

**MATATAG**

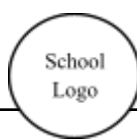
Bansang Makabata



Batang Makabansa



BAGONG PILIPINAS

School
Logo

Name of School:		Quarter:	4th Quarter
Grade Level & Section:	Grade 7	Week:	Week 7 Day 3
Subject:	TLE	Date and Time:	
Topic:		Teacher:	

I. CONTENT, STANDARDS AND LEARNING COMPETENCIES		ANNOTATIONS
A. CONTENT STANDARDS	The learners demonstrate an understanding of the concepts and principles in performing mensuration and calculations.	
B. PERFORMANCE STANDARDS	The learners perform mensuration and calculations following safety precautions	
C. LEARNING COMPETENCIES	Learning Competency Interpret the readings in different measuring instruments.	
D. LEARNING OBJECTIVES	Learning Objectives At the end of the lesson, the students are expected to: 1. Explain the function and uses of tachometer, oscilloscope, and ampere meter. 2. Identify the parts of the tachometer, oscilloscope, and ampere meter. 3. Interpret the readings of tachometer, oscilloscope, and ampere meter.	
I. CONTENT		
Scale Reading		

II. LEARNING RESOURCES

A. REFERENCES	
B. OTHER LEARNING RESOURCES	Ammeters - A complete guide. (2023, March 7). Industrial Solutions & Electrical Components RS. https://ph.rs-online.com/web/content/discovery/ideas-and-advice/ammeters-guide How to measure current (Amperes) using analog multi-meter. (2021, June 28). YouTube. https://youtu.be/CcfQFqcMa7U?si=v31yCNTeM1giOB8j Huang, Y. (2022, June 21). How does a tachometer work? KUS Americas, Inc. KUS USA. https://kus-usa.com/resources/how-does-a-tachometer-work/ Kulkarni, A. (2022, April 15). What is ammeter? Uses and benefits Complete guide on ammeter. BEEMET. https://beemet.com/ammeter-guide/ Tachometer: Uses, types, measurement & working. (2021, November 29). Tesca Global Blog. https://www.tescaglobal.com/blog/digital-and-mechanical-tachometer/ Tachometers - A complete guide. (2023, January 24). Industrial Solutions & Electrical Components RS. https://uk.rs-online.com/web/content/discovery/ideas-and-advice/tachometers-guide Understanding oscilloscope parts and function: A comprehensive guide - Keysight technologies. (n.d.). https://savings.em.keysight.com/en/knowledge/guides/used-oscilloscope-buying-guide/oscilloscope-parts-and-function What is an oscilloscope? (2021, May 11). Test and Measurement Equipment Tektronix. https://www.tek.com/en/blog/what-is-an-oscilloscope#EbUses

III. TEACHING AND LEARNING PROCEDURE

BEFORE/PRE-LESSON PROPER

ACTIVATING PRIOR KNOWLEDGE	Directions: Answer the following questions about the oscilloscope. Write your answers on a separate sheet of paper. 1. What is an oscilloscope, and what is its main function?	Answer 1. An oscilloscope is an electronic test instrument used to display and analyze
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	- What are the two main axes of an oscilloscope display, and what do they represent? - Why is the triggering function important in an oscilloscope? - Differentiate between an analog oscilloscope and a digital storage oscilloscope (DSO).	electrical waveforms over time. Its main function is to measure and visualize voltage changes in a circuit. 2. Vertical axis (Y-axis) – Represents voltage (V). Horizontal axis (X-axis) – Represents time (s). 3. The triggering function stabilizes a repeating waveform, allowing the user to see a clear and steady display instead of a moving or unstable signal. 4. Analog oscilloscope uses a cathode ray tube (CRT) to display waveforms in real time but cannot store signals. Digital storage oscilloscope (DSO) converts waveforms into digital signals, allowing storage and further analysis.
LESSON PURPOSE/INTENTION	Lesson Purpose Define an ammeter and explain its primary function. Identify the different types of ammeters and how they work. Demonstrate how to properly connect and use an ammeter in an electrical circuit. Interpret ammeter readings to analyze current flow in a circuit.	

	• Recognize the importance of an ammeter in troubleshooting and maintaining electrical systems.	
LESSON LANGUAGE PRACTICE	Vocabulary ✓ Ammeter – An instrument used to measure electric current in a circuit, expressed in amperes (A). ✓ Ampere (A) – The unit of electric current, representing the flow of one coulomb of charge per second. ✓ Current – The flow of electric charge through a conductor, measured in amperes. ✓ Series Connection – The correct way to connect an ammeter in a circuit, ensuring that current flows directly through it. ✓ Shunt Resistor – A low-resistance component used in an ammeter to bypass excess current and prevent damage. ✓ Internal Resistance – The small resistance inside an ammeter that must be minimized to avoid affecting the circuit's performance.	

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| | <ul style="list-style-type: none">✓ Analog Ammeter – A type of ammeter that uses a needle and dial to display current readings.✓ Digital Ammeter – A modern type of ammeter that displays current readings numerically on a digital screen.✓ Clamp Meter – A type of ammeter that measures current without direct contact by detecting the magnetic field around a conductor.✓ Overload Protection – A feature in ammeters that prevents damage by limiting excessive current flow.✓ Multimeter – A versatile device that combines an ammeter, voltmeter, and ohmmeter in one instrument.✓ Galvanometer – A sensitive device that detects small electric currents and serves as the basis for analog ammeters.✓ Direct Current (DC) – A type of current that flows in one direction, measurable by an ammeter.✓ Alternating Current (AC) – A type of current that periodically reverses direction, requiring a specialized AC ammeter to measure. | |
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	✓ Zero Adjustment – A control feature in some analog ammeters used to calibrate the meter for accurate readings.	
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DURING/LESSON PROPER

READING THE KEY IDEA/STEM	An ammeter (abbreviation of Ampere meter) is an instrument used to measure the current in a circuit. Electric currents are measured in amperes (A). An ammeter is a measuring device that measures the flow of current in a circuit. It gives the exact reading of how much current passes through the conductor. Ammeter is derived from the Greek word ‘amps’ which means current. Applications of an Ammeter Ammeters are the current navigators in a variety of situations. From home to industry, they silently play a crucial part in maintaining a balanced current flow and enhancing our electrical experiences. Let’s take a look at their applications: Home Wiring Check: Ammeters lend a hand in confirming if your home’s electrical system is running smoothly. By measuring current flow, they ensure that circuits aren’t overloaded, averting potential problems. Gadget Performance: By hooking up to devices like your computer or fridge, they unveil their power consumption details. Car Troubleshooting: Behind a vehicle’s dashboard, ammeters can uncover if the battery and alternator are matched perfectly. Too much or too little current can point to issues that need fixing. Industrial Buzz: Ammeters are like stage managers in factories. They keep tabs on the currents feeding heavy machinery, guaranteeing a smooth performance.	The teacher should emphasize the difference between AC Current and DC Current. The teacher may use a step-by-step process of using ammeter or multimeter to show how does ampere is being measured. Actual demonstration is also advisable for deep understanding.
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Renewable Energy Setup: Ammeters can help us monitor and optimize the energy harnessed from solar panels and wind turbines.

Electronics Creation: They can help fine-tune the components, ensuring they consume the right amount of current.

- **Analog Ammeter**

The pointer inside the ammeter moves within a span of 90°. The tip of the pointer corresponds to a numeric value.



- **Digital Ammeter**

It measures current flow in amps and display current levels as per the number of digits provided on a digital display.



How to use an Ammeter

Follow the basic steps using ammeter correctly and safely:

1. Choose the right model. Do you need analog or digital? Do you need high or low capacity?
2. Before you begin, make sure that all the equipment is use has been checked thoroughly for any faults. Use insulated gloves to protect you from live electrical current.
3. Apply the ammeter leads to the target area-the point at which you want to measure the current. Use a crocodile clip, attach the red lead to the wire nearest the positive terminal and black

Since milli-ammeter function is not tackled in the previous exemplar, and the subtopic of this exemplar is ammeter. The teacher is encouraged to expound the milli-ammeter function of the VOM

The teacher may use this source: Analog multimeter DC current reading Part4. (2021,October 26). YouTube.

<https://youtu.be/YRmeMa5j1ql?si=zfbgd6ngcwwmfXOk>

	lead to the wire nearest to the negative terminal on the device you are measuring. 4. Check your reading. On analogue panel ammeters, look for the nearest marker to the needle. Note: A multimeter is a great little tool used for testing and checking electrical circuits in your vehicle or electrical devices. The most common use is to check the voltage of electrical circuits, but they can also be used to check the Amperage and Ohms. Milli-Ammeter: Measuring Small Amount of Current 1. When operating on the 50μA range, we utilize the 0-50 scale and read the scale directly. 2. To read current in the 2.5mA range, read the black 0-250 scale and move the decimal point two places to the left. 3. If the instrument is operated on its 25mA range, read the black 0-250 scale and move the decimal point just once to the left. 4. When the VOM is set to its 0.25 range, read the black 0-250 scale and move the decimal point three places to the left. Observe correct polarity of the instrument when measuring DC current. Be very careful against overloading your meter. If you are doubt of approximate reading, always start with the highest range. If the pointer deflects lefts across zero point, just reverse the connections; no damage to the meter if this occurs.	If digital VOM is available, the teacher has the discretion to use reliable source to support the learning process. The teacher may use these as references: How to measure DC amps with a multimeter. (2022, July 29).YouTube. https://youtu.be/F_A2TYEfCk0?si=SJH_YGfAH41mt4kb How to read the ammeter. (2023,June 10). YouTube. https://youtu.be/tcuYMxBoY8?si=w9cSzPkw3Mf4rjcu
DEVELOPING and DEEPENING UNDERSTANDING OF THE KEY IDEA/STEM	Directions: Complete the following activities to reinforce your understanding of the ampere meter (ammeter) and how it is used in electrical circuits. Match the terms in Column A with their correct definitions in Column B.	Answer 1-A, 2-E, 3-D, 4-C, 5-B 6.b

	<table><tr><th>Column A (Term)</th><th>Column B (Definition)</th></tr><tr><td>1. Ammeter</td><td>A. Measures current flow in a circuit</td></tr><tr><td>2. Series Connection</td><td>B. A modern ammeter that displays readings on a screen</td></tr><tr><td>3. Shunt Resistor</td><td>C. Unit of measurement for electric current</td></tr><tr><td>4. Ampere (A)</td><td>D. A small resistance inside an ammeter to prevent errors</td></tr><tr><td>5. Digital Ammeter</td><td>E. The correct way to connect an ammeter in a circuit</td></tr></table> Choose the correct answer and write the letter on your answer sheet. What is the main function of an ammeter? A. To measure voltage B. To measure current C. To measure resistance D. To generate electricity How should an ammeter be connected in a circuit? A. In parallel B. In series C. In any way D. It doesn't need to be connected What happens if you connect an ammeter in parallel with a circuit? A. It will work normally B. It will measure the voltage C. It may get damaged due to excessive current flow D. It will increase the resistance of the circuit	Column A (Term)	Column B (Definition)	1. Ammeter	A. Measures current flow in a circuit	2. Series Connection	B. A modern ammeter that displays readings on a screen	3. Shunt Resistor	C. Unit of measurement for electric current	4. Ampere (A)	D. A small resistance inside an ammeter to prevent errors	5. Digital Ammeter	E. The correct way to connect an ammeter in a circuit	7.b 8.c
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AFTER AFTER/POST-LESSON														
MAKING GENERALIZATIONS AND ABSTRACTIONS	Worksheet Synthesis/Extended What you have learned In a one sheet of paper write something you understand about the lesson we discussed today.													
EVALUATING LEARNING	Directions: Read each question carefully and choose the correct answer. Write the letter of your answer on your answer sheet. 1. What is the primary function of an ammeter? A. To measure voltage B. To measure current C. To measure resistance D. To generate electricity	ANSWER 1.B 2.C 3.B 4.C												

	2. In what unit does an ammeter measure electric current? A. Volts (V) B. Ohms (Ω) C. Amperes (A) D. Watts (W) 3. How should an ammeter be connected in a circuit? A. In parallel B. In series C. It doesn't need to be connected D. In any way 4. What will happen if an ammeter is connected in parallel with a circuit? A. It will work normally B. It will measure the voltage C. It may get damaged due to excessive current flow D. It will increase the resistance of the circuit 5. What is the function of a shunt resistor in an ammeter? A. To reduce voltage B. To bypass excess current and protect the ammeter C. To increase resistance D. To decrease current flow	5.B
ADDITIONAL ACTIVITIES FOR APPLICATION OR REMEDICATION (IF APPLICABLE)		
REMARKS		
REFLECTION		

Prepared by:

Reviewed by:

Subject Teacher
Teacher

Master Teacher/Head