

Student Worksheets

Electrical Power and Energy



Identity:

Name :

Class :

Roll number :



Time Allocation : 40 minutes
Material : Dynamic electricity
Subchapter : Electrical Power and Energy
Class : IX

A. LEARNING OBJECTIVES

- Students are able to understand the concept of power and electrical energy.
- Students are able to analyze changes in electrical energy in everyday life.

B. CHARGING INSTRUCTIONS

- Read the prayer before working on the LKPD
- Read this LKPD carefully
- If you have difficulty, ask the teacher.
- Study each material presented, if necessary, underline the important things.
- Do the LKPD according to the instructions and answer the questions given.

B. INTRODUCTORY VIDEO

Before we start learning, let's take a few minutes to watch the introductory video that has been prepared. This video will provide an overview of the topics we will study and help you understand the main concepts better. Click the link below to watch the video. Happy watching and happy learning!



C. LEARNING MATERIALS

1. Electrical energy

Electrical energy is the work required to move electric charges. The SI unit for power is the joule [J] or kilowatt-hour [kWh]. Systematically, electrical energy can be written in the equation:

$$W = V.I.t$$

or

$$W = I^2.R.t$$

$$W = V^2/R.t$$

Information:

W = Electrical energy [Joules]

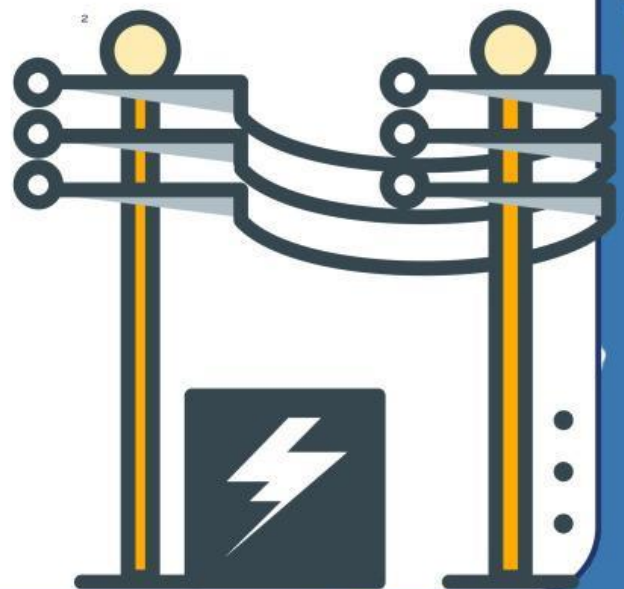
V = Electrical voltage [Volts]

I = Electric Current [Ampere]

t = Time [s]

R = Resistance [ohms]

Currently, electrical energy has become a very important need in human life. This is due to the increasing number of electrical equipment used by humans in everyday life. Electrical energy can be obtained from power plants such as PLTA (Hydroelectric Power Plant) which is then distributed to every community home. Electrical energy can be converted into other energy such as heat, motion, light and sound energy.



2. Electrical power

Electric power is electrical energy that flows per unit time. The SI unit for power is the watt [W]. Systematically, electric power can be written in the equation:

$$P = W/t$$

or

$$\begin{aligned} P &= W/t \\ &= V.I.t/t \\ &= V.I \end{aligned}$$

$$\begin{aligned} P &= W/t \\ &= I^2.R.t/t \\ &= I^2.R \end{aligned}$$

Information :

P = Electric power [Watts]

W = Electrical energy [Joules]

V = Electrical voltage [volts]

I = Electric Current [Ampere]

t = Time [s]

R = Resistance [ohms]

C. ACTIVITY 1

Find 10 different sources of electrical energy from the table below!

C	O	B	I	O	M	A	S	S	T	I
R	I	C	N	U	C	L	E	A	R	E
U	H	O	C	S	W	A	T	E	R	D
E	B	A	T	T	E	R	Y	E	G	W
D	S	L	J	S	T	O	L	R	S	A
O	U	E	W	T	U	E	D	C	B	V
I	N	W	I	N	D	F	G	A	M	E
L	G	E	O	T	H	E	R	M	A	L



D. ACTIVITY 2

After identifying the energy sources above, identify the changes in electrical energy that occur in several electronic devices below!



E. ACTIVITY 3

After studying the material on power and electrical energy, do the following practice questions and write the answers in the column provided!

1. Mention several factors that influence the amount of electrical energy!

2. The increase in population can cause the need for electrical energy to also increase. What efforts can someone take to save electrical energy?

3. A lamp installed in a living room has a voltage of 6 volts and the current flowing through the lamp is 150 mA. Calculate the amount of energy needed in 2 minutes!

4. Farhan is doing an effort of 450 Joules to move a table for 5 minutes. Calculate the amount of force exerted by Rani to move the chair

Good!
Luck! ★