

272-Q08

BCTHS MECHATRONICS TECHNOLOGY

NAME: _____

START DATE: ____/____/____

COMPLETION DATE: ____/____/____

TASK:

Q-08 Ohms Law

PERFORMANCE OBJECTIVE:

Given a calculator the student will solve Ohms Law equations for EMF, Current, Resistance, and Power with 90 % Accuracy.

ENABLING OBJECTIVE:

Watch video and practice Ohms Law equations

TOOLS REQUIRED:

Calculator

SAFETY FACTORS:

*Complete Q01-Q02
Observe all school/classroom safety rules at all times*

ACADEMIC ANCHORS:

M11.A.1.1.2 Express numbers using scientific notation

M11.A.2.1.1 Solve problems operations with rational numbers using rates and percentages

R11.A.1.3.5 Demonstrate after reading understanding of non-fiction text

R11.A.2.1.2 Identify meaning of content specific words used in texts

CAREER & WORK ANCHORS:

13.2.11.E Demonstrate essential workplace skills.

PERFORMANCE CHECKLIST:

**STUDENT
CHECK**

TASK TO BE COMPLETED

**TEACHER
SIGN OFF**

_____	1. Identify academic anchors and complete learning guide AA01	_____
_____	2. View this video: https://youtu.be/t-7baWmd74Q	_____
_____	3. Read Information Sheets	_____
_____	4. Complete ETCAI software and Performance Sheets	_____
_____	5. Have Instructor Check your work.	_____

PERFORMANCE LEVEL:

MASTERY

SATISFACTORY

FAMILIARIZATION

INSTRUCTED/CANNOT PERFORM

BUCKS COUNTY TECHNICAL SCHOOL – August 22, 2021

INSTRUCTOR'S SIGNATURE

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INFORMATION SHEET

DEFINITIONS

E – Electromotive force measured in Volts.

I – Current measured in Amperes

R- Resistance measured in Ohms.

P – Power measured in Watts.

FORMULAS - Commit These Formulas to Memory

$$E = IR$$

$$I = E \div R$$

$$R = E \div I$$

$$P = I E$$

Other Variations of Ohms Law for Future Reference

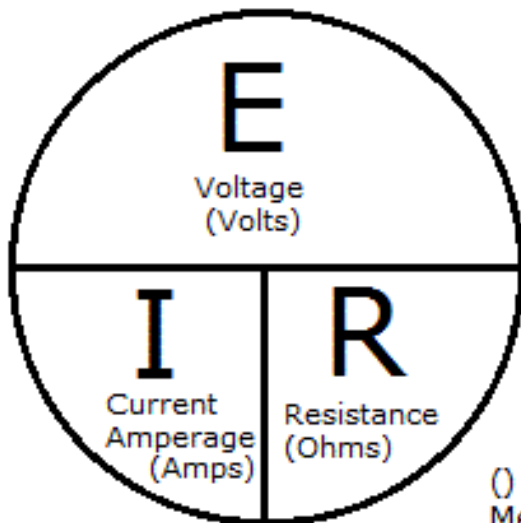
$$E = P \div I$$

$$I = P \div E$$

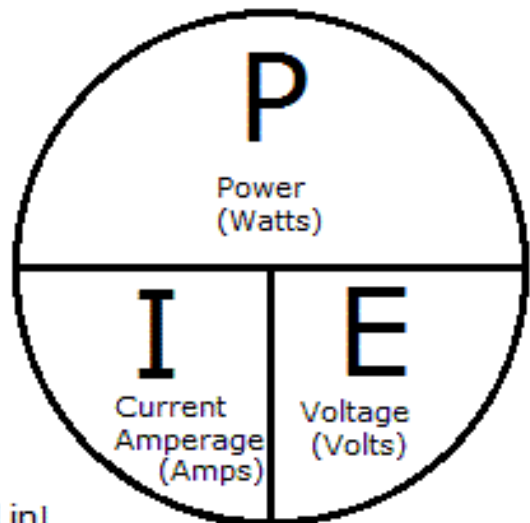
$$P = \frac{E^2}{R}$$

$$P = I^2 \times R$$

Ohm's Law



() Means
Measured in!



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PERFORMANCE SHEET

USING A CALCULATOR SOLVE THE FOLLOWING PROBLEMS.
SHOW YOUR WORK.

1. A car stereo amplifier is drawing 62 amps of current and is hooked up to a 12v battery. How many watts is the amplifier?
2. How many amps of current does a 100-watt light bulb draw when plugged into a 120v wall outlet?

3. A computer draws 3 amps of current from the wall. It is on 8 hours a day for 22 days a month and The Electric Company charges 11 cents for a kilowatt/hour of electricity. How much does it cost to run the computer for 2 months?

4. An iPod runs on 3 volts DC and draws 500 milliamps of current. How many watts of power is it consuming from the battery?

5. A battery is connected to a light bulb. The Bulb has 1 ohm of resistance. The battery is 10 Volts? How much current is being drawn? How many watts is the bulb?
6. If a circuit has a voltage of 400 V and a resistance of 80 Ω , what is the current?
7. A motor has a resistance of 40 Ω and draws a current of 15A, what is the supply voltage?

8. If a circuit has a voltage of 500 V and a resistance of 250 Ω , what is the current?
9. If a circuit has a voltage of 45 V and a current of 5.0A, what is the resistance?
10. If a circuit has a resistance of 18 Ω and a current of 15A, what is the voltage?

GRADING RUBRIC

	Instructed/Cannot 0 points	Familiarization 1 point	Satisfactory 2 points	Mastery 3 points
Safety	Student rarely follows industry standard safety rules	Student needs to be frequently reminded to follow industry standard safety rules	Follows all industry standard safety rules, but required one reminder.	Student always follows all industry standard safety rules
Task	Student is unable to complete task	Student requires frequent assistance to complete task, and/or is familiar with some parts of the task	Student requires very little assistance to complete task, or has only completed task once or twice, but completed it satisfactorily with little to no assistance	Student can perform task with no assistance and has completed the task many times with no errors.

Mastery = 6 points

Satisfactory = 4-5 points

Familiarization = 2-3 points

Instructed cannot perform = <2 points