

# Initiate & Plan

Step 1: Observing & Questioning

**What did I observe?**

(What do you notice about the object or event? Use your senses to describe the object or event.)

**What am I wondering?**

(What questions or predictions do you have about the object or event?)

Labeled diagram:

# Initiate & Plan

Step 2(a): What could I change or vary about the object or the event?  
- Brainstorm (Place sticky notes of the same colour in the squares below.)

Variable

Variable

Variable

Variable

Variable

Variable

Step 2(b): What could I measure or observe about the object, or event?  
- Brainstorm (Place sticky notes of a new colour in the squares below.)

Dependent  
Variable

Dependent  
Variable

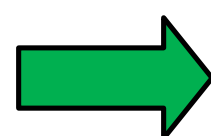
# Initiate & Plan

Step 3: What will I change and not change?  
- Choosing Variables

One variable I will change:

**Independent Variable**

(Place a sticky note from Step 2(a) here)



I will measure or observe this result:

**Dependent Variable**

(Place a sticky note from Step 2(b) here)

Variables I will NOT change:

What conditions will be held constant so it is a fair test? Place remaining sticky notes from Step 2(a) here.

**Controlled Variable**

**Controlled Variable**

**Controlled Variable**

**Controlled Variable**

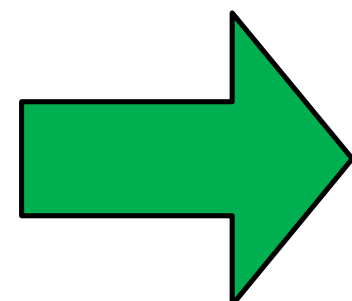
**Controlled Variable**

**Controlled Variable**

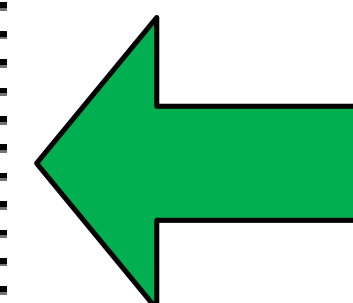
# Initiate & Plan

Step 4: What is the question I want to explore?

If I change this one variable...



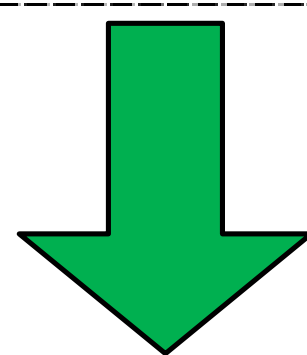
Independent Variable



If I don't change this one variable...

Write your question here:

What will happen to:



Write your question here:

Dependent Variable

Step 5: What is my prediction (what and why)?

Based upon my question, I predict that :

What? if I change \_\_\_\_\_  
(Independent Variable)

then I predict this will happen to what I will measure or observe:

\_\_\_\_\_  
(Dependent Variable)

Why? I think this will happen because \_\_\_\_\_

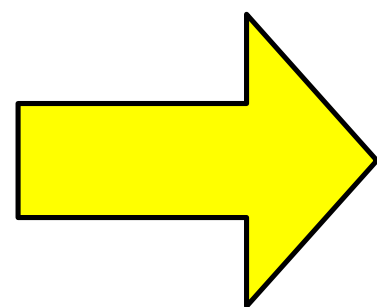
\_\_\_\_\_

# Plan, Perform & Record

Step 6: How do I test my prediction?

My Test Set-Up

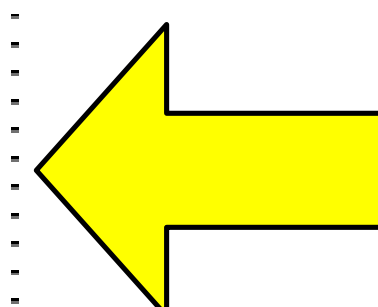
Here's how I will change the variable...



Independent Variable

My Control Set-Up

Here's how I won't change this variable...



(What will I do?  
How will I change the variable?)

(What will I do?  
How will I keep the variable the same?)

My Test Steps:

My Control Steps:



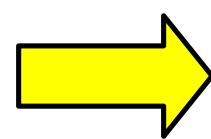
## Steps to Inquiry (4-8)

# Plan, Perform & Record

Step 7a): Preparing for Data Collection

When I changed:

### Independent Variable



What measurements resulted?

### Dependent Variable

Sample Chart for Recording Measurements / Observations

- Modify this chart to suit your investigation or design your own. (Specify units if appropriate.)

What I changed: _____ (____) units (Independent Variable)	What I measured/observed: _____ (____) units (Dependent Variable)			
	Observation #1	Observation #2	Observation #3	Observation #4
Control Condition:				
Condition 1:				
Condition 2:				

# Plan, Perform & Record

## Step 7b): Equipment Set-Up & Check

Have I ....

- collected all of the materials?
- organized and/or set-up my equipment properly?
- reviewed my procedure and recording chart?
- made changes where necessary?

## Step 7c): Perform Experiment and Collect the Data

Follow the procedure to complete the experiment.  
Record the data in your chart. (See Step 7a).

## Steps to Inquiry (4-8)

# Analyze & Interpret

### Step 8: Graphing Results

What type of graph best suits my data?

Bar Graph

Line Graph

Other

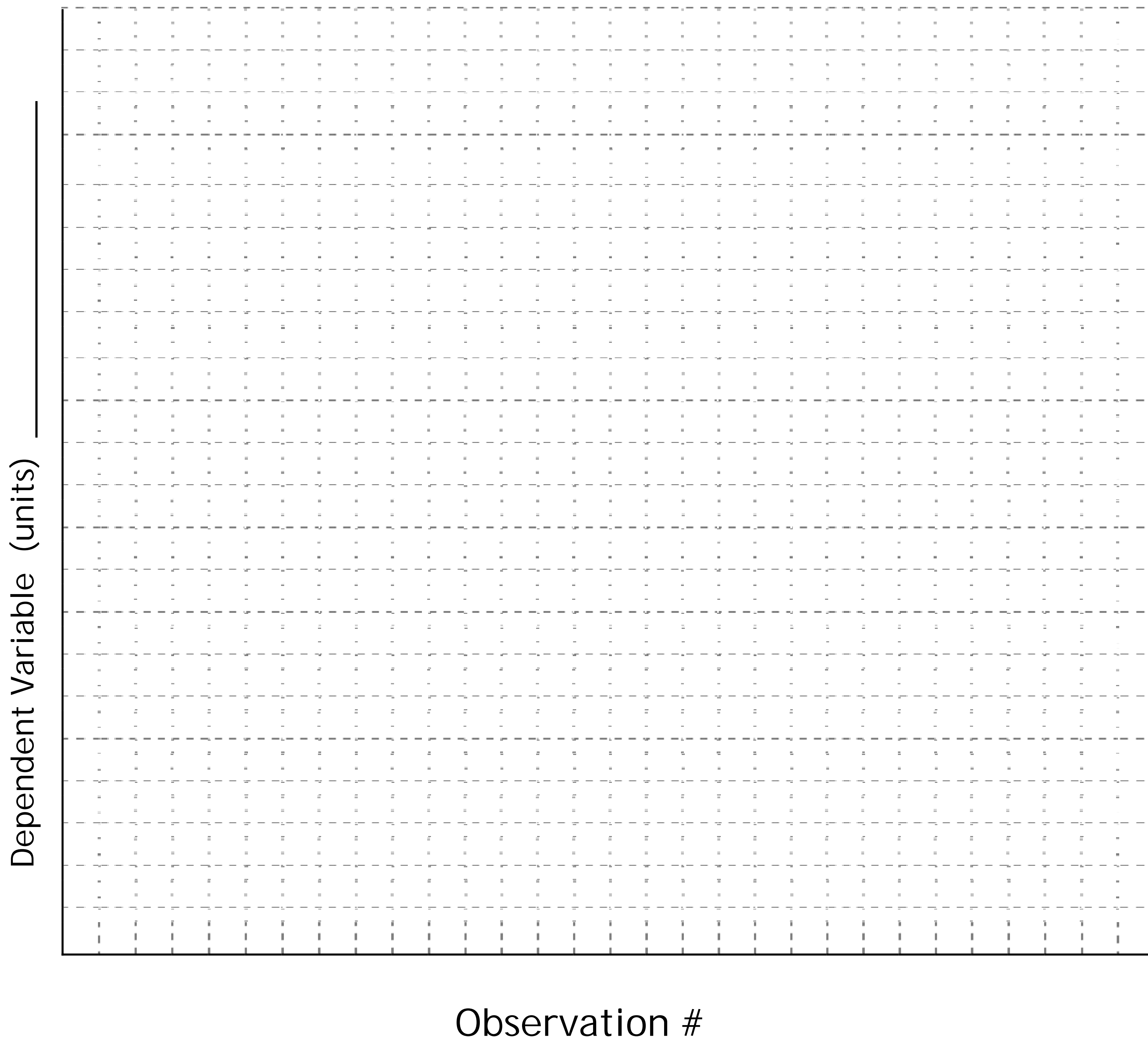


Figure # \_\_\_\_: \_\_\_\_\_  
(descriptive caption)

Remember to label axes, add scales appropriately and include a legend.

## Steps to Inquiry (4-8)

# Analyze & Interpret

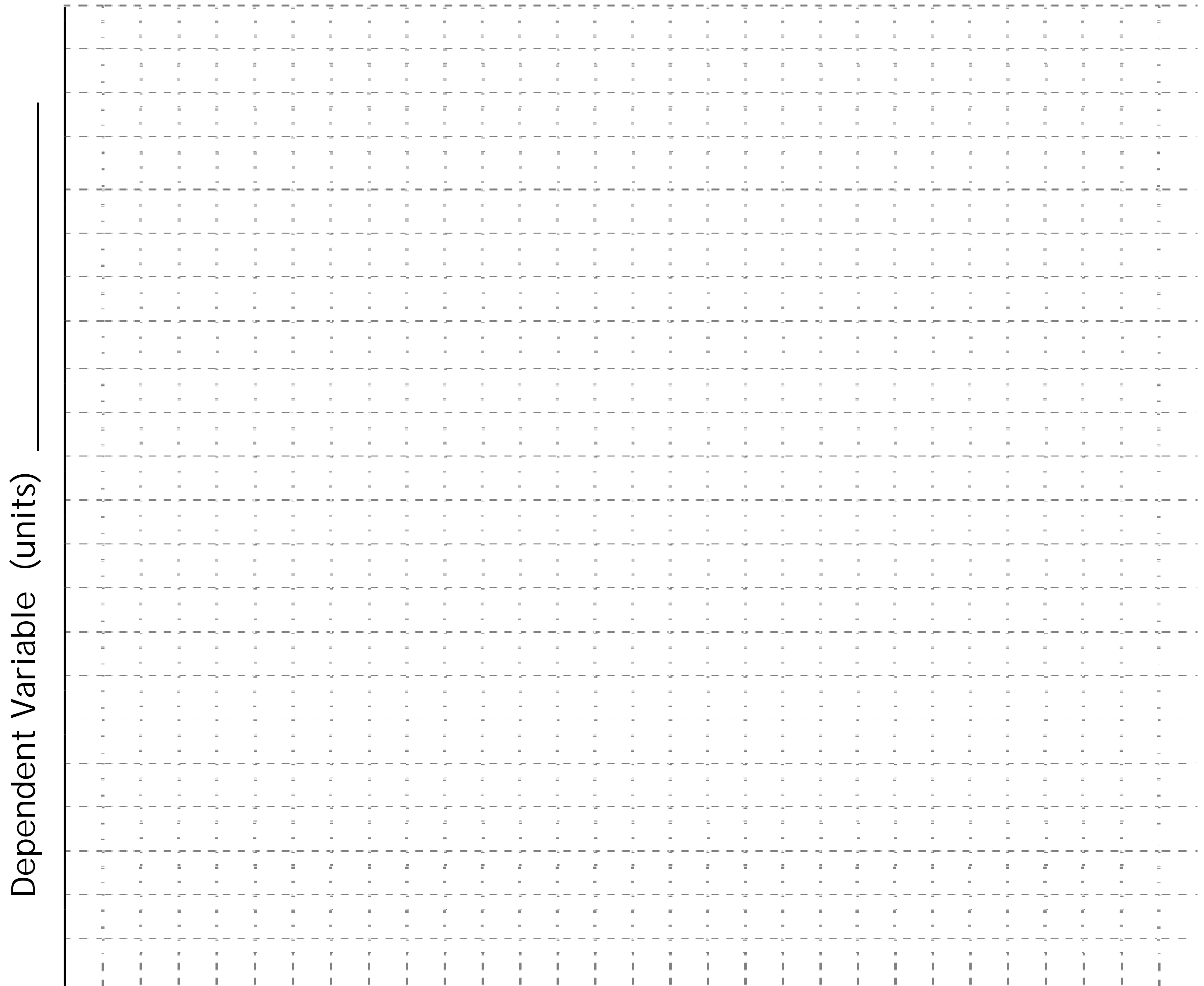
Step 8: Graphing Results (continued)

What type of graph best suits my data?

Bar Graph

Line Graph

Other



Independent Variable (units) \_\_\_\_\_

Figure # \_\_\_\_: \_\_\_\_\_

(descriptive caption)

Consider measures of central tendency\* (mode, median and mean).

## Steps to Inquiry (4-8)

# Analyze & Interpret

### Step 9: Finding Patterns and Relationships in Results

From the graphs and table:

<p>What I changed:</p> <p>_____ (____) units</p> <p>(Independent Variable)</p>	<p>What I saw happen:</p> <p>_____ (____) units</p> <p>(Dependent Variable)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Central Value*</th> <th style="width: 25%;">Highest Value</th> <th style="width: 25%;">Lowest Value</th> <th style="width: 25%;">Rank</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td style="height: 40px;"> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td style="height: 40px;"> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Central Value*	Highest Value	Lowest Value	Rank												
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Control Condition:																	
Condition 1:																	
Condition 2:																	

The trends show that when the \_\_\_\_\_ (Independent variable) \_\_\_\_\_ (increases/decreases),  
 the \_\_\_\_\_ (Describe what happens to the dependent variable)

I know this because:  
 (What is my evidence?)

Qualitative Data	When I observed _____ I saw/heard/felt/smelled, _____ _____ _____
Quantitative Data	When I measured _____ with _____, I found _____ _____ _____

# Steps to Inquiry (4-8)

# Communicate

## Step 1 : Communicating My Results

Answer the question in a general way.

When I \_\_\_\_\_ the \_\_\_\_\_ the  
increased / decreased independent variable

\_\_\_\_\_ .  
what I measured/observed increased / decreased

Provide evidence from your observations or tests.

For example: The \_\_\_\_\_ was \_\_\_\_\_ when  
dependent variable highest value

the \_\_\_\_\_ was \_\_\_\_\_. But the  
independent variable value/setting

\_\_\_\_\_ was only \_\_\_\_\_ when the \_\_\_\_\_  
dependent variable lowest/setting dependent value

was \_\_\_\_\_.  
value/setting

Make a concluding statement based on the evidence.

Therefore, changing \_\_\_\_\_ makes  
the independent variable

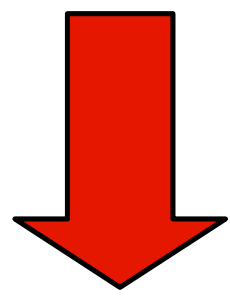
\_\_\_\_\_ .  
the dependent variable change observed

# Steps to Inquiry (4-8)

# Communicate

Refer to your prediction.

The data does support my prediction.

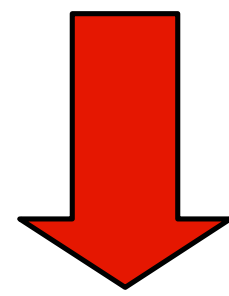


The data does support my prediction because I predicted that \_\_\_\_\_ change in the IV would make \_\_\_\_\_ the change in the DV. I thought \_\_\_\_\_ the IV would cause this change because \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

The data does NOT support my prediction.



The data does NOT support my prediction because I predicted that \_\_\_\_\_ change in the IV would make \_\_\_\_\_ the change in the DV. I thought \_\_\_\_\_ the IV would cause this change because \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Now I know that \_\_\_\_\_ the IV doesn't have that effect.

Make an inference:

I think this happened because \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Communicate

## Step 1 b): Other Considerations

1. If you had data that was different from other groups (or was inconclusive or inconsistent), what might have caused these results?

2. How might have you improved your investigation?

3. What new/additional questions do you now want to investigate?