

Thermometer Design Specs Report: Licking Valley Chemistry Department

Team Name:REMS

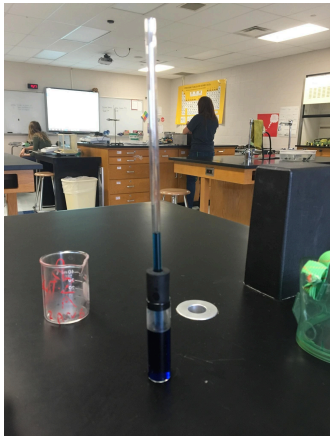
Group Member Names:Ryan, Ellie, Sydni, Marissa

Our thermometer is a very environmentally friendly thermometer. It is made from water making it much better for people to use than other types of thermometers. It is much more available than other types of thermometers because water is much more accessible than other types of liquids. It is also much safer to use than mercury as it is not toxic to humans at all.

Materials Needed

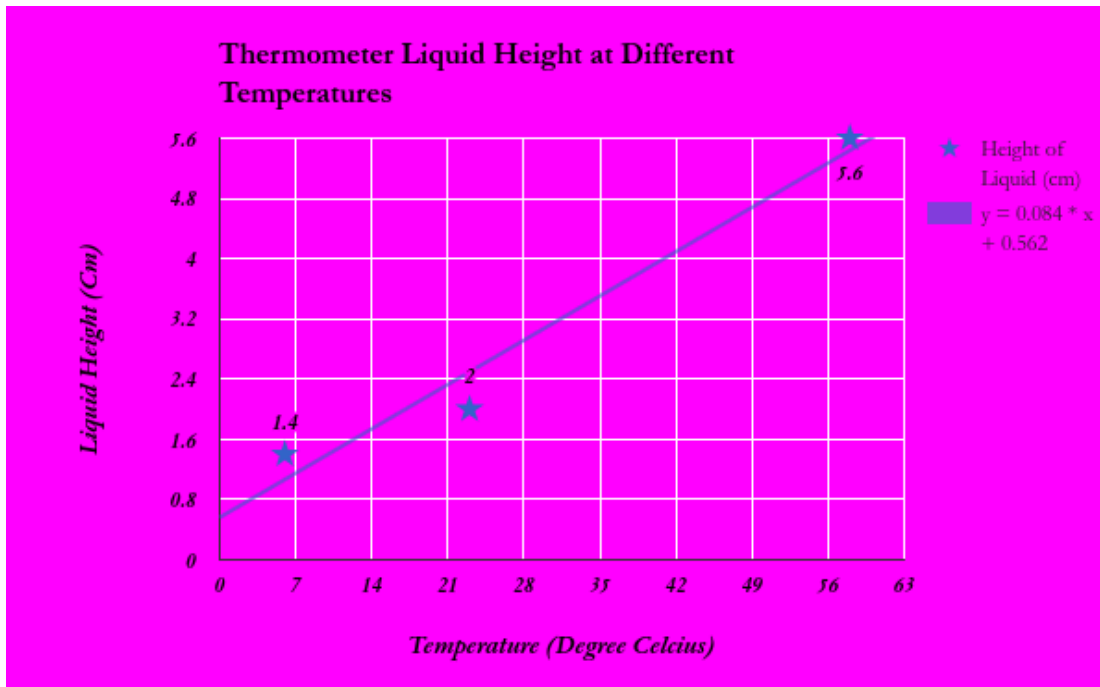
- A 4mm wide and 15cm tube
- A stopper
- A 2 dram glass well
- Water
- Food Colouring(Optional)

Assembly Instructions



1. We ordered the parts from the warehouse
2. Poke the 4mm wide, 15cm long tube through the stopper so that there is 2cm showing on the bottom
3. Fill the 2 dram glass well with just enough water to touch the bottom of the tube but not the stopper
4. Can optionally add food colouring
5. Put in the stopper so that the liquid touches the tube and appears about a centimeter above the stopper

Calibration Graph



Calculations for determination of unknown water bath temperature

We plugged the liquid height in as Y in our equation of $y = 0.084 * x + 0.562$. We then used a graphing calculator to figure out X which would equal our mystery temperature.

If you had more time and/or funding, what would you change about your design?

1. We would change the type of liquid we used, because maybe one was more accurate than what we used.
2. If we had more money we would test the different types of tubes with different types of liquid.
3. If we had more time we would test if the stopper being moved effected the data.

RUBRIC

Graph data from a table including: axis labels and units, scales, a key (with multiple data sets), a title, and line of best fit when appropriate.

4	3	2	1
Correctly graphs data with all appropriate labels, no errors Uses line of best fit to make data based predictions	Correctly graphs data with all appropriate labels, very few errors	Plots basic graph but is missing several labels or plots variables on incorrect axes	Points are incorrectly plotted and graph does not resemble correct graph

Conduct a controlled experiment, record and present data that is systematic, relevant, accurate, and organized, and make appropriate graphs that enhance the communication of data.

4	3	2	1
Experiment is written and organized in a systematic and neat manner. All data is recorded in tables and graphs are correctly created and	Experiment is written and organized in a systematic and neat manner. All data is recorded in tables and graphs are correctly created and	Experiment contains all required portions but is not organized in a way that makes sense. There are some errors in data or graphs and/or written	Experiment is missing required portions and/or data and written sections are extremely difficult to follow.

labeled. All written sections (purpose, procedure, conclusions, discussion) are complete and clear.	labeled. Some portions of the written sections are unclear.	sections are somewhat unclear.	
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Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

4	3	2	1
Generates clear data from various designs, makes a clear decision about what makes a "best design," and provides clear rationale for which solutions will meet the criteria	Generates clear data from various designs and compares the results with some rationale for which will best meet the criteria	Some generated data is not clear, leading to misguided decisions and rationale, but an attempt is still made	Data is so unclear that a decision is impossible and/or rationale is not provided at all.

Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

4	3	2	1
Clearly explains rationale for material choice and why those choices will meet the company's criteria, including any trade-offs that are necessary due to budget or time restrictions.	Clearly explains rationale for material choice and why those choices will meet the company's criteria.	Rationale is included for some material choices, but others are left open to interpretation.	Clear rationale is not provided for material choices. It is not clear whether trade-offs were even considered.