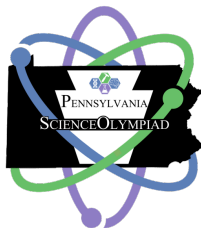


# PENNSYLVANIA SCIENCE OLYMPIAD

## DIVISION C EXPERIMENTAL DESIGN



Team Number \_\_\_\_

Team Name \_\_\_\_\_

### Team Members:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

## Part 1

# Design & Construct Experiment

## Time: 20 minutes

### ***FOR SUPERVISOR ONLY***

Lab Equipment being utilized during experiment:

YES      NO Supervisor

Notes: (optional)

### **STUDENT BROUGHT EQUIPMENT CHECKLIST**

*circle any MISSING item(s)*

1x measuring device   1x timing device  
1x calculator of any kind

1x timing device  
3 x goggles

## **DO NOT OPEN PACKET UNTIL INSTRUCTED**

\*Goggles are to remain on at **all times** during the event.\*

### **2022 State Tournament**

### **Division C Experimental Design**

#### **Topic:**

**Materials:** You must use \_\_\_\_\_ of the materials listed below.

---

High score wins. Scoring will be done using the Pennsylvania Experimental Design Checklist.

- During the first 20 minutes, participants will receive the question/topic area, materials, and the first half of the report packet so you can design and conduct your experiment.
- After the first 20 minutes, participants will receive the last half of the report packet to analyze data and report your findings.
- Place all materials back on the front table at the conclusion of your experiment. Clean up your area and bring your report, **IN THE CORRECT ORDER**, to the supervisor to be stapled.
- If needed, you may write on the back of the pages.

A. Statement of Problem

B. Hypothesis

C. Variables

Independent Variable (IV)	Dependent Variable (DV)	Controlled Variables (CV)
		1.
		2.
		Constants
		1.
		2.

D. Experimental Control (Standard of Comparison)

**E. Materials**

**F. Procedure and Set-up diagrams**

**G. Qualitative Observations**

	Before	During	After
Procedure			
Results			

## H. Quantitative Data - Raw & Condensed Data Tables

School: \_\_\_\_\_

student: \_\_\_\_\_

student: \_\_\_\_\_

student: \_\_\_\_\_

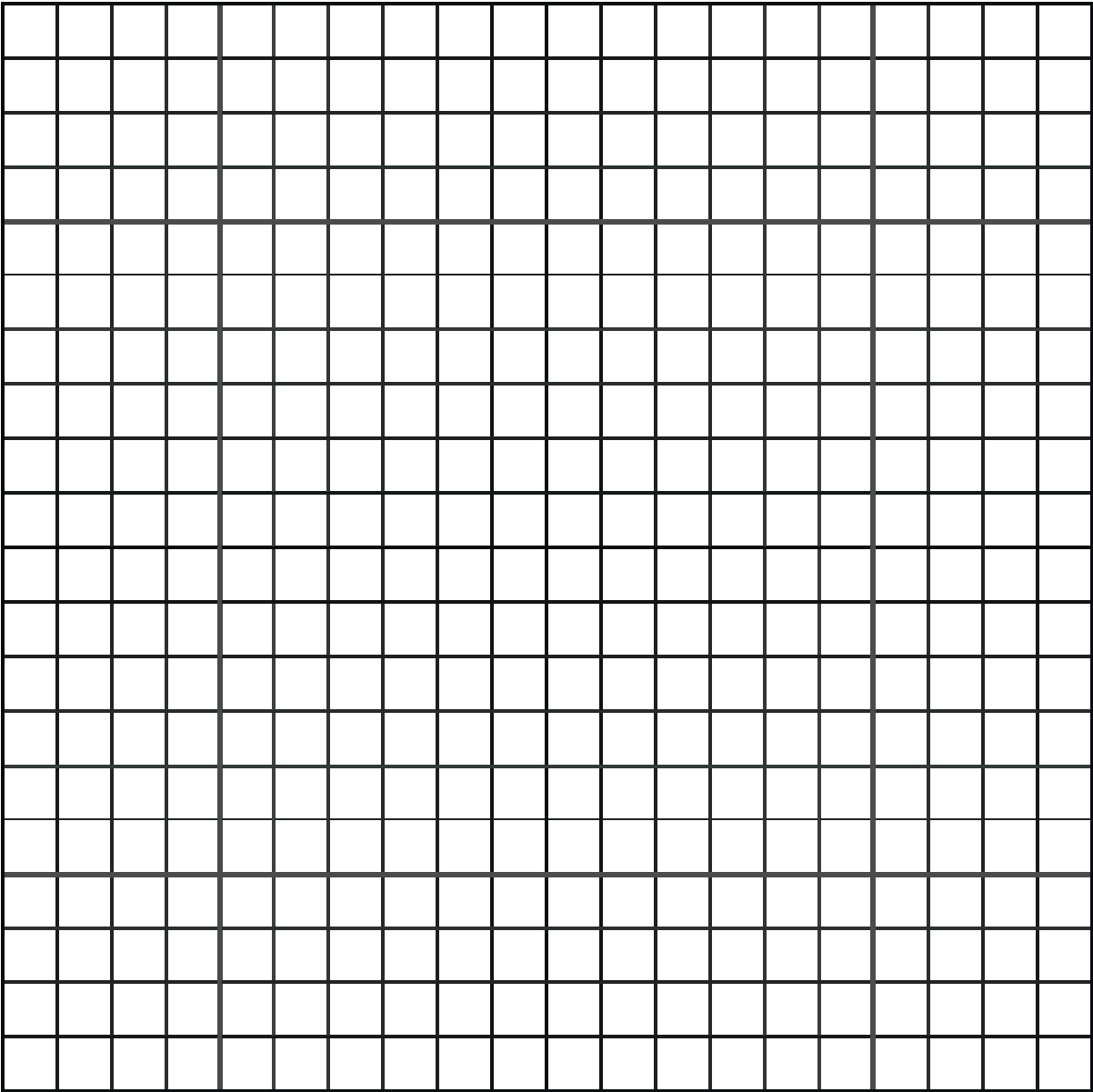
# Part 2

## Part 2: Experimental Write Up

### Time: 30 minutes

*Cover Sheet*

I. Graph





Division C

Team #:

## **J. Statistics (& K. Significant Figures)**

Measures of Central Tendency

Measures of Variation

**L. Analysis of Claim/Evidence/Reason (CER)**

<b>PROMPT: Is data precise or not?</b>	
<b>CLAIM</b>	
<b>EVIDENCE</b>	
<b>REASON</b>	

**L. Analysis of Claim/Evidence/Reason (continued)**

<b>PROMPT: What is the nature of the data trend?</b>	
<b>CLAIM</b>	
<b>EVIDENCE</b>	
<b>REASON</b>	

**M. Possible Experimental Errors**

	Specific Error Identified	Specific Effect on Results
<b>Error 1</b>		
<b>Error 2</b>		

**N. Conclusion**

<b>Hypothesis Restated:</b>	
<b>Hypothesis is Evaluated</b>	
<b>Claim</b> <i>Acceptance or Rejection of Hypothesis</i>	
<b>Evidence</b>	
<b>Reason</b>	

**O. Recommendation for Future Experimentation**  
Improvements to experiment as performed

Practical applications

Future experiments