



**Government Degree College for Women,
Gadwal -509125**

Jogulamba Gadwal Dist. Telangana

Affiliated to Palamuru University

DEPARTMENT OF PHYSICS



Jignasa project
2021 - 2022

CHARGE FROM CHANGE : Make a Coin Battery

Introduction ⇒ Have you ever wondered exactly how your phone, laptop or a flashlight manages to work without being plugged into a power outlet? Where does the electrical energy come from that makes all these portable devices function? You probably know the answer: They use batteries! But do you know how these batteries work? Batteries store electrical energy in the form of chemical energy, which means that electrochemical reactions inside the batteries create electricity. It may sound complicated, but it is simpler than you think! In this activity, you will create a basic homemade battery with just construction paper, vinegar, salt, and a coin and prove it works by lighting an LED.

Materials

- * Pencil
- * Scissors
- * Bowl
- * Vinegar
- * Small white or red LED
- * Aluminum foil
- * Multimeter

Preparation ⇒ In this activity, you will make a very low-voltage battery. The amount of electricity generated by this homemade battery is safe. Higher voltages of electricity, however, can be very dangerous and even deadly, and you should never experiment with commercial batteries and wall outlets.

Signature

Take One Washer and place it on your work area. What materials the washer made of?

Take a Soaked Construction paper piece and place it on top of the washer. Why do you think the construction paper needs to be soaked in the Vinegar?

Next place another washer on top of the Soaked paper piece

Then place another washer on top of that washer. Add another piece of soaked construction paper and then add two more washers on top of that

Repeat alternating the Soaked paper and two washers in total. you should you have used nine washers in total. you should finish with two washers on top of a Soaked piece of paper.

Also, check that the Soaked paper is not touching more than one washer on each side

Take the LED and spread the two contact pins of the LED underneath the stack so that it makes firm contact with the washers. At the bottom, place the stack and press it down. Watch the LED. Does the light turn on when you connect the pins to the top and bottom of the washer pile?

Make a second stack in the same way, but this time use pennies instead of washers. What material are the coins made of?

Then make a third stack, but this time start with a penny on the bottom. place a soaked paper piece on top of the coin and then add a washer on top of the paper. Repeat, adding a coin, soaked paper and washer until you have used five coins in total. you should end up with a coin placed on top of a washer.

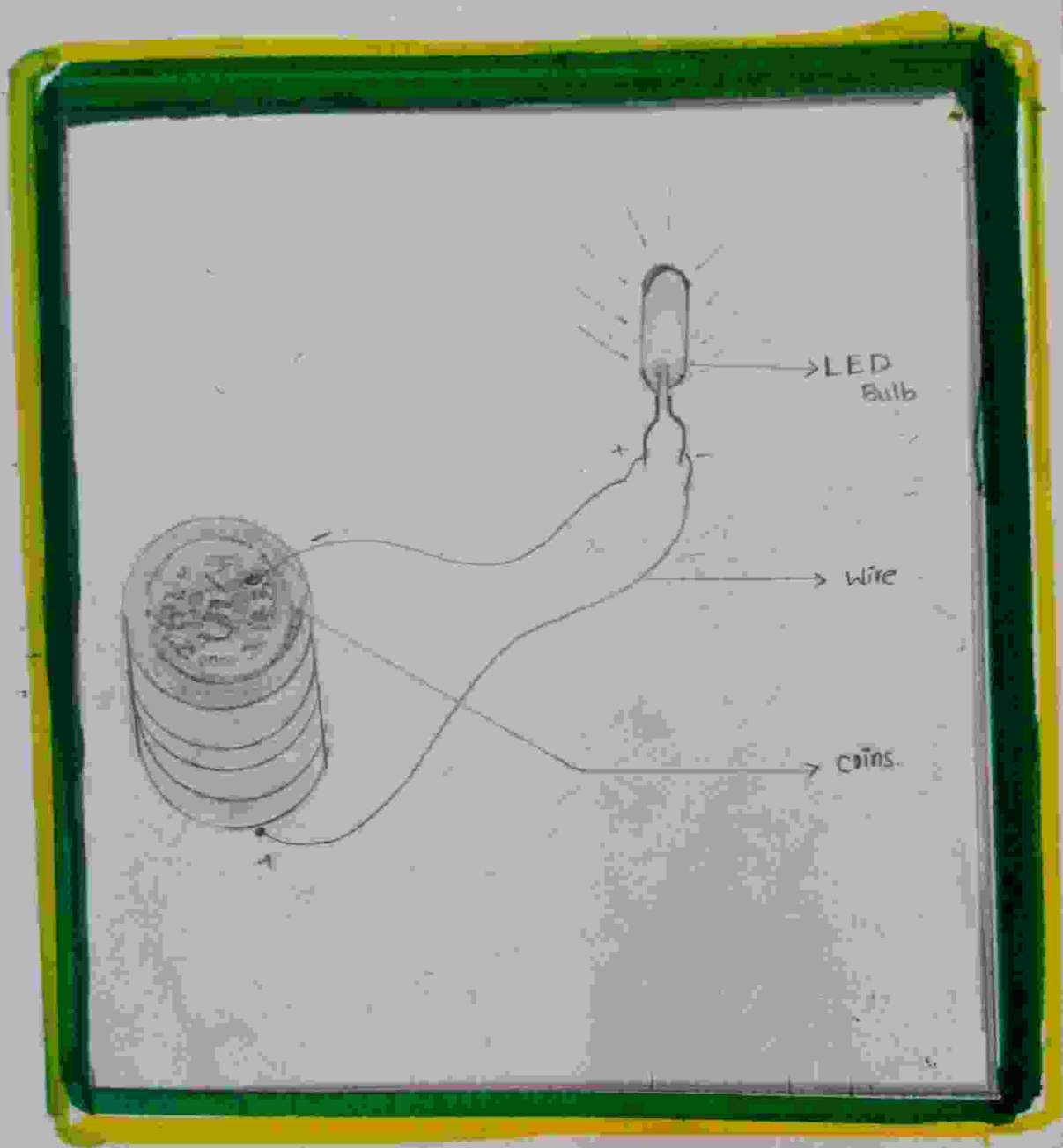
en Connect the long end of the LED pins to the coin at the bottom of the pile and the short end to the washer on top of the stack. What happens to the LED this time?

Finally, use the dry construction paper piece and make a fourth stack alternating coin, a dry paper piece, washer until have you used five coins

Take the LED one more coins and washers do you connect the long pin to the bottom of the stack and the short pin to the top Does the LED light up this time? Why or why not.

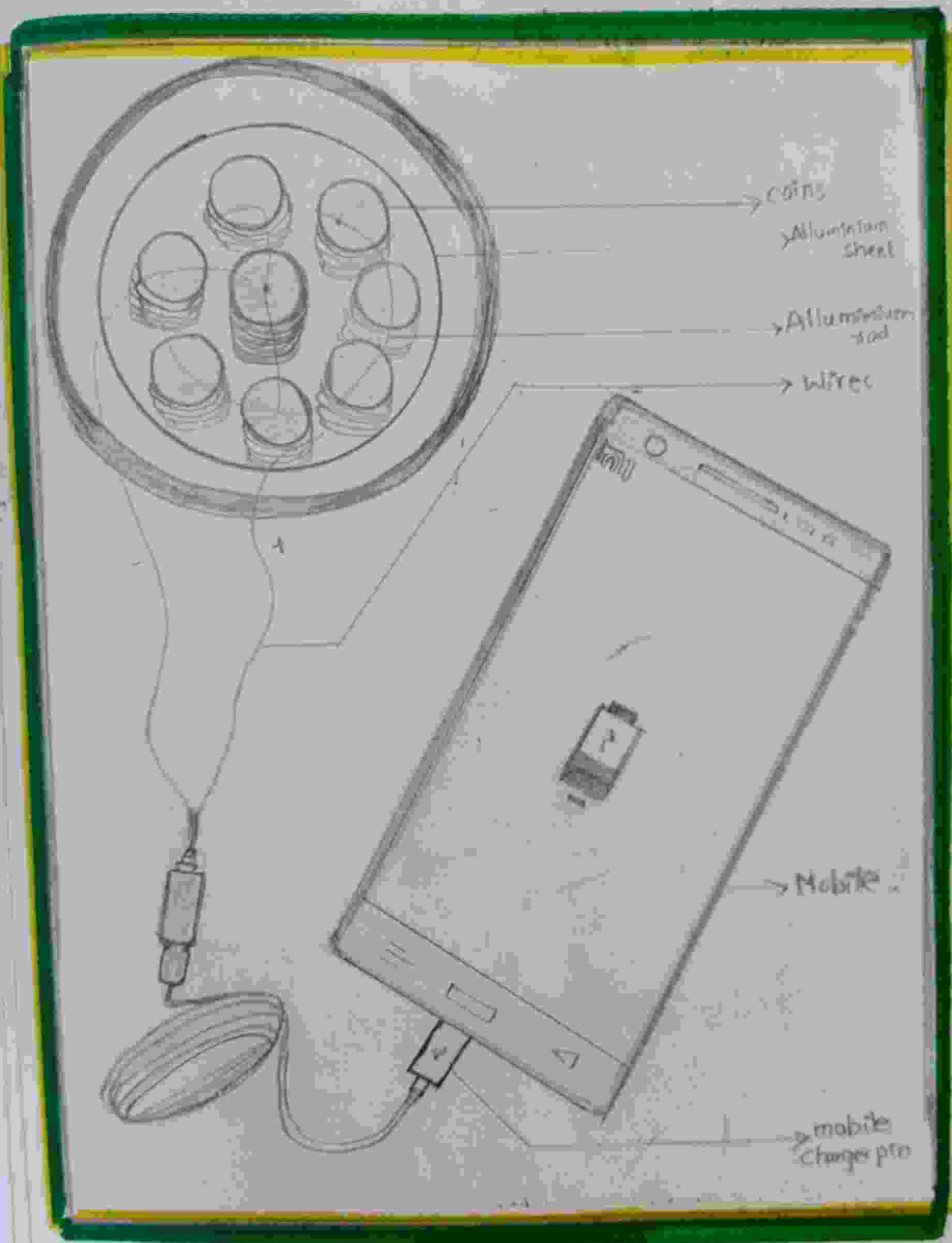
Results ⇨

Did you manage to get the LED to light up? probably not with first two stacks, which consisted of only coins or washers coins are coated with copper which turns your penny into a copper electrode for this activity. The galvanized washers on the other hand are coated with zinc, which is a different metal and function as a zinc electrode in your battery. The key to a function battery is that an electrochemical reaction has to occur between the two electrodes. if both electrodes are made of the same material no reaction will take place and no electricity will be generated.



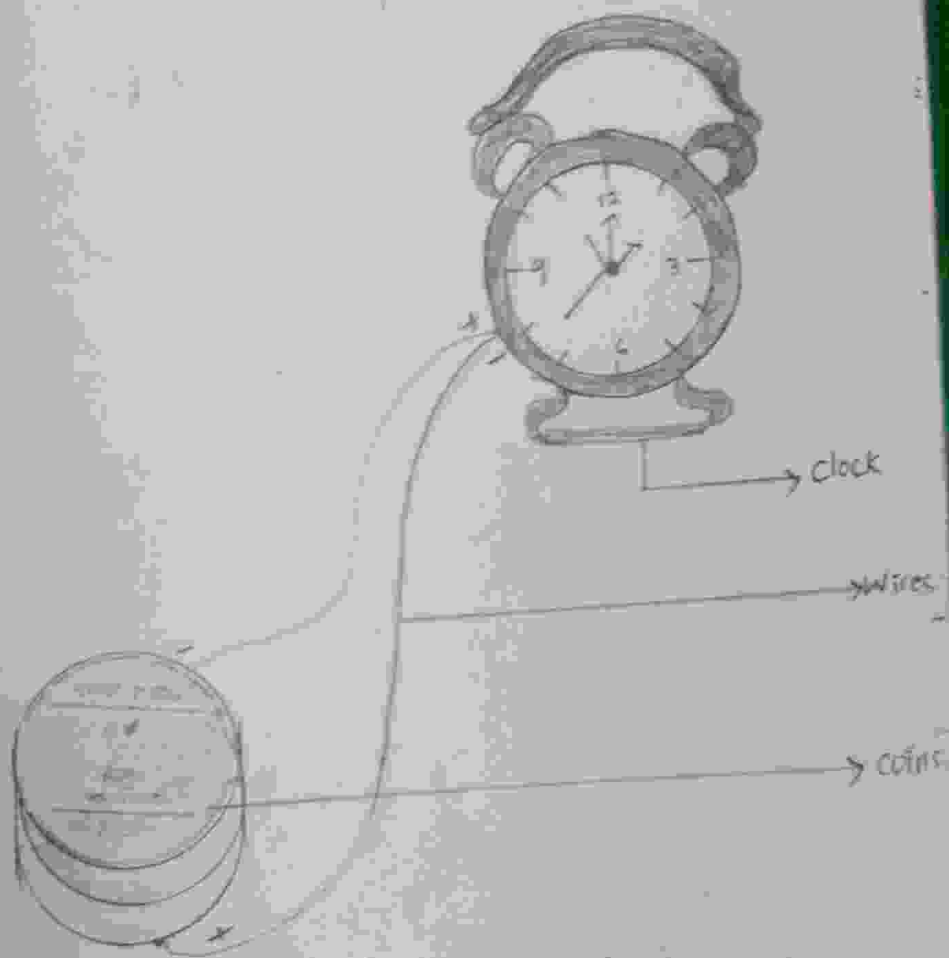
[The light is emitting through LED.
[using coins].

LED (Bulb)



[Mobile will charge through coins.]

MOBILE



[The clock will run using coins]

CLOCK



