

Which is the Most Effective Heartburn Remedy?

Friday

Research Question (Choose how you want to measure “effectiveness” ; also identify the heartburn remedies you want to test- should include at least 4, and one should be a home remedy)

Independent Variable (could include units of measurement):

Dependent Variable (specify units of measurement):

Constants (all other factors not selected as independent variable):

Hypothesis (xxxxx remedy will provide the best heartburn relief):

Prediction (use “If ..., then..., because” format):

Procedure

Brainstorm with your partner a detailed procedure for determining the relationship between your independent variable and the dependent variable.

- Write your procedure in bullet point steps.
- Make sure you include the specific lab equipment you will use in the procedure steps and the specific units.
- Include steps that indicate a change in your independent variable, and how it will be measured. Indicate specific units if applicable.
- Include multiple trials for every measurement you make in the procedure.
- Create a data table after the procedure to record both quantitative data (make sure it indicates the units), and written qualitative observations (should also be accompanied by pictures) of the reactions.
- Make sure there are no calculation steps in your procedure. Only record measurements you can see without doing any math in your head.

Check with the teacher after this step and finish for HW if needed.

Monday

- Perform the experiment and collect data.
- Day three homework includes data analysis, conclusion and presentation. See guidelines below.

Data Analysis and Results

The data should be presented in a clear, concise manner (data table, graph, and visual representation) and properly labeled.

- This may require calculations.
- If you have a qualitative independent variable, use a bar graph.
- If your independent variable is quantitative, use a line graph (best fit line).
- Photos or diagrams of the experiment.

Conclusion

Write a conclusion. A conclusion contains a general overview of the lab purpose, a summary of your results, and an explanation of how your results either confirm or disconfirm your hypothesis. This section should include any changes you made in your procedure with an explanation for why, and also include your sources of error. There are potential sources of error for EVERY laboratory. Think of at least **two** possible sources of error and make a note of them here. Make sure they are specific to the lab and its procedure. Do not just say “calculation” or “measuring” errors. How exactly may it have been difficult to measure?

- 1 point for reference to purpose of the lab and the research question

- 5 points for the evaluation of the hypothesis using specific observations and data points

- 5 points for drawing conclusions from the lab that relate to the scientific theories or concepts based upon evidence from the experiment

- 2 points for the two sources of error

- 2 points for addressing how you might improve the experiment if you were to do it again in the future

Project Presentation Grading Rubric

Your presentation will be in the form of a short video of a PPT. This is what we will share with our Chinese partners. You will also present to the class but you will have the option to share your video or present in person.

(2 pts.) Research Question and Title _____

(5 pts.) Experimental Details _____

Includes:

- Independent variable (include units of measurement, if applicable)
- Dependent variable (include units of measurement)
- Constants
- Hypothesis (“if..., then..., because” format)

(15 pts.) Procedure _____

(15 pts.) Analysis of Results _____

Includes:

- Data Tables (properly labeled, with appropriate title)
- Graphs (properly labeled, with appropriate title)
- Calculations (if applicable)
- Visual representation (photo or diagram of experiment)

(15 pts.) Conclusion _____

Includes:

- 1 point for reference to purpose of the lab and the research question
- 5 points for the evaluation of the hypothesis using specific observations and data points
- 5 points for drawing conclusions from the lab that relate to the scientific theories or concepts based upon evidence from the experiment
- 2 points for the two sources of error
- 2 points for addressing how you might improve the experiment if you were to do it again in the future

(8 pts.) Overall Appearance of presentation _____

Includes:

- Neatness
- Organization of data