

# RESEARCH PROJECT

# WORKSHEETS



for

Elementary & Middle

School Students

This resource packet is presented to you by:



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Our thanks to those teachers, parents, & students who helped produce this document.

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# TEACHERS...

Please be sure to adapt this packet to meet the needs of your particular students.

We want to make sure inquiry & research get kids **EXCITED ABOUT LEARNING**, not discouraged, frustrated, or thinking it's all just **TOO HARD!!**

All we ask is that you give us credit (cite this document as a source) when you adapt this packet for use in your classroom. Thanks!

# Ask a Question...Form a Hypothesis

**GUESS** = No prior experience with this area at all.

**PREDICTION** = Based on prior experience, repeated observations, etc.

**HYPOTHESIS** = Specific prediction indicating the variable to be tested.

Write a **QUESTION** that is something you can investigate:

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From this question, write a **HYPOTHESIS**:


**IF** \_\_\_\_\_

**THEN** \_\_\_\_\_

**When I Change:**

 *What I will change...INDEPENDENT VARIABLE(s)*

**What Will Happen  
To:**


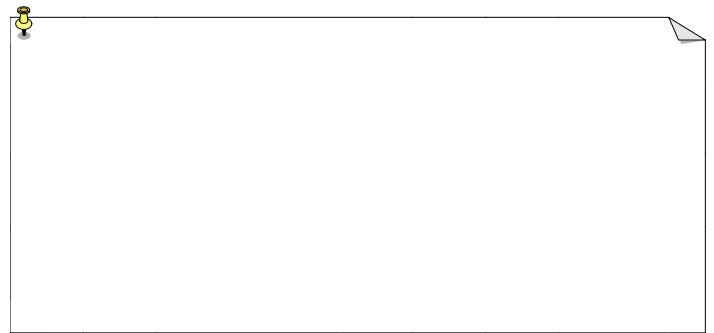
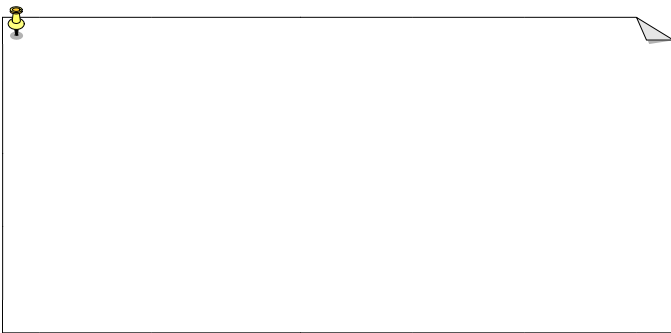
 *What I will measure...DEPENDENT VARIABLE(s)*

# Experimental Design Process

Things to Change or Vary...**INDEPENDENT VARIABLES:**



Things to Measure or Observe...**DEPENDENT VARIABLES:**



# Narrowing Down & Choosing Your Variables

I Will Change...INDEPENDENT VARIABLE(s):

I Will Measure...DEPENDENT VARIABLE(s):

I Will NOT Change *(so that it is fair!)*:

I Will NOT Measure:



**DATA ANALYSIS:** Describe what you will do to analyze the your data to help you answer your research question or hypothesis (graphs, charts, statistics, etc.). \_\_\_\_\_

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**BIBLIOGRAPHY:** List at least 3 (elementary/middle school) to 5 (high school) major references (ex: science journal articles, books, internet sites, etc.) from your library research. If you plan to use vertebrate animals, give an additional animal care reference. Choose one style and use it consistently to reference the literature used in the research plan.

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
\_\_\_\_\_
5. \_\_\_\_\_  
\_\_\_\_\_

*TEACHERS: Please refer to the ISEF Research Plan Guide for specific additional information needed for projects involving human subjects; vertebrate animals; potentially hazardous biological agents; &/or hazardous chemicals, activities, and devices.*

**Materials Needed for This Project:**

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



# Data Collection

What I will change or vary (**INDEPENDENT VARIABLE**):

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What I will measure or observe (**DEPENDENT VARIABLE**):

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How I will collect and record data:

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Number of trials I will complete: \_\_\_\_\_

Sample chart for recording findings:

## **WHAT I MEASURED**

*(Dependent Variable; for Y axis)*

**WHAT I CHANGED**  
*(Independent Variable; for X axis)*

	TRIAL 1	TRIAL 2	TRIAL 3

# Data Analysis

Title of Graph:

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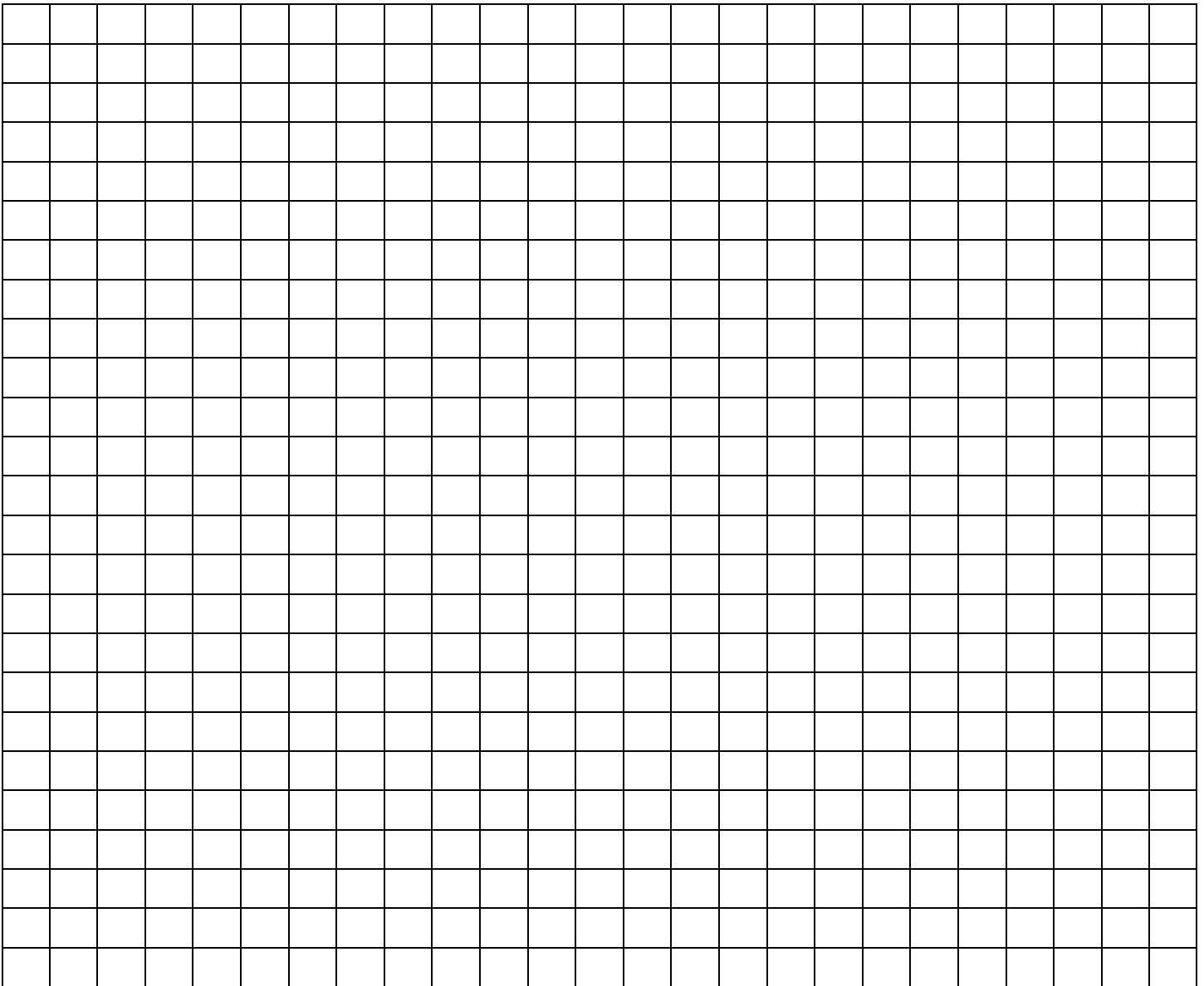


**What I MEASURED**

*(specify units)*

**Dependent Variable**

**Y Axis**



**What I CHANGED**

*(specify units)*

**Independent Variable**

**X Axis**



**NOTE: Both axes need to be labeled and appropriate units of measurement marked!**



# Conclusion

The **CONCLUSION** is a statement based on evidence (*information that helps you form a conclusion*) and a logical argument (*reasonable statement for or against something*).

**\*\*Use your *Data Summary Statements* to help you write your **CONCLUSION**.\*\***

1. Explain the **cause & effect relationship** from your hypothesis: \_\_\_\_\_  
\_\_\_\_\_
2. What **unanswered questions** do you still have? \_\_\_\_\_  
\_\_\_\_\_
3. How might mistakes during data collection &/or analysis have influenced your results?  
\_\_\_\_\_  
\_\_\_\_\_
4. Answer your original question OR explain why it can't be answered at this time: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PRACTICAL APPLICATIONS:** Could your results be used in the real world? How? For what?

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**FURTHER INVESTIGATION:** The next thing I want to know is...

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**NEW INDEPENDENT VARIABLE:** Another thing I'll CHANGE...

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**NEW DEPENDENT VARIABLE:** Another thing I'll MEASURE...

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