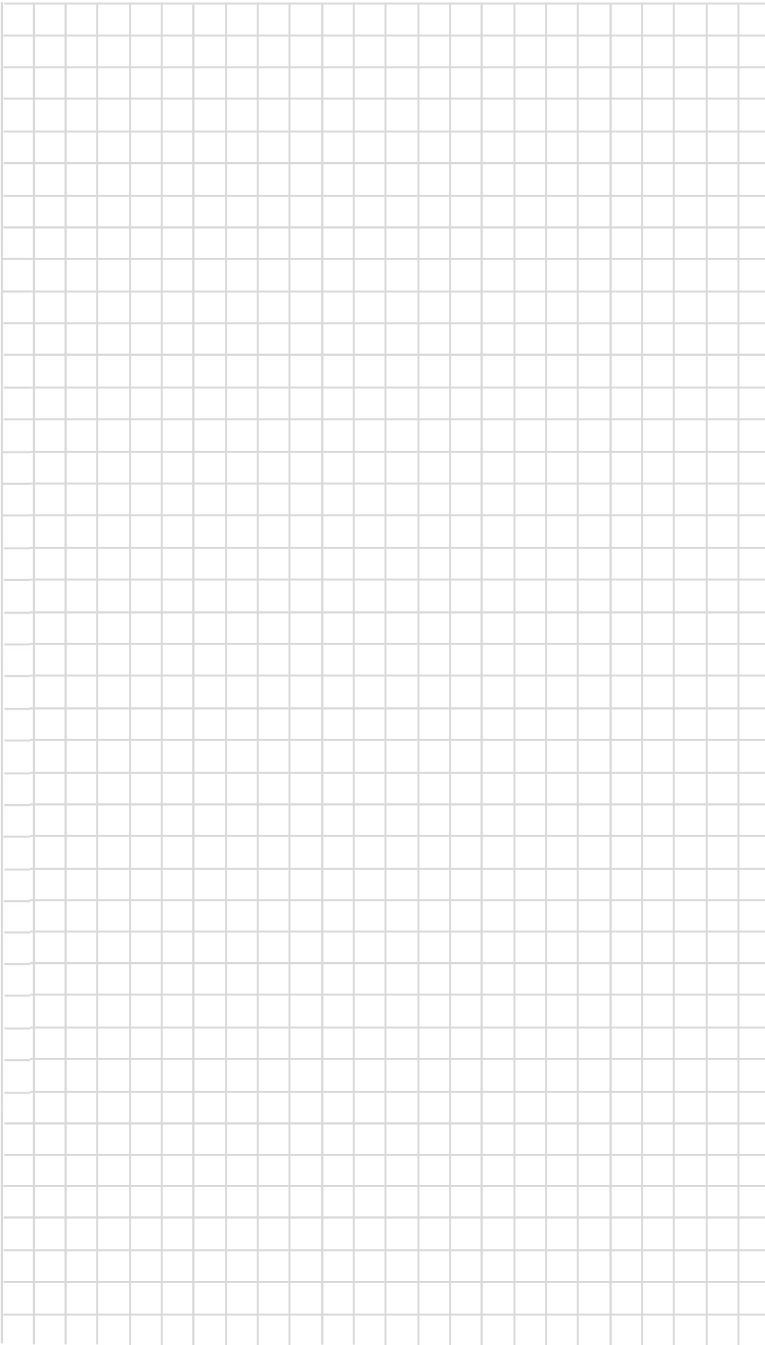


Dependent Variable Name vs. Independent Variable Name



Dependent Variable Name (units)

Independent Variable Name (units)

**P**henomenon

**Q**uestions

**R**esearch investigation

**S**cience story

**T**hinking more

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Phenomenon

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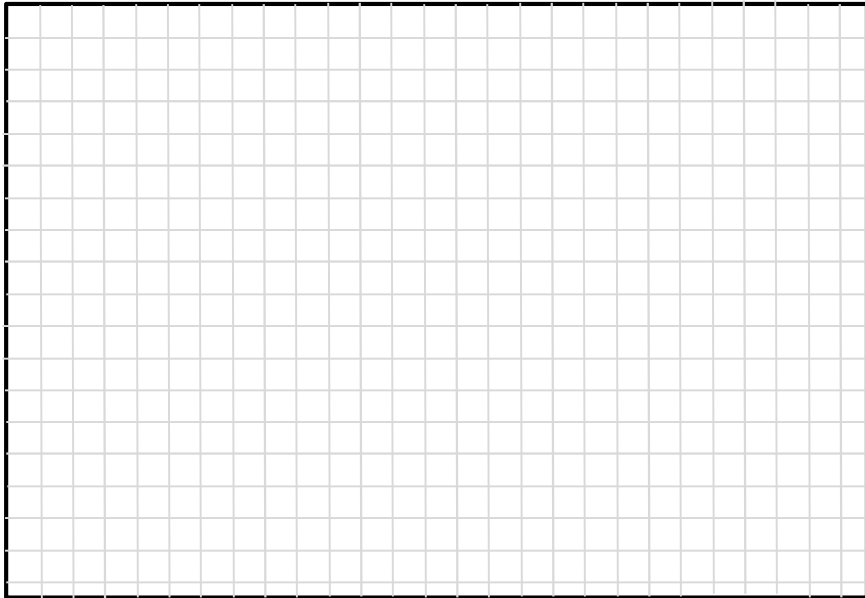
Scientist's Name

# Sciencing Journal



DaNel Hogan – STEMAZing.org  
Brooke Meyer – SARSEF.org

# Draw and label **P**henomenon



I notice \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_.

I notice \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_.

I notice \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_.

Dependent Variable Name (units)	Average							
	Trial 5							
	Trial 4							
	Trial 3							
	Trial 2							
	Trial 1							
Independent Variable Name (units)								

# Experimental Procedure

(detailed enough to allow data collection to be repeated exactly as you collected it)

**NOTE: Control Variables** (all independent variables not selected for testing must be given a set value or controlled. These controlled settings must be explicitly noted in the procedure.)

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# Questions

I wonder why...? I wonder if...? I wonder what...?  
I wonder how...? I wonder what would happen if...?

I wonder \_\_\_\_\_

Testable?

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I wonder \_\_\_\_\_

Testable?

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I wonder \_\_\_\_\_

Testable?

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I wonder \_\_\_\_\_

Testable?

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I wonder \_\_\_\_\_

Testable?

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## More Questions

I wonder why...? I wonder if...? I wonder what...?  
I wonder how...? I wonder what would happen if...?

I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_?

I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_?

I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_?

I wonder \_\_\_\_\_

Testable?

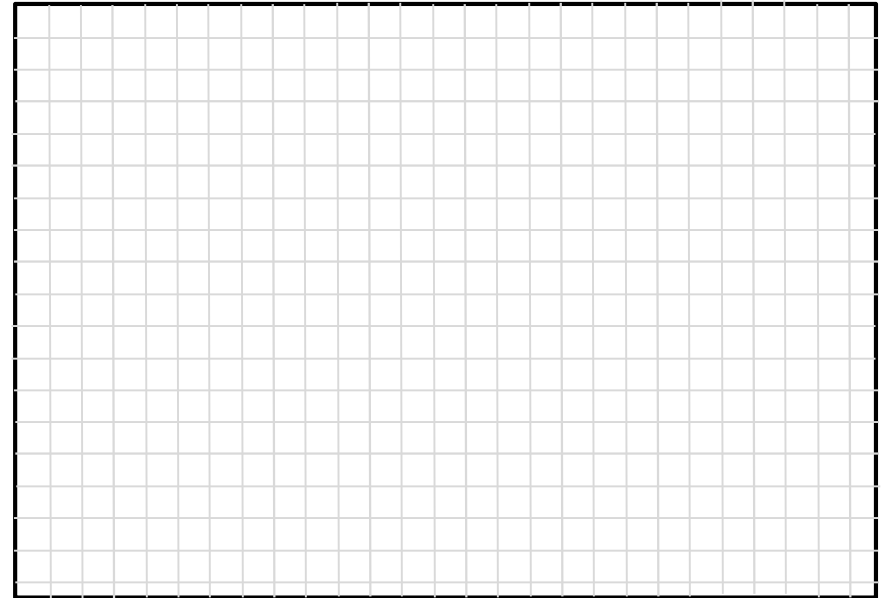
\_\_\_\_\_  
\_\_\_\_\_?

I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_?

Draw and label experimental setup.



Materials and Equipment List for Experiment

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Thinking more...

Now I wonder why...? Now I wonder if...? Now I wonder what...?

Now I wonder how...? Now I wonder what would happen if...?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

# All Materials and Equipment Available

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

Play to learn more – tinker and experiment with materials and equipment you have available to explore how everything works.

I notice \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

I notice \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

I notice \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

## Even More Questions

Now I wonder why...? Now I wonder if...? Now I wonder what...?  
Now I wonder how...? Now I wonder what would happen if...?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

Now I wonder \_\_\_\_\_

Testable?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_?

**Reasoning** (connect evidence to claim using scientific principles and rules) \_\_\_\_\_

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**Peer Critique of CER** (Is there another way to interpret the data? Is there something they might not have considered? Is there another explanation which could connect the evidence to the claim?)

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**Science Story** (Using **Claim**, **Evidence**, and **Reasoning**, share the story the data tells and the science explains.)

**Claim** (answer to investigation question, should either be one of your hypotheses from page 7 or a new claim you had not considered) \_\_\_\_\_

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**Evidence** (cite data from the experiment to support the claim) \_\_\_\_\_

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## Research Investigation (Experiment)

**Independent Variables** (a variable manipulated or changed by the experimenter – think “I” control it)

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**Dependent Variables** (a responding variable which could vary depending on other factors and can be measured and/or calculated with available equipment)

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**Testable Question** (can be answered with a claim based on evidence from a scientific experiment)

How will changing \_\_\_\_\_  
independent variable selected for testing  
affect \_\_\_\_\_?  
dependent variable selected for testing

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**Multiple Hypotheses** (consider every possible claim you might be able to make once you collect data)

1. Direct Relationship

**Increasing** the \_\_\_\_\_  
independent variable selected for testing  
**will increase** the \_\_\_\_\_.  
dependent variable selected for testing

2. Indirect Relationship

**Increasing** the \_\_\_\_\_  
independent variable selected for testing  
**will decrease** the \_\_\_\_\_.  
dependent variable selected for testing

3. No Relationship

**Increasing** the \_\_\_\_\_  
independent variable selected for testing  
**will not change** the \_\_\_\_\_.  
dependent variable selected for testing

**Data Observations** (What do you notice as you look at the raw data collected in the data table and at the graphical representation of the data?)
