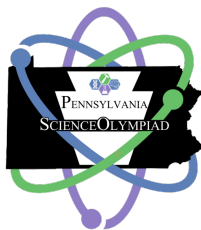## PENNSYLVANIA SCIENCE OLYMPIAD

DIVISION B   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 timing device
1x calculator of any kind   3 x goggles

<u>DO NOT OPEN PACKET UNTIL INSTRUCTED</u>

*Goggles are to remain on at **<u>all times</u>** during the event.*

2022 State Tournament

Division B Experimental Design

<u>Topic:</u>

Provided Materials: You must use at least **____** materials to design and conduct an experiment that addresses the question. You do not need to use everything provided.

_____

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 you need additional space, you can write on the back of any of the pages.

A. **Statement of Problem**

B. **Hypothesis**

C. **Variables**

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

D. **Materials**

E. **Procedure and Set-up Diagrams**

F. **Qualitative Observations**

	Before	**During**	**After**
Procedure			
Results			

G. **Quantitative Data - Raw & Condensed Data Tables**

School: _____

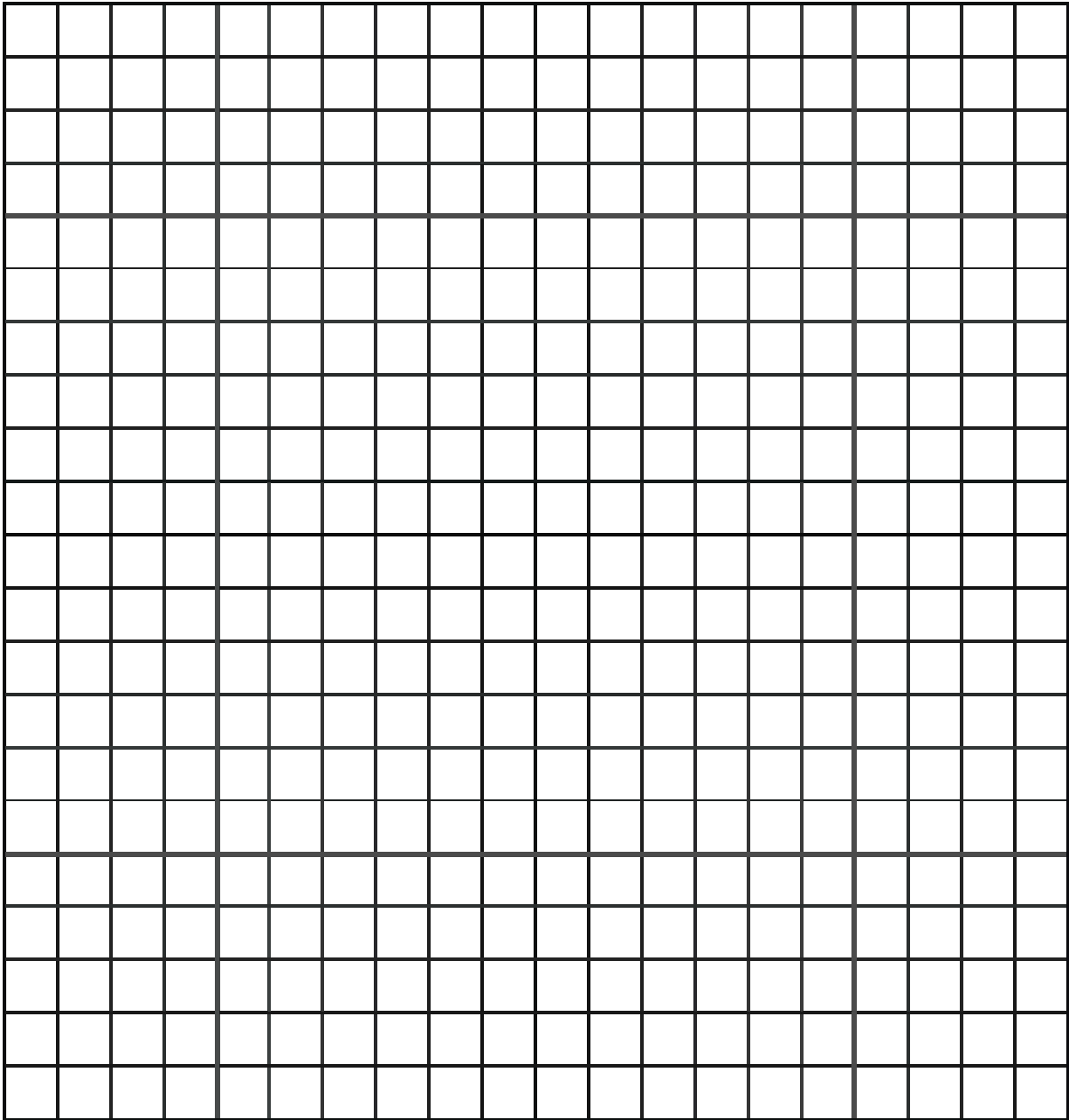**student:** _____

student: _____

student: _____

Part 2
Part 2: Experimental Write Up
Time: 30 minutes

Cover Sheet

H. Graph

I. Statistics
Measures of Central Tendency

Measures of Variation

J. Analysis of Claim/Evidence/Reason (CER)

	PROMPT: Is data precise or not?
CLAIM	
EVIDENCE	
REASON	

J. Analysis of Claim/Evidence/Reason (continued)

PROMPT: What is the nature of the data trend?	
CLAIM	
EVIDENCE	
REASON	

K. Possible Experimental Errors

	Specific Error Identified	Specific Effect on Results
Error 1		
Error 2		

L. Conclusion

Hypothesis Restated:		
Hypothesis is Evaluated		
Claim *Acceptance or Rejection of Hypothesis*		
Evidence		
Reason		

M. Recommendations for Future Experimentation

Improvements to experiment <u>as performed</u>

Practical applications

Future experiments

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