

MATH-in-CTE LESSON PLAN TEMPLATE

LESSON TITLE: Micrometers

AUTHOR: Jim Berles (modified from the Math-in-CTE Automotive Technology lesson plan by Steve Christy and Amanda Hession)

OCCUPATIONAL AREA: Automotive

CTE CONCEPT(S): Using correct tool, using correct measurement

MATH CONCEPTS: Measuring using a micrometer. Understanding place value, including tenths, hundredths, and thousandths place. Adding and subtracting using correct place values.

CCSS: Number & Quantity 9-12.Q.3

Mathematical Practice: #4 Model with mathematics.
#5 Use appropriate tools strategically.
#6 Attend to precision.

LESSON OBJECTIVE: Students will be able to make precise measurements up to $1/1000^{\text{th}}$ of an inch. Students will be able to correctly add and subtract measurements

SUPPLIES NEEDED: Micrometers, Instructor Notes, Student Notes, Student worksheet, and Student Quiz.

THE “7 ELEMENTS”	TEACHER NOTES
1. Introduce the lesson. Explain the importance of precise measurements. What would happen if the measurements were not precise?	Talk about the different parts of a car that need precise measurements. Discuss common problems that can occur if something is not measured correctly
2. Assess students’ math awareness as it relates to the CTE lesson.	Ask students what they know how to measure? How precise do they usually measure? Question students to see how much they know about place value
3. Work through the math example embedded in the CTE lesson.	Use Instructor notes to review place value Go to the websites to explain how to use a micrometer: http://www.stefanelli.eng.br/en/aka-micrometer-caliper-outside-inch-

	thousandths.html http://www.linnbenton.edu/auto/day/mike/practice1.html
4. Work through related, contextual math-in-CTE examples.	Students turn the thimble on the micrometer to the indicated values in the example problems
5. Work through traditional math examples.	Students should complete the be able to show the correct addition of values on the examples on the Student notes sheet
6. Students demonstrate their understanding.	<p>Allow students to begin work on the Micrometer worksheet. Monitor students to ensure they are using the micrometer correctly. While students are working, circulate the classroom, answering questions and assisting as needed. Formatively assess students understanding through their work on the worksheet. Clarify any misconceptions and troubleshoot common mistakes. Encourage students who finish early to help others.</p>
7. Formal assessment	Students will complete the Micrometer Quiz.