This graphic organizer will help you write your Discussion (Conclusion + Evaluation) section of your Investigation

- ☐ Interpret processed data and analysis to draw and justify conclusions.
- ☐ Assess reliability and validity
- ☐ Compare the outcomes of an investigation to the accepted scientific context.
- ☐ Relate the outcomes of an investigation to the stated research question or hypothesis.
- ☐ Discuss the impact of uncertainties on the conclusions.
- ☐ Evaluate hypotheses.
- ☐ Evaluate the implications of methodological weaknesses, limitations and assumptions on conclusions.
- ☐ Identify and discuss sources and impacts of random and systematic errors.
- ☐ Explain realistic and relevant improvements to an investigation.

STEP 1 RESTATE Revisit your RQ, hypothesis (your expected mathematical relationship between your IV and DV) and prediction (an expected outcome from your hypothesis)

STEP 2 CONCLUDE Write your Conclusion in the form of Claim-Evidence-Reasoning

Claim: State the trend/relationship and prediction observed between your IV and your DV. Does the claim agree with your hypothesis and prediction?	**Evidence:** Provide scientific data that supports the claim. Pieces of evidence include ● Trend / fit type indicated in the graphical analysis ● Specific predicted values ● Sample calculations leading to the prediction	**Reasoning:** Explain why the trend/relationship exists. If your hypothesis is confirmed, refer back to the theoretical background in the introduction. If your hypothesis is not confirmed, address why in Step 5 below.

STEP 3. EVALUATE LIMITATIONS What were the limitations, why is it a limitation, and how could you fix it?

Research design	**Data analysis**	**Conclusion**
● Were the procedures clear and replicable? If you gave your lab to another student to have them complete it, what might they struggle with? ● Did you choose the correct variables and controls? ● Were there any sources of random or systematic error? ● Were there any measurements that were hard to make?	● Was the range of values for the independent variable appropriate? ● Were the measurements precise? ● Was the data analyzed using relevant graphical methods? ● Can you explain your outliers (if any)? ● Were there any competing data interpretations? ● Are your conclusions supported by your data?	● To what extent did your results match your prediction? ● Are your results accurate in comparison to an externally accepted value? ● Were any assumptions made that could affect the conclusions drawn? ● Can you explain your results with scientific reasoning? ● Can you offer any alternative explanations?

STEP 4. SUGGEST EXTENSIONS What research question came up from this study and why? Describe your IV and DV for the new research

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