



PENNSYLVANIA EXPERIMENTAL DESIGN CHECKLIST

2020 Experimental Design Division C Checklist for Pennsylvania

(Note: The maximum points available for each task are shown.)

Part I – Design and Construction of the Experiment (65 pts)

A. Statement of the Problem (2 pts)

- ② ① ① Statement addresses the experiment including variables (Not a yes/no question)

B. Hypothesis (6 pts)

- ② ① ① Statement predicts a relationship between the independent and dependent variables
② ① ① Statement gives specific direction to the prediction(s) (i.e., a stand is taken)
② ① ① A rationale is given for the hypothesis.

C. Variables (19 pts)

a. Independent Variable (IV) (7 pts)

- ② ① ① Correctly identified
② ① ① Correctly defined
③ ② ① ① Levels of IV given

b. Dependent Variable (DV) (4 pts)

- ② ① ① Correctly identified
② ① ① Correctly defined

c. Controlled Variables (CV) & Constants (8 pts)

- ② ① ① First CV correctly identified
② ① ① Second CV correctly identified
② ① ① First Constant correctly identified
② ① ① Second Constant correctly identified

D. Experimental Control (Standard of Comparison) (4 pts)

- ② ① ① SOC logically identified for the experiment
② ① ① Reason given for selection of SOC

E. Materials (4 pts)

- ② ① ① All materials are listed and quantified
② ① ① No extra materials are listed

F. Procedure and Set-up Diagrams (14 pts)

- ② ① ① Procedure is presented in list form
② ① ① Procedure is in a logical sequence
② ① ① Steps for repeated trials are included
② ① ① Multiple diagrams of setup are provided
② ① ① All diagrams are appropriately labeled
④ ③ ② ① ① Procedure detailed enough to repeat experiment accurately

G. Qualitative Observations (6 pts)

- ② ① ① Observations about procedure provided
② ① ① Observations about the results provided
② ① ① Observations given throughout the course of the experiment

H. Quantitative Data - Data Table (10 pts)

- ② ① ① All raw data is provided
② ① ① Condensed data table with only the data to be graphed is provided
② ① ① Tables and columns labeled properly
② ① ① All data has units
② ① ① Example calculations for derived variables are given

(revised 1/19/20)

Part II – Data, Analysis and Conclusions (62 pts)

I. Graph (12 pts)

- ④ ② ① Appropriate Graph is provided
② ① ① Graph properly titled
② ① ① Graph properly labeled
② ① ① Appropriate scale
② ① ① Units included

J. Statistics (12 pts)

- ③ ② ① ① Statistics of Central Tendency used (i.e., median, mode, mean)
② ① ① One example of Statistics of Central Tendency calculation is given for each statistic with units
③ ② ① ① Statistics of variation are included (i.e., min, max, standard deviation)
② ① ① One example of Statistics of Variation calculation is given for each statistic with units
② ① ① Calculations are accurate

K. Significant Figures (6 pts)

- ② ① ① Data is reported using correct significant figures
② ① ① Graph completed using correct significant figures
② ① ① Statistics are reported using correct sig figs

L. Analysis of Claim/Evidence/Reason (CER) (6 pts)

- ② ① ① Data Trend Claim completed logically (i.e., precise, not precise)
② ① ① Data Trend Evidence using statistics completed logically
② ① ① Data Trend Reasoning completed logically

M. Possible Experimental Errors (4 pts)

- ④ ③ ② ① ① Two specific errors are identified and their effect on results discussed.

N. Conclusion (8 pts)

- ② ① ① Hypothesis is re-stated
② ① ① Hypothesis Claim completed logically
② ① ① Hypothesis Evidence completed logically
② ① ① Hypothesis Reasoning completed logically

O. Applications & Recommendations for Further Use (6 pts)

- ② ① ① Suggestions to improve the experiment given
② ① ① Suggestions for practical applications of experiment are given
② ① ① Suggestions for future experiments are given

P. Abstract (8 pts)

- ② ① ① Brief and well-organized
② ① ① Contains the Statement of the Problem and Hypothesis
② ① ① Describes the research procedure
② ① ① Includes major findings and conclusions

School: _____ Team# _____

Point Total: _____/127

Deduction multiplier(s): _____
Non-clean up (0.95), Off topic (0.75), or Non-lab (0.25)

Final Score: _____