

Idea of project = 11/03/24

I saw that my electronic devices turned off faster in the cold weather and because of that I think that cold temperature affects the performance of batteries.

Result = 11/06/24

So I thought that I need to test this in an experiment and research why (they are affected).

Research notes = 12/03/24 - 01/07/24

If batteries power the same devices in different temperatures then colder batteries will discharge faster because of something inside the battery. So I went to set up an experiment. While researching batteries, I came up with a science project called effects of extreme temperatures on battery life. See attached printout containing the procedure. I have almost all materials to start the experiment:

- Snap circuit unit (the basics)
- AA alkaline batteries
- Ice bucket
- Regular ice
- Dry ice
- Zip lock bags
- Wires and voltmeter
- Timer

I asked my parents where I could get dry ice from. My parents found a store where you could get dry ice. It is called Calgary dry ice.

I set up the snap circuit with the batteries, the voltmeter switch, the load (fan with LED lights and a separate snap on with LED lights).

I learned that most batteries have an anode and a cathode. The anode is the negative side of the battery (the one that has the “-” sign) and then the cathode is the positive side of the battery (the one with the “+” sign on it). The two are separated by an electrolyte. This is where a chemical reaction takes place. The electrolyte zinc anode reacts with the manganese dioxide cathode to produce electricity. So batteries produce electricity in DC form.

01/14/2024

I set up the experiment and followed the procedure. I collected a table of results and created a graph in excel to explain them.