



TESTING THE EFFECT OF TEMPERATURE ON BATTERY PERFORMANCE



Name: _____

Date: _____

QUESTION

How does temperature affect the performance of a battery?

HYPOTHESIS

If the temperature of a battery changes, then its performance will _____ because _____.

MATERIALS

- 3–4 identical batteries (same brand and type)
- Battery tester OR small device (e.g., LED light with resistor, small fan, or toy car)
- Thermometer
- Ice and a bowl (for cold temperature)
- Warm water and a bowl (for warm temperature)
- Timer or stopwatch
- Paper and pen for recording data
- Towel or gloves (for handling cold items safely)



PROCEDURE

1. Check that all batteries are the same brand, type, and are new or equally used.
2. Choose the temperatures you will test. Suggested:
 - Cold: 0–5 °C (ice bath)
 - Room Temperature: 20–25 °C
 - Warm: 40–45 °C (warm water bath)(Do not allow batteries to get wet.)
3. Place one battery in each temperature condition for 15 minutes to reach that temperature.
4. After 15 minutes, remove the battery and quickly test its performance using your chosen method.
 - If using a battery tester, record the voltage.
 - If using a device, run the device and record how long it works (in minutes or seconds) until it stops.
5. Repeat for each temperature.
(Use a new or equally used battery for each condition.)
6. Record all your data in the table below.
7. Keep batteries and water away from electrical outlets and dry everything after the experiment.

DATA TABLE

Temperature (°C)	Battery Tester Voltage (Volts) (If using)	Device Run Time (Time until it stops) (min or sec) (If using)	Observations (Optional)
Cold (0–5 °C)			
Room Temperature (20–25 °C)			
Warm (40–45 °C)			

Note: If using voltage, higher voltage usually means better performance.
If using run time, longer time means better performance.

ANALYSIS

1. Which temperature gave the best battery performance?

2. Which temperature gave the worst battery performance?

3. How did temperature affect the battery's performance?

4. Why do you think temperature affects battery performance?

CONCLUSION

The results show that temperature _____

battery performance. Batteries worked best at _____
and worst at _____.
This experiment shows that _____

_____.



THINK FURTHER

How might these results be useful in real life? Think about things like phones, remote controls, flashlights, or electric cars in hot or cold weather.

