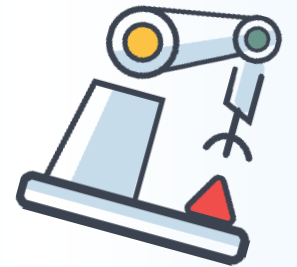
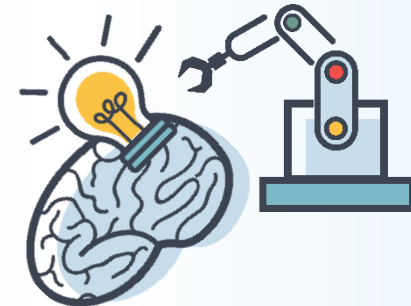
Vernier Caliper: Take a bottle cap, measure its inner as well as outer diameter & try to design it in 3D CAD software.

Multimeter: Take a battery, 5 different resistor, Diode & 2 LED. Try to check the voltage & Ampere of the battery. Resistance of resistor & value of diode.

Digital Oscilloscope: Try to check the wavelength of the Hand/body Current.

Spirit Level: Check the level of table whether the table is tilted or not.

Measurement tape: Try to measure the dimensions of table & record it in your notebook.



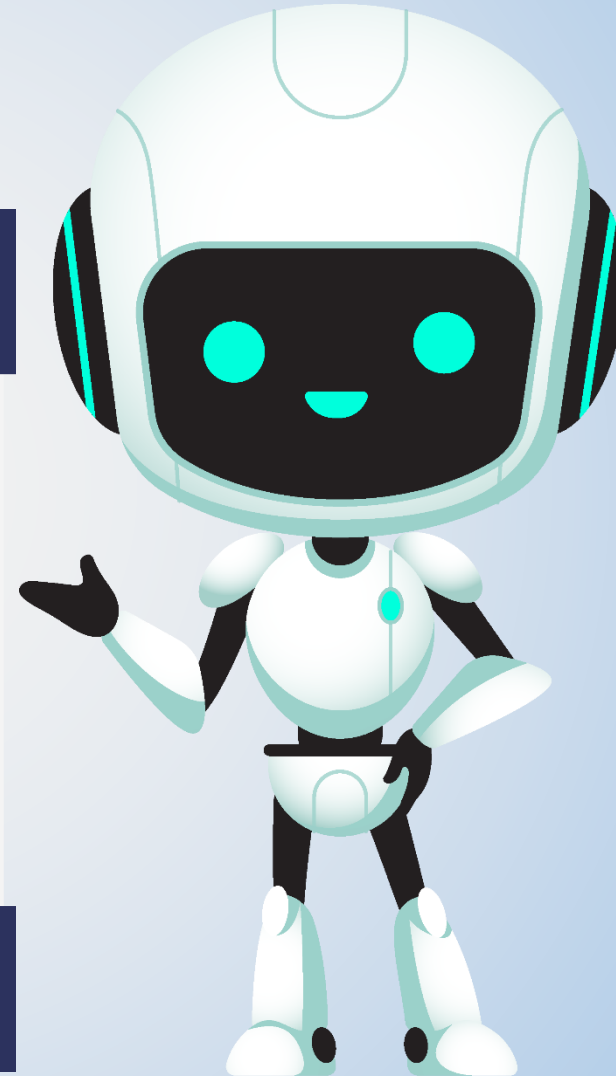
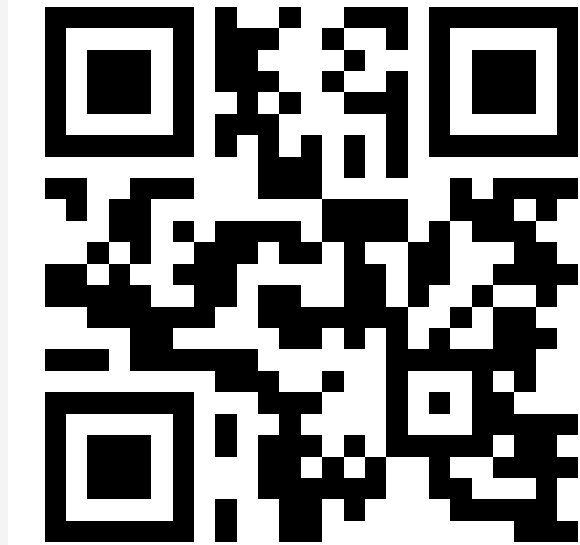
Vernier Caliper

- A Vernier scale (Vernier Caliper) is a visual aid to take an accurate measurement reading between two graduation markings on a linear scale by using mechanical interpolation ; thereby increasing resolution and reducing measurement uncertainty by using Vernier acuity to reduce human estimation error.





Working of Vernier Caliper



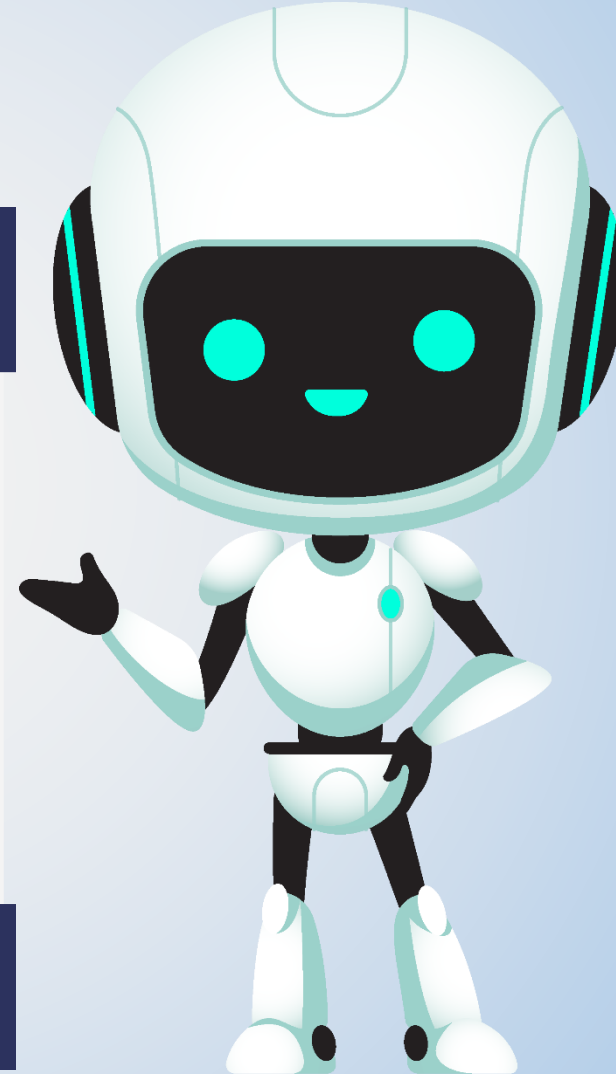
Multi Meter

A multimeter or a multi-tester, also known as a VOM (volt-ohm-milliammeter), is an electronic measuring instrument that combines several measurement functions in one unit. A typical multimeter can measure voltage, current, and resistance.





Working of Multimeter



Digital Oscilloscope

A digital storage oscilloscope (often abbreviated DSO) is an **oscilloscope which stores and analyses the signal digitally** rather than using analog techniques. It is now the most common type of oscilloscope in use because of the advanced trigger, storage, display and measurement features which it typically provides.



Specification & working

As per AIM guidelines

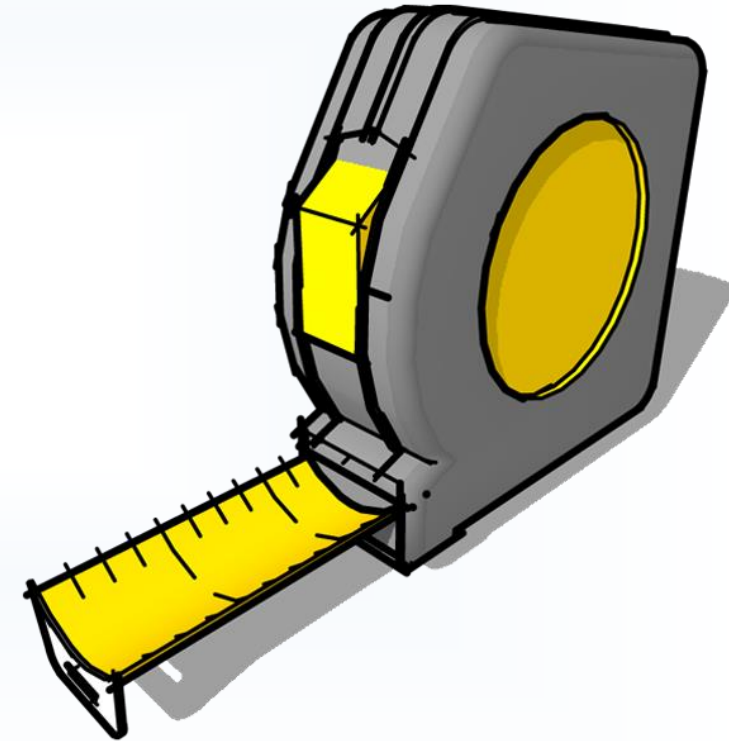
Minimum Bandwidth	50Mhz
Minimum Number of channels	2 channels
Sample Rate	1Gsa/s
With inbuilt waveform function generator	

How Digital Oscilloscope Work



Measuring Tape

A tape measure or measuring tape is a **flexible ruler and used to measure distance**. It consists of a ribbon of cloth, plastic, fiber glass, or metal strip with linear-measurement markings. It is a common measuring tool.



Spirit Level

A device consisting of a sealed glass tube partially filled with alcohol or other liquid, containing an air bubble whose position reveals whether a surface is perfectly level



