

MICROMETERS - Name _____

Description

This Activity Plan is designed as one among many through which students will rotate within the Automotive Service Technician component of Skills Exploration 10–12.

A micrometer is a detailed measuring instrument capable of making very exact measurements even to 1/1000 of an inch. Automotive technicians use micrometers in order to ensure that the work they do is extremely accurate.

Note: Micrometers are expensive, sensitive measuring instruments. Not all schools can afford to purchase them. This activity should be considered a secondary supplementary activity to be introduced only if tools and facilities exist.

Lesson Outcomes

The student will be able to measure a variety of objects and obtain precise measurements to within very exact specifications.

Assumptions

Prior to doing the activity themselves, students will have been given some theory, and the instructor will have demonstrated the proper procedure of using a micrometer.

* Terminology

Anvil: the shiny part of the micrometer that the spindle moves toward and that the sample is set against.

Frame: the main supporting structure of the micrometer.

Index line: the horizontal line on the sleeve that is used as an indicator line for which mark to read on the thimble.

Micrometer: a detailed measuring instrument used to measure very fine, exact measurements.

Spindle: the shiny cylindrical part of the micrometer that the thimble moves toward the anvil.

Ratchet screw: found on the end of the thimble, used for "final tightening" on an object to get a consistent measurement from person to person.

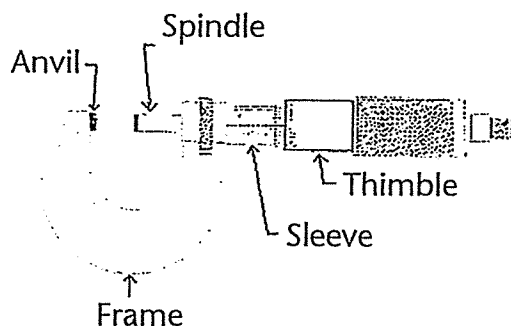
Thimble: the part of the micrometer that is usually turned with the thumb. The thimble has graduated markings.

Estimated Time

45–60 minutes

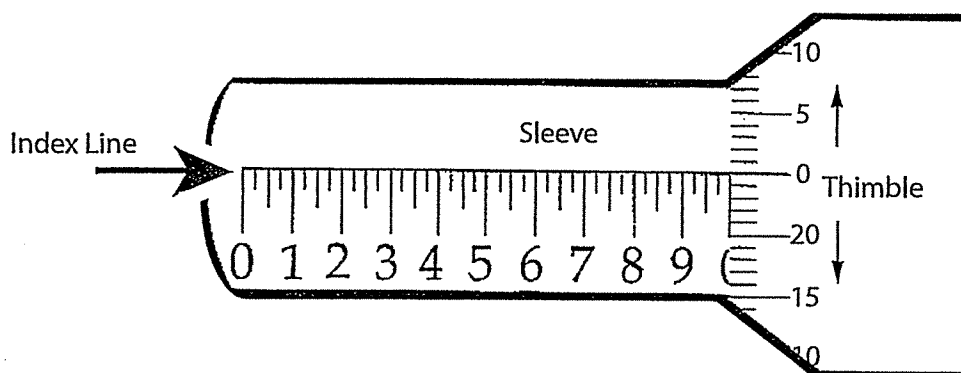
HOW TO READ A MICROMETER

Reading a micrometer takes practice.



To learn to read the mike you need to understand the **thimble** and the **sleeve**.

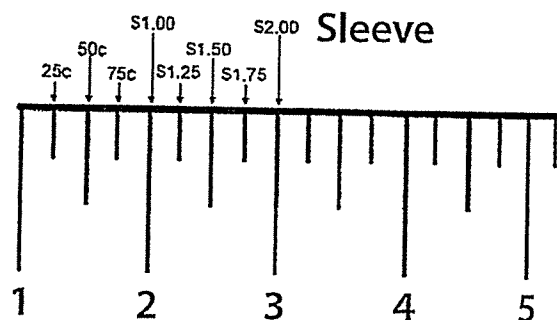
Here we are going to learn to read the micrometer by figuring out the markings on the thimble and the sleeve.



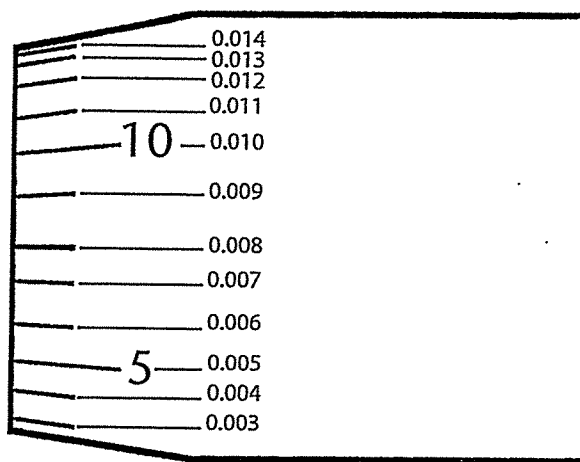
The **sleeve** does not move. It looks like a ruler with 10 numbers. The space between each number is divided into quarters. As the **thimble** rotates around this sleeve it covers up or reveals the numbers marked on the sleeve.

The **thimble** has numbers and markings on it from 0 to 24. One complete revolution of the thimble (from 0 all the way around to 0 again) moves the micrometer exactly 0.025 inches. Thus each revolution of the thimble moves it to the next "quarter" line on the sleeve.

It is easy to read a micrometer if you think of markings on the sleeve as dollars and quarter: and the thimble as "pennies".



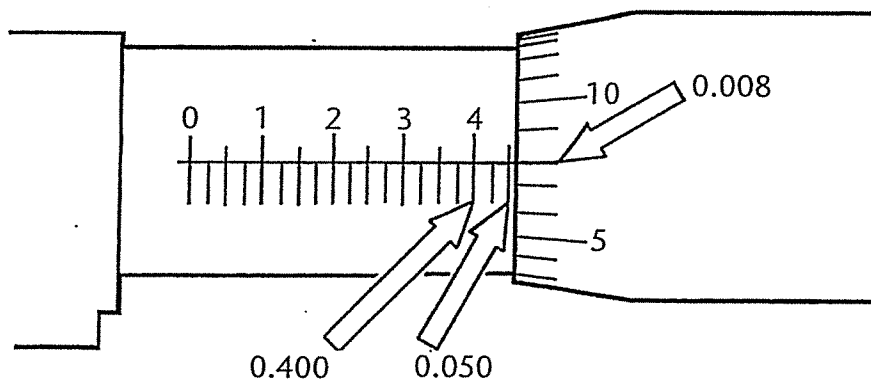
Now it gets a little easier to read the mike.



To read the micrometer, simply add up the "dollars", "quarters" and "pennies" in the correct order. See example below.

The reading is composed of:

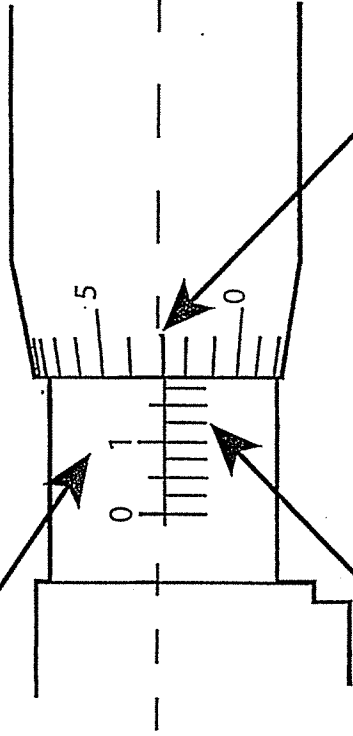
4 Large graduations or 4×0.100	$= 0.400$
2 Small graduations or 2×0.025	$= 0.050$
8 Graduations on the thimble or 8×0.001	$= 0.008$
	$= 0.458"$



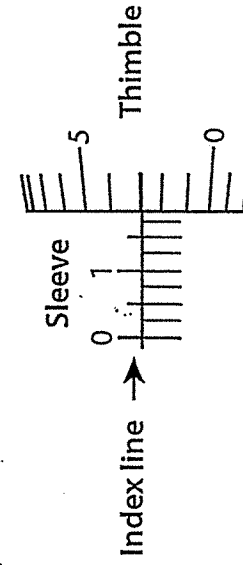
Name: _____

Reading the Micrometer

1. Write down the last visible number before the thimble edge on #1.



2. Count the number of small lines between the number identified in #1 and the thimble edge. Multiply the number of lines by .025. Write the answer down on #2.



3. Find the closest number to the index line on the thimble.
Note: The number must be below the Index Line. Each line is worth 0.001. Write the number down in #3.

#1	_____
+	
#2	_____
+	
#3	_____
Total	_____