

Experimental Design Rubric for B/C

a. Statement of problem (2 Points)

Not a yes/no question and includes independent and dependent variables

Problem is clearly testable and is written in a clear and concise manner

b. Hypothesis (4 points)

Statement predicts a relationship or trend

Statement gives specific direction to the predictions(s): A stand is taken.

Prediction includes both independent and dependent variables

A rationale is given for the hypothesis.

c. Variables

Independent Variable (IV) (3 Points)

IV correctly identified

IV operationally defined

At least three levels of IV given

Dependent Variable (DV) (3 points)

(2pts) DV correctly identified

DV operationally defined

Controlled Variables (CV) (4 points)

One CV correctly identified

Two CVs correctly identified

Three CVs correctly identified

Four CVs correctly identified

d. Experimental Control (Standard of Comparison-SOC)

(2 points)

SOC correctly identified and makes logical sense for the experiment

Reason given for selection of SOC

e. Materials (3 points)

All materials used are listed

All materials used are listed properly

(no extras)

Materials listed separately from procedure

f. Procedure: Including Diagrams (6 points)

Procedure well organized

Procedure is in a logical sequence

(2pts) Enough information is given so

another could repeat procedure

Diagrams used

Repeated trials

g. Qualitative Observations (4 points)

Observations about results given

Observations about procedure/deviations

Observations about results not directly

relating to DV

Observations given throughout the course

of the experiment.

h. Quantitative Data - Data Table (6 points)

All raw data is given

All data has units

Condensed table with most

important data included

Table(s) labeled properly

Example calculations are given

All data reported using correct figures

(significant figures C Division only)

i. Graph(s) (6 points)

- Appropriate type of graph used
- Graph has title
- (2pts) Graph labeled properly (axes/series)
- Units included
- Appropriate scale used

j. Statistics Division B&C- (2 points)

- Average (mean), median, mode, range, or drawn in line best of-fit

Division C only (4 more points)

- Measure of central tendency
- Measure of variation
- Regression analysis
- Other appropriate statistic used

k. Analysis and interpretation of data (4 points)

- All data discussed and interpreted
- Unusual data points commented on
- Trends in data explained and interpreted
- Enough detail is given to understand data and all statements must be supported by the data.

l. Possible Experimental Errors (3 points)

- Possible reasons for errors are given
- Important info about data collection given
- Effect errors had on data discussed

m. Conclusion (4 points)

- Hypothesis is evaluated according to data
- Hypothesis is re-stated
- Reasons to accept/reject hypothesis given
- All statements are supported by the data

n. Applications and Recommendations for Further Use (4 points)

- Suggestions for improvement of specific experiment are given
- Suggestion for other ways to look at hypothesis given
- Suggestions for future experiments given
- Practical application(s) of experiment given