



My name is Alfa from MITz KITS and I wish to know you! Can you help me?

Your name:

gender:

Age:

class:

school:

Region:

Can you take a picture of this page after filling you information and send to us so that we can use these information to know more how to help you grow the innovation spirit with our future exciting products and services.

Ofcourse you can send the picture through whatsapp no. **+255653068346** or **contact@mitzkits.co.tz**



# WHW Sheet I

## CHARGING A CAPACITOR

Now you should draw the schematics diagram from fig.1 in the space bellow.

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Fill out the table below by putting the mark (v) based on the capacitor used, and if the LED light was ON

		LED Light ON
01	CERAMIC Capacitor	
02	ELECTROLYTIC capacitor	

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# WHW Sheet II

## DISCHARGING A CAPACITOR

As usual, you should draw the schematics diagram before you proceed.

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Fill out the table below by putting the mark (v) based on the capacitor used, and if the LED light was ON.

		LED Light ON
01	CERAMIC Capacitor	
02	ELECTROLYTIC capacitor	

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# WHW Sheet III

## CHARGING AND DISCHARGING A CAPACITOR

As a rule, you have to draw its schematics diagram bellow.

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Now use the ceramic capacitor instead of electrolytic capacitor.

Observed something? fill out the table below by putting the mark (v) based on the capacitor used, and if the LED light was ON.

		LED Light ON
01	CERAMIC Capacitor	
02	ELECTROLYTIC capacitor	

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# WHW Sheet IV

## SIMPLE CIRCUIT

Redraw the circuit diagram from Fig 4.

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Now observe the brightness of the LED by changing Resistors R1 and R2. Record your observations on the table by putting the mark (v) if the LED gave higher brightness

		High Brightness
01	R1	
02	R2	

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So, which resistor do you think has a higher resistance? R1 or R2? .....

WHY that resistor?

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Congratulations, you just made your simple torch experiment successfully.

One-step to being the Great scientist.



# WHW Sheet V

## SERIES CIRCUIT

Please draw its circuit schematics diagram.

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Play with the Switches (SW1 and SW2) and record your observations on the table by putting the mark (v) if the LED lights up.

	Sw1	Sw2	LED1	LED2
01	ON	ON		
02	ON	OFF		
03	OFF	ON		
04	OFF	OFF		

Switch On all the switches and remove LED1, What happens to LED2? WHY?

Now, disconnect the circuit and build it without switch SW1 and switch SW2.



# WHW Sheet VI

## PARALLEL CIRCUIT

Again...draw its schematics diagram and continue with questions.

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Play with the Switches (Sw1 and Sw2) and record your observations on the table by putting the mark (v) if the LED lights up.

	Sw1	Sw2	LED1	LED2
01	ON	ON		
02	ON	OFF		
03	OFF	ON		
04	OFF	OFF		

Switch On all the switches and remove LED1, What happens to LED2? WHY?

Up to now, you should be able to understand the difference between a series circuit and parallel circuit. Can you do that?



**WHW Sheet**  
**Some Review Qns?**

1	WHAT is a Capacitor? Its SI unit?	6. A capacitor of capacitance 100uF is connected with a p.d. of 9v across its plates. Determine the quantity of charge on the plates.
2	Draw the symbol for a capacitor.	
3	Write the formula for capacitance (C) of a capacitor using charge and voltage.	
4	For two capacitors C1 and C2 connected in series. What is the total capacitance?	
5	For two capacitors C1 and C2 connected in parallel. What is the total capacitance?	



**WHW Sheet**  
**More Review Qns?**

7	What is electric current? Its SI unit?	12. State the ohms law.
8	What is voltage? Its SI unit?	
9	What is Resistance? Its SI unit?	13. If the p.d. is 9v and the resistance is 47 ohms, calculate the quantity of charge that flows in 2 minutes.
10	What is the total resistance of two resistors R1 and R2 connected in Series?	
11	What is the total resistance of two resistors R1 and R2 connected in Parallel?	





## WHW Sheet

### Ohm's Law

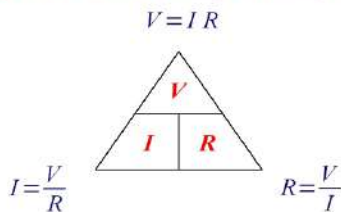
States that,  
"Current flowing through a metal conductor is directly proportional to the potential difference across its ends provided the temperature remains constant."

Formular

$$V=IR$$

where, V=voltage  
I=current  
R=resistance

You can get I and R by just making it a subject of the equation.  
And the formula can also be memorized by using the following triangle



In our experiments we used LED to demonstrate the size of the current by observing the brightness.

It was observed that, the lower the resistance used (47 Ohms, the shorter one) the brighter was the LED, this means the bigger was the current.

And with the same 9v battery when you change the resistor (use the taller one 4700 Ohm) the LED brightness was decreased which means the current was smaller.

Mathematically.

$$V=9v$$
$$R1=47 \text{ Ohm}$$

So

$$I_1 = \frac{V}{R1} = \frac{9}{47}$$

$$I_1 = \mathbf{0.19 \text{ A}}$$

$$V=9v$$
$$R2=4700 \text{ Ohm}$$

So

$$I_2 = \frac{V}{R1} = \frac{9}{4700}$$
$$I_2 = \mathbf{0.0019 \text{ A}}$$