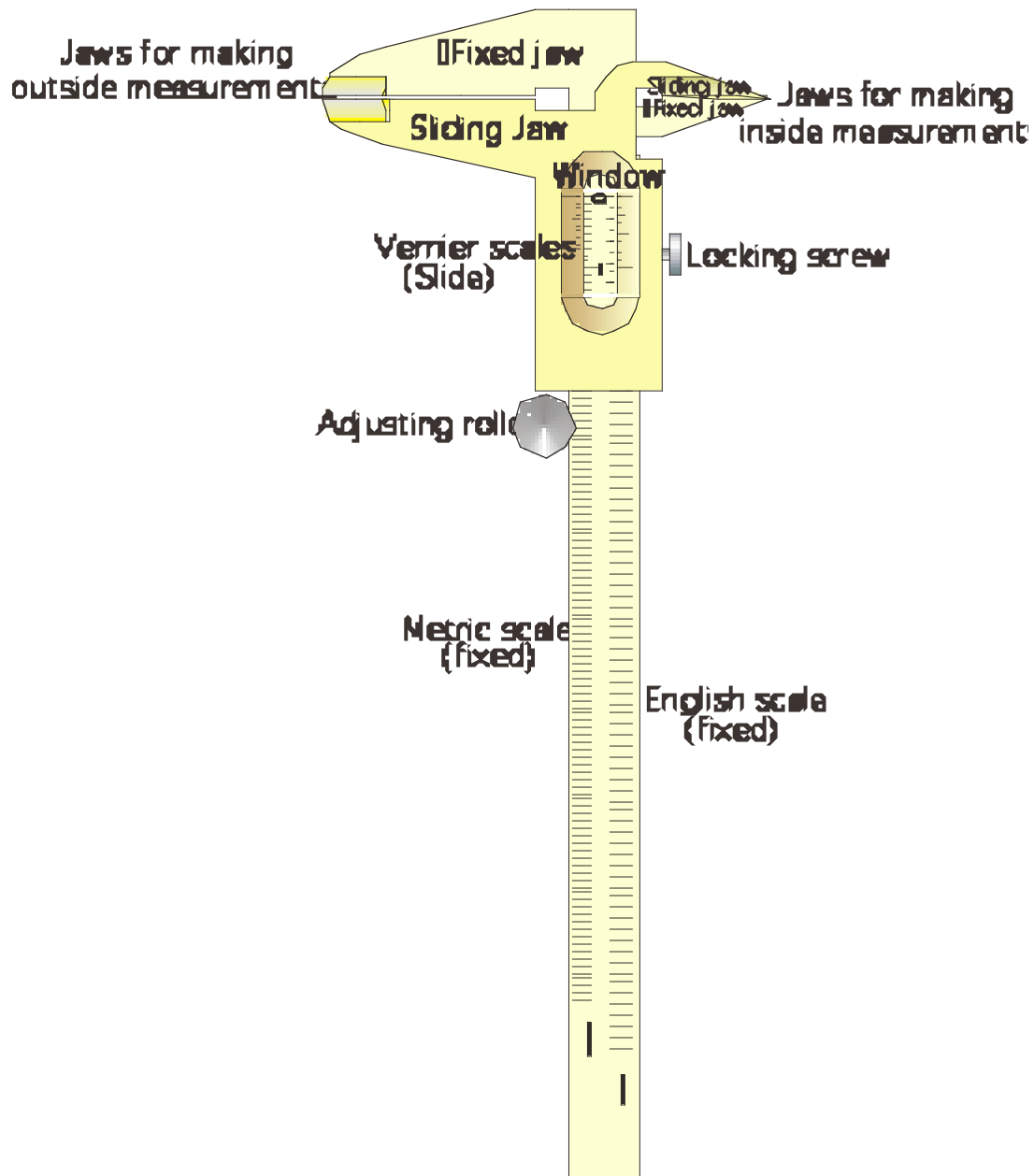


# HOW TO USE THE VERNIER CALIPERS

The vernier calipers are used to make accurate measurements of both “outside” and “inside” dimensions of objects by using both fixed scales and a vernier scale on a sliding piece.

The calipers consist of a “ruler” with fixed scale(s) etched on it and a fixed “jaw” at one end. The other part is a slider with a “jaw”, viewing window (with vernier scale), adjusting roller, and a locking screw.

## Vernier caliper



The vernier scale (Pierre Vernier 1580-1637) allows an accurate reading to be made to one tenth of the smallest division of a fixed ruler. As an example, if you have a scale in centimeters with ten divisions per centimeter (i.e. millimeters), then by using a vernier scale you can make an accurate measurement to  $1/10^{\text{th}}$  of a millimeter.

Hold the calipers in your right hand with the “window” on the slider facing you and the side of the adjusting roller under your thumb.

To make an outside measurement hold the object to be measured in your left hand, open the “jaws” of the calipers until they are a bit wider than the object to be measured. This is done by turning the adjusting roller counter-clockwise with your thumb. **Note: when the jaws are opened a thin metal guide is extended from the end of the calipers. This can cause injury! Use caution!**

Next, place the object to be measured between the jaws and reverse the direction that you turn the adjusting roller until the jaws just touch the object. You can tighten the locking screw to keep the jaws from moving or, if the calipers are “stiff” enough, you can carefully remove the object from between the jaws to make your reading.

Look at the position of the vernier scale in relation to the fixed scale as seen in the window of the slide. The measurement will be the total of that part of the fixed scale to the left of the vernier scale **plus** that number of divisions of the vernier scale that are to the left of the position where the two scales most nearly line up. This number is expressed as a decimal. See example below.

