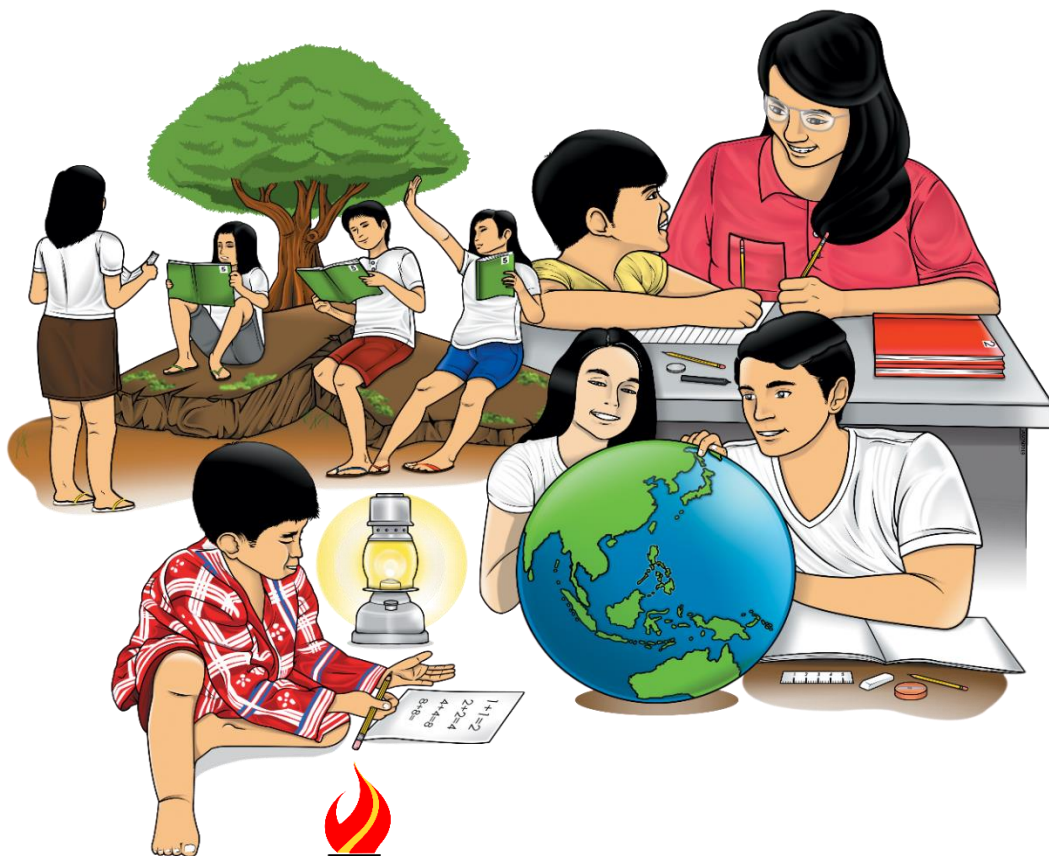


7/8

TLE (SMAW)

Module 2: PERFORM MENSURATION AND CALCULATIONS (MC)



TLE SMAW– Grade 7/8
Alternative Delivery Mode
Module 2: Perform Mensuration and Calculations (MC).
First Edition, 2020

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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by- step as you discover and understand the lesson prepared for you.

Pre-test are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module, or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teachers are also provided to the facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. Read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



What I Need to Know

Welcome to the world of **Shielded Metal Arc Welding SMAW!**

This Module is an exploratory course which leads you to **Shielded Metal Arc Welding [SMAW]** National Certificate Level II [NC II]. It covers common competencies for you to possess. These competencies include basic knowledge in mensuration and calculations.

Learning Objectives

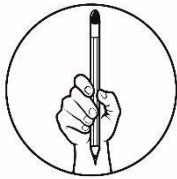
At the end of the lesson, you are expected to do the following:

1. Select measuring instruments – TLE-IAAW7/8MC-Od1

Manipulate the measuring tool for a specified task

2. Carry out measurements and calculations – TLE-IAAW7/8MC-Ode-

2 Measure and calculate the dimensions of a specific object



What I Know

Pre-test

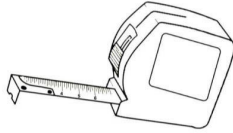
Let us determine how much you already know about selecting measuring instrument and carrying out measurement and calculations.

- I. Direction:** Identify the measuring instrument being shown or described in each item. Choose your answer on the table below. Write the letter of the correct answer in your activity notebook.

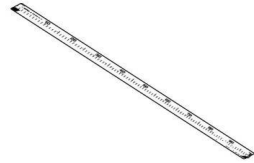
A. Pull-push Rule	B. Ruler	C. Meter Stick	D. Caliper
--------------------------	-----------------	-----------------------	-------------------

1. It is used for measuring long pieces of stock.
2. 12-inch/one-foot rule and it is used to take/make simple measurements.
3. It is used for measuring short pieces of stock.
4. It is used for measuring inside diameter.
5. A measuring device which is one (1) meter in length.
6. It is used for measuring outside diameter.

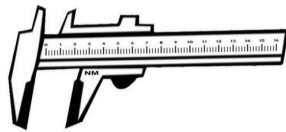
7.



8.



9.



10.

II. Direction: Read and analyze the following question. Write the letter of the correct answer in your activity notebook.

11. A system of measurement originated in England also known as the U.S. customary system of measurement.
- a. Metric System
 - b. English System
 - c. Standard System
 - d. Measurement System
12. It was developed in France and also known as the S. I. (International Standard).
- a. Metric System
 - b. English System
 - c. Standard System
 - d. Measurement System
13. The inch is divided into segments called _____ .
- a. System
 - b. Measurement
 - c. Standard
 - d. Graduation
14. The inch can be divided into 16, 8, 4 and 2, _____ parts.
- a. Equal
 - b. Not Equal
 - c. More than
 - d. Less than
15. Which of the following is not included in English System?
- a. Yard
 - b. Meter
 - c. Feet
 - d. Inch

Lesson

2

Perform Mensuration and Calculations (MC)

Shielded metal arc welding is an important part of our lives. Building and infrastructural projects are dependent on metal arc welding and plays an important role in construction works.

The success of the industry depends mainly on the knowledge of accurate measurements and calculations. This module will guide you in performing measurements and calculations in relation to metal arc welding.



What's In

Do you have some measuring tools at home? Can you identify those tools? I think you should know, because some of those tools are used in SMAW works by our worker in building construction trades. But, if not, you are going to explore here how to perform measurements and calculations.



Notes to the Teacher

1. Read the lessons properly. These will guide you on what to do at the end of this module.
2. Find out what you already know by taking the learning activities.
3. Apply what you have learned in another activity or real life situation.

SYSTEM OF MEASUREMENTS

The two (2) systems of measurements are: The English and the Metric System. The English system originated in England also known as the U.S. customary system of measurement while the Metric System was developed in France and also known as the S. I. (International Standard).

I. (UNIT OF MEASURES) - LINEAR MEASUREMENT

ENGLISH

Yard (yd)

Foot (ft) / (')

Inch (in) / (")

METRIC

meter (m)

decimeter (dm) 1/10 meter

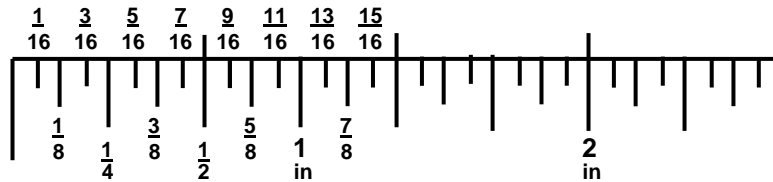
centimeter (cm) 1/ 100 meter

millimeter (mm) 1 /1000 meter

II. READING OF MEASUREMENTS

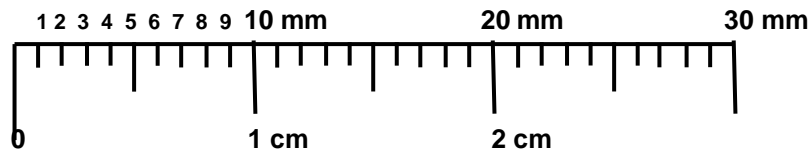
A. Reading the inch

The inch is divided into segments called graduations. Each graduation represents a measurement in the form of a proper fraction. The inch can be divided into 2, 4, 8 and 16, equal parts.



Note: The illustration is not the actual length of an inch.

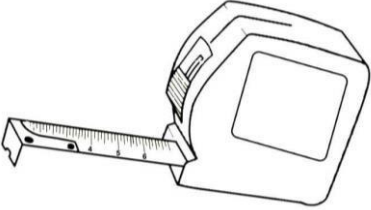
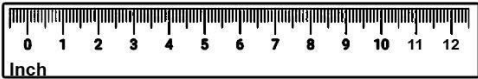
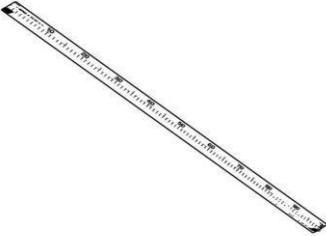
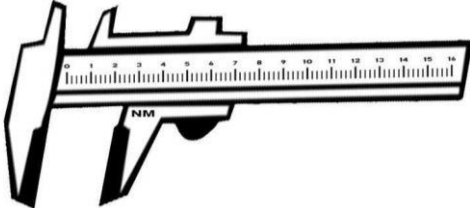
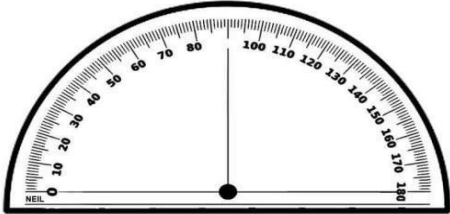
B. Reading the centimeter and millimeter





What's New

The following are common measuring instruments and their uses.

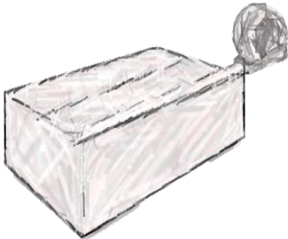
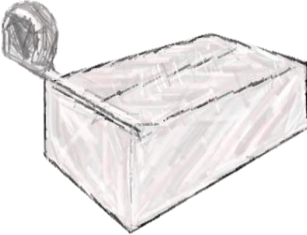
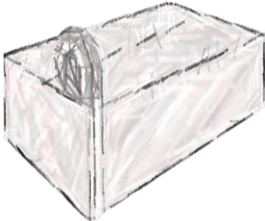

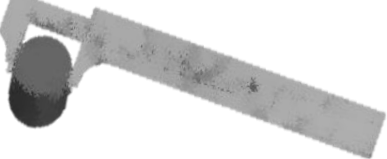
<p>1. Pull-push rule – used for measuring long pieces of stock.</p>	
<p>2. Ruler – used for measuring short pieces of stock.</p>	
<p>3. Meter Stick – a measuring device which is one (1) meter in length.</p>	
<p>4. Caliper – used for measuring the diameter.</p>	
<p>5. Protractor – a measuring instrument used to measure angles</p>	



What is It

The SMAW worker for metal arc welding can successfully do the job with the proper knowledge in basic measurements and calculations. Here are some of information on measuring the specific object using appropriate measuring instrument.

WAYS OF TAKING DIMENSION USING SPECIFIC MEASURING INSTRUMENT

TASK	MEASURING INSTRUMENT/TOOL	ILLUSTRATION
1. Measure the length of the stock/metal	<ul style="list-style-type: none"> ● RULER ● PULL-PUSH RULE ● RULER ● METER STICK 	
2. Measure the width of the metal/stock	<ul style="list-style-type: none"> ● RULER ● PULL-PUSH RULE ● RULER ● METER STICK 	
3. Measure the height of the metal/stock	<ul style="list-style-type: none"> ● RULER ● PULL-PUSH RULE ● RULER ● METER STICK 	
4. Measure the inside diameter of a cylindrical object	<ul style="list-style-type: none"> ● CALIPER 	
5. Measure the outside diameter of a cylindrical object	<ul style="list-style-type: none"> ● CALIPER 	

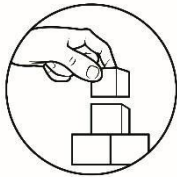
Activity 1

Direction: Answer the following questions and write your answers in your activity notebook.

1. Have you seen any measuring tools in your house? Give at least 3 examples

2. What are the common units of measurement used for metal products?

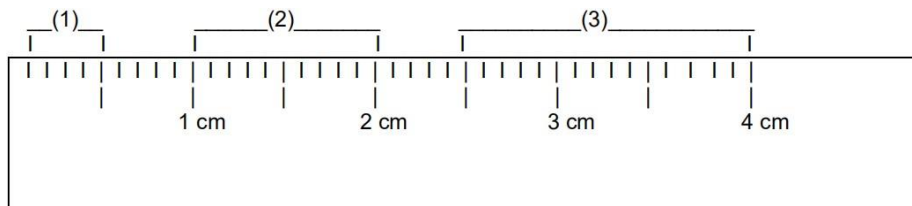
3. What is the importance of using correct measurements for metal arc welding?

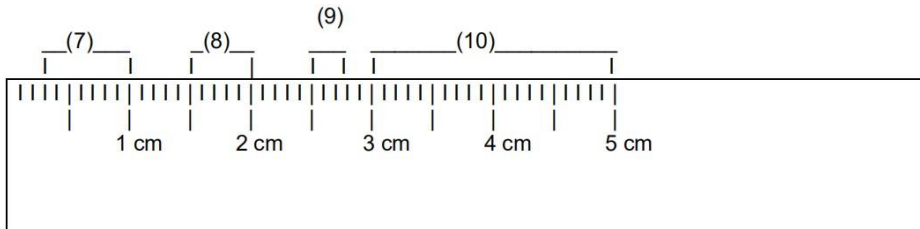
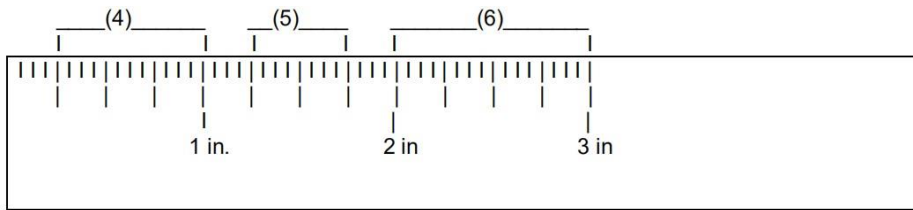


What's More

Activity 2

I. Direction: Write the correct measurements indicated below. Write your answer on your activity notebook.





- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |



What I Have Learned

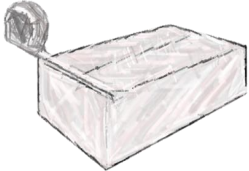
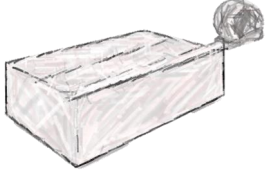
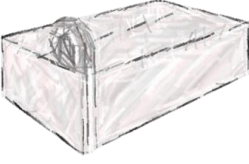
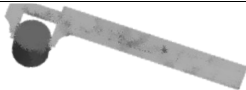
Activity 3

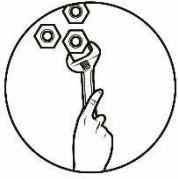
- I. Direction:** Enumerate the following.
- 1-2 – What are the two systems of measurements
 - 3-5 – Give at least 3 units of linear measurements in the English System
 - 6-9 – Give at least 3 units of linear measurements in the Metric System
- II. Direction:** Match the unit with its equivalent symbol.

Column A	Column B
1. Centimeter	a) yd
2. Millimeter	b) in
3. Meter	c) cm

4. Yard	d) m
5. Inch	e) mm
6. Decimeter	f) dm
7. Feet	g) ft

III. Direction: Identify the different ways of taking dimensions as shown.

8.		_____
9.		_____
10.		_____
11.		_____



What I Can Do

Activity 4: Measure Me!

Directions: You need to measure the dimension of your table in your house using the available tools you have. Apply the 2 measuring system: Metric System (use **Centimeter**), and English System (use **Inch**).

- a. What is the equivalent of the table's dimension in centimeter and in inch?

- b. Draw the layout of your table and write the exact measurements (centimeter and inches) in each dimension?

A large empty rectangular box with a black border, intended for drawing the layout of a table and writing the exact measurements in centimeters and inches.



Assessment

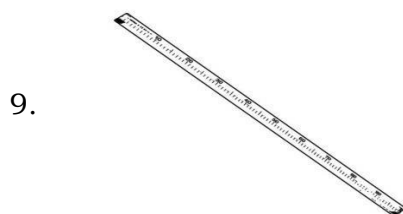
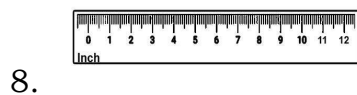
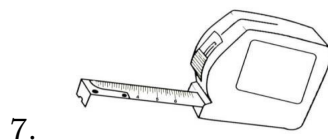
Post-Test

Let us determine how much you have learned about selecting measuring instrument and carrying out measurement and calculations. Take this test.

- I. Direction:** Identify the measuring instrument being shown or described in each item. Choose your answer on the table below. Write the letter of the correct answer in your activity notebook.

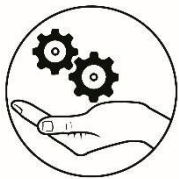
A. Pull-push Rule	B. Ruler	C. Meter Stick	D. Caliper
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1. It is used for measuring long pieces of stock.
2. 12-inch/one-foot rule and it is used to take/make simple measurements.
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4. It is used for measuring inside diameter.
5. A measuring device which is one (1) meter in length.
6. It is used for measuring outside diameter.



II. Direction: Read and analyze the following question. Write the letter of the correct answer in you activity notebook.

11. A system of measurement originated in England also known as the U.S. customary system of measurement.
 - a. Metric System
 - b. English System
 - c. Standard System
 - d. Measurement System
12. It was developed in France and also known as the S. I. (International Standard).
 - a. Metric System
 - b. English System
 - c. Standard System
 - d. Measurement System
13. The inch is divided into segments called _____.
 - a. System
 - b. Measurement
 - c. Standard
 - d. Graduation
14. The inch can be divided into 2, 4, 6, 8 and 12 _____ parts.
 - a. Equal
 - b. Not Equal
 - c. More than
 - d. Less than
15. Which of the following is not included in English System?
 - a. Yard
 - b. Meter
 - c. Feet
 - d. Inch



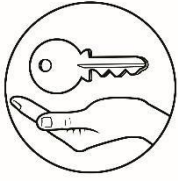
Additional Activities

Activity 5: Find Me!

Find the Six (6) words related to unit of measurement.

A	S	F	E	E	T	T	Y	M	R	D	D
G	D	O	A	A	R	I	F	E	G	F	D
D	A	O	I	E	R	N	F	T	G	F	D
O	A	T	U	T	R	C	F	E	G	F	R
R	B	F	E	D	E	H	T	R	A	A	E
T	A	A	A	A	F	E	T	A	E	D	A
Y	B	B	E	D	E	S	T	T	T	F	E
T	B	B	D	D	F	Y	A	R	D	F	F
T	B	B	E	F	D	Q	E	G	E	E	E
C	E	N	T	M	E	T	E	R	G	H	F
Y	T	R	E	G	H	T	Y	Y	U	H	B

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



Answer Key

<p>Pre-Test</p> <p>1. A 2. B 3. B 4. D 5. C 6. D 7. A 8. B 9. C 10. D 11. B 12. A 13. D 14. A 15. B</p>	<p>Activity 2</p> <p>1) 5mm/0.5cm 2) cm 3) B 4) 7/5 in 5) 5 in 6) in 7) mm 8) mm/0.5cm 9) mm 10) cm</p>	<p>Activity 3</p> <p>1. C 2. E 3. D 4. A 5. B 6. F 7. G 8. Measure the length of the stock/metal 9. Measure the width of the metal/stock 10. Measure the outside diameter of a cylindrical object 11. Measure the inside diameter of a cylindrical object</p>
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<p>Post Test</p> <p>1. A 2. B 3. B 4. D 5. C 6. D 7. A 8. B 9. C 10. D 11. B 12. A 13. D 14. A 15. B</p>	<p>Activity 5</p> <p>METER MILLIMETER INCHES CENTIMETER FOOT FEET</p>
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- *Welding inspection technology: Workbook*. (2008). Miami, FL: American Welding Society, Education Services.

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