

# Precise Measurements



USING VERNIER CALIPERS

# Calipers



- Caliper – a device used to measure the distance between two opposite sides of an object.



- History
  - The earliest caliper dates back to the Greeks and Romans during the 6<sup>th</sup> century BC.
  - Vernier Caliper – invented by American Joseph Brown in 1851.



Types of Calipers  
Inside Caliper



**Used to measure the internal size of an object.**



## Types of Calipers

Inside Caliper

Outside Caliper



**Used to measure the external size of an object.**



## Types of Calipers

Inside Caliper

Outside Caliper

Vernier Caliper



**Used to measure with very high accuracy and precision. Uses a Vernier scale to measure external width, internal width and the depth of an object.**



## Types of Calipers

Inside Caliper

Outside Caliper

Vernier Caliper

Dial Caliper



**Used to measure with very high accuracy and precision. Uses a dial scale to measure external width, internal width and the depth of an object.**



## Types of Calipers

Inside Caliper

Outside Caliper

Vernier Caliper

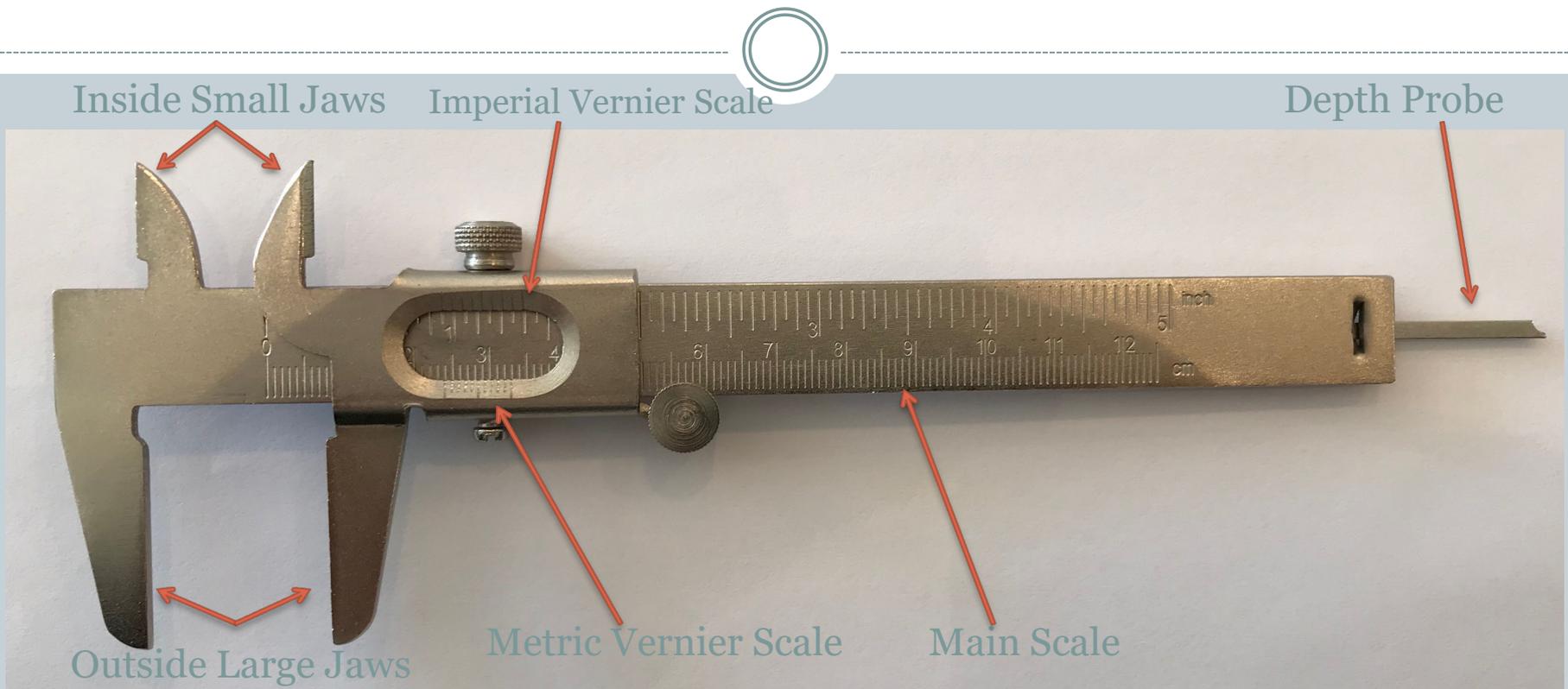
Dial Caliper

Digital Caliper



**Used to measure with very high accuracy and precision. Uses a digital scale to measure external width, internal width and the depth of an object.**

# Vernier Caliper



**Outside Large Jaws:** used to measure external width of an object.

**Inside Small Jaws:** used to measure internal width of an object.

**Depth Probe:** used to measure depths of an object or hole.

**Main Scale:** scale marked every mm and inch fractions

**Vernier Scale:** gives measurements to 0.05mm or better and measurements in a fraction of an inch.

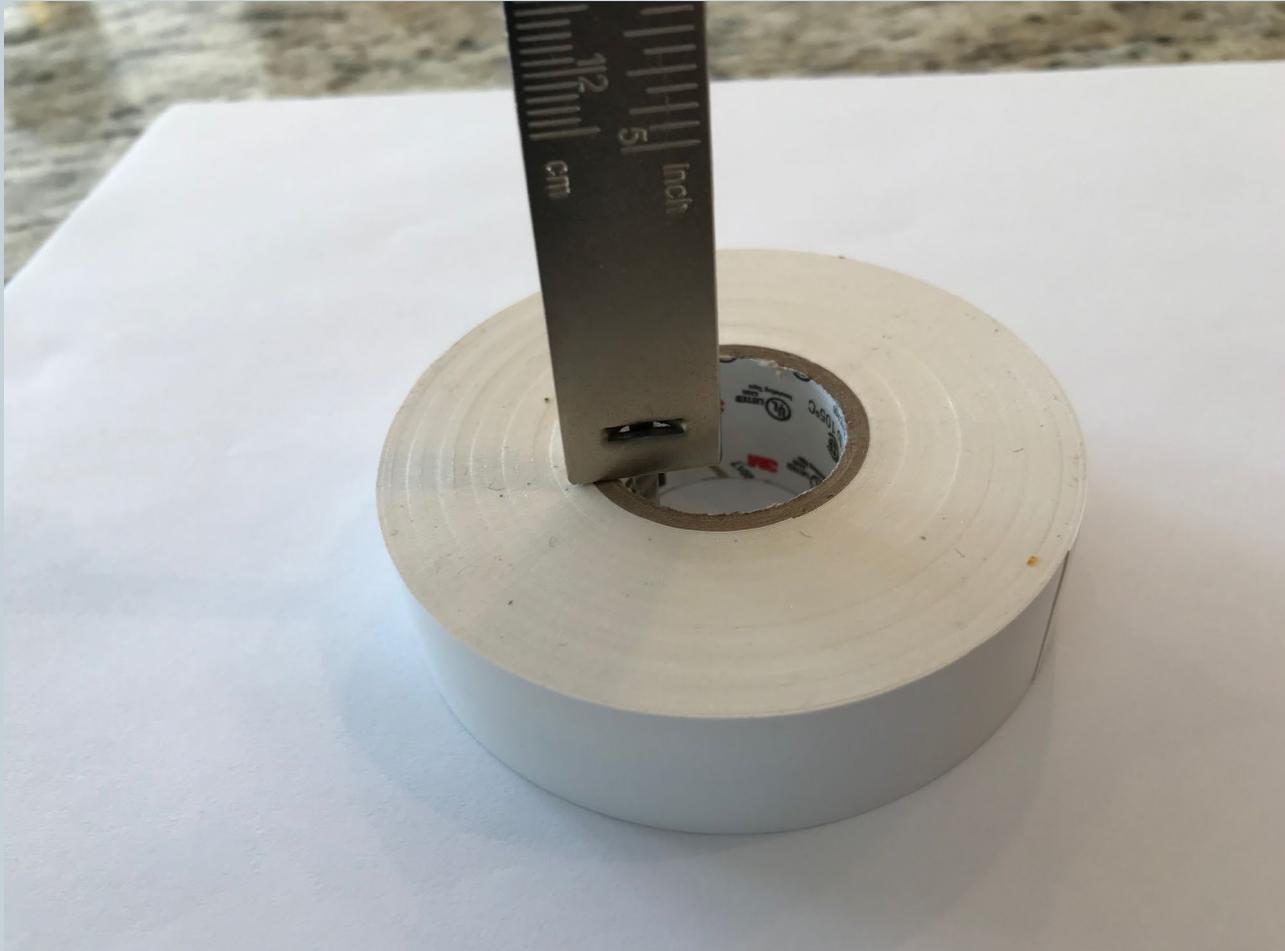
# Vernier Caliper: External Measurement



# Vernier Caliper: Internal Measurement



# Vernier Caliper: Depth Measurement



# Measuring for Vernier Caliper



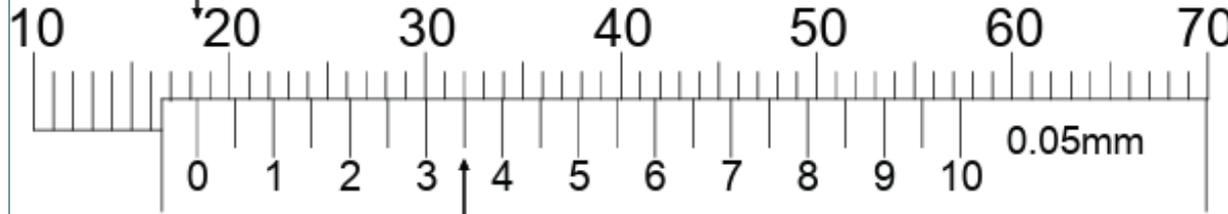
**METRIC READINGS**

# Metric Reading



Graduation: 0.05mm

18mm



Main scale reading: 18 mm

Vernier scale reading: 0.35mm

Reading: 18.35mm

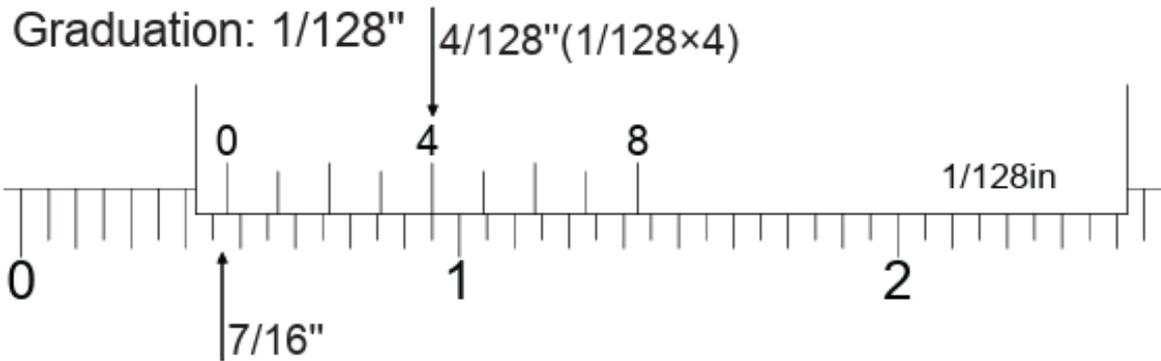
0.35mm(0.05×7)

# Measuring for Vernier Caliper



**IMPERIAL READINGS**

# Imperial Measurements



Main scale reading:  $7/16''$   
Vernier scale reading:  $4/128''$

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Reading:  $15/32''$