



Steps to In

# Initiate

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.)

quiry (4-8)

**& Plan**

**What am I wondering?**

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

Labeled diagram:

(Adapted from: Buttemer, H. "Inquiry on Board." Science and Children Oct. 2006.; Fulwider, J. & Feasey. Making Sense of Primary Science Investigations. Hatfield: ASE, 1994.)





Steps to In

# Initiate

Step 2(a): What could I change or vary about  
- Brainstorm (Place sticky notes of t

Variable

Variable

quiry (4-8)

# & Plan

ut the object or the event?

the same colour in the squares below.)

Variable

Variable

# Variable

Step 2(b): What could I measure or observe  
- Brainstorm (Place sticky notes of a new

# Dependent Variable

# Variable

... about the object, or event?  
(... colour in the squares below.)

## Dependent Variable

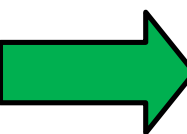
# Initiate

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)



Variables I will NOT change:

What conditions will be held constant so it is a fair test? Place

Controlled Variables

quiry (4-8)

# & Plan

ge?

I will measure or observe this result:

**Dependent  
Variable**

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

Place remaining sticky notes from Step 2(a) here.

**Controlled**

Variable

Controlled  
Variable

Controlled  
Variable

Variable

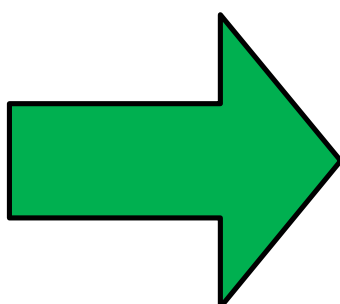
Controlled  
Variable

Controlled  
Variable

# Initiate

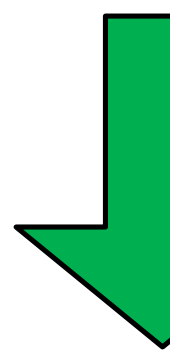
Step 4: What is the question I want to explore?

If I change  
this one  
variable...



Independent  
Variable

Write your  
question here:



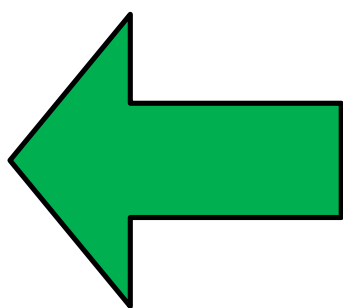
Dependent  
Variable

quiry (4-8)

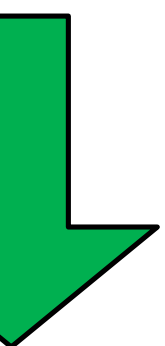
# & Plan

xplore?

endent  
able



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



What will  
happen to:

Write your  
question here:

endent  
able

Step 5: What is my prediction (what

Based upon my question, I predict that

What?

if I change \_\_\_\_\_

(Independent)

then I predict this will happen to what

\_\_\_\_\_

(Dependent)

Why?

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

\_\_\_\_\_

(Adapted from: Buttemer, H. "Inquiry on Board." Science and Children Oct. 2006.; Fulwider, J. & Feasey. Making Sense of Primary Science Investigations. Hatfield: ASE, 1994.)

and why)?

and why)?

t :

pendent Variable)

t I will measure or observe:

pendent Variable)

4 of 4

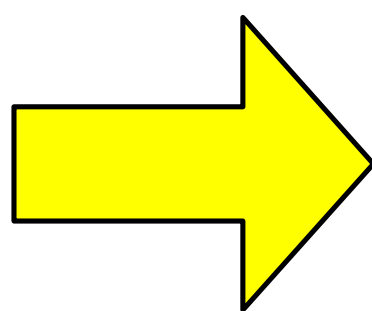
viler, B. Writing in Science. Portland: Heineman, 2007.; Goldsworthy, A., and R.

# Plan, Perform

Step 6: How do I test my prediction?

## My Test Set-Up

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



Indepe  
Varia

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

My Test Steps:

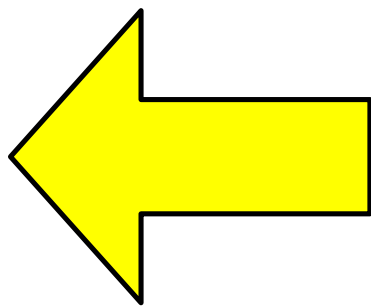
quiry (4-8)

# m & Record

endent  
able

## My Control Set-Up

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



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

My Control Steps:

(Adapted from: Buttemer, H. "Inquiry on Board." *Science and Children* Oct. 2006.; Fulw  
Feasey. *Making Sense of Primary Science Investigations*. Hatfield: ASE, 1994.)





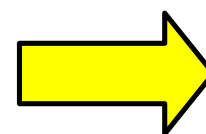
Steps to In

# Plan, Perform

Step 7a): Preparing for Data Collection

When I changed:

Independent Variable



Sample Chart for Recording Measurement

- Modify this chart to suit your investigation or design

What I changed: <hr/>	What I <hr/>
--------------------------	-----------------

quiry (4-8)

# m & Record

What measurements resulted?

Dependent  
Variable

ts / Observations

ign your own. (Specify units if appropriate.)

measured/observed:

(Dependent Variable)

( )  
units

(Independent Variable) units	Observation
Control Condition:	
Condition 1:	
Condition 2:	

(Adapted from: Buttemer, H. "Inquiry on Board." Science and Children Oct. 2006.; Fulwider, J., & Feasey. Making Sense of Primary Science Investigations. Hatfield: ASE, 1994.)

Observation #1	Observation #2	Observation #3	Observation #4

# Plan, Perform

Step 7b): Equipment Set-Up & Check

Have I ....

collected all of the materials?

organized and/or set-up my equipment?

reviewed my procedure and recorded my data?

quary (4-8)

# m & Record

Check

oment properly?

ording chart?

made changes where necessary?

Step 7c): Perform Experiment

Follow the procedure to complete the  
Record the data in your chart. (See S

## and Collect the Data

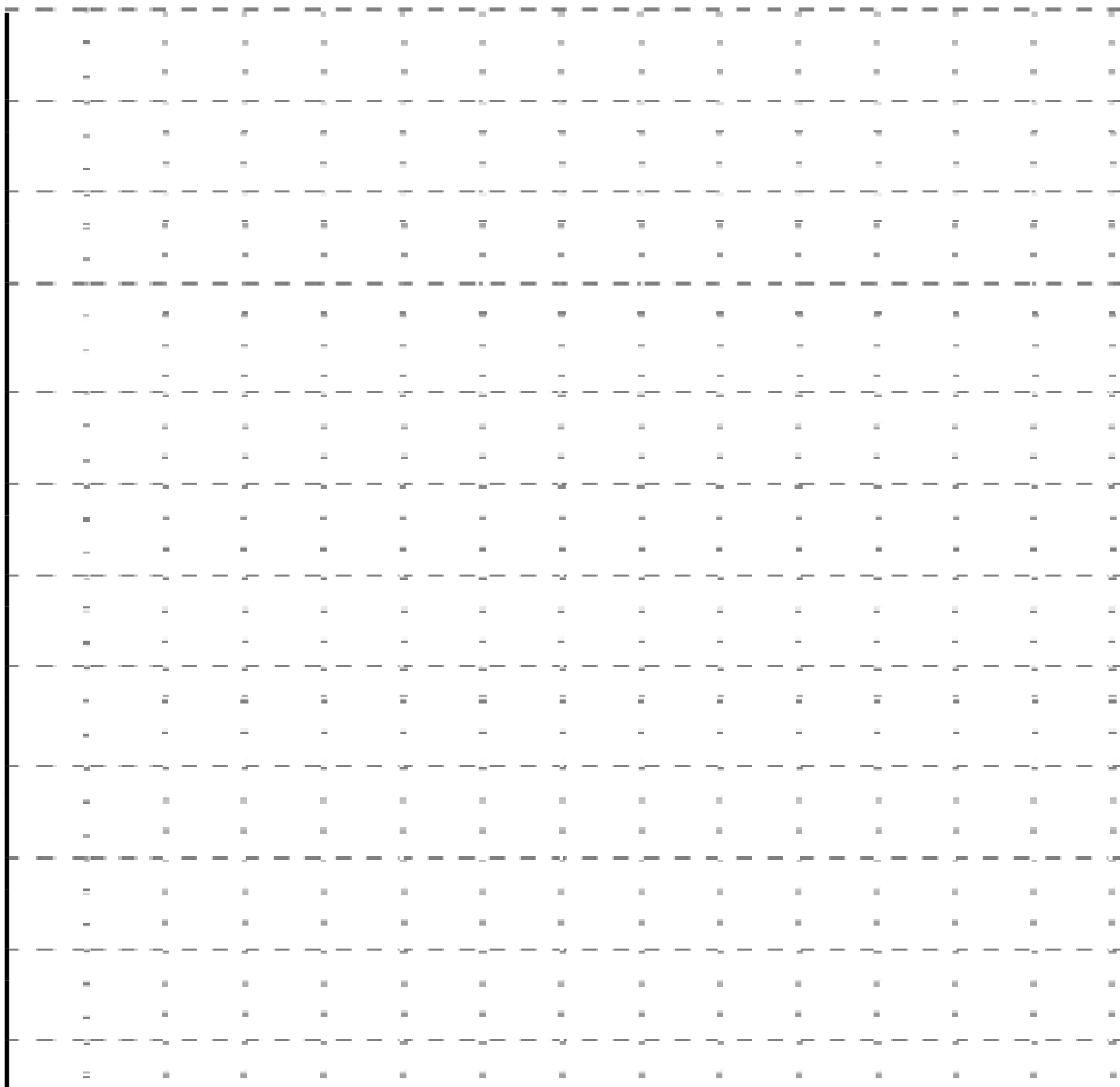
the experiment.  
(Step 7a).

# Analyze &

## Step 8: Graphing Results

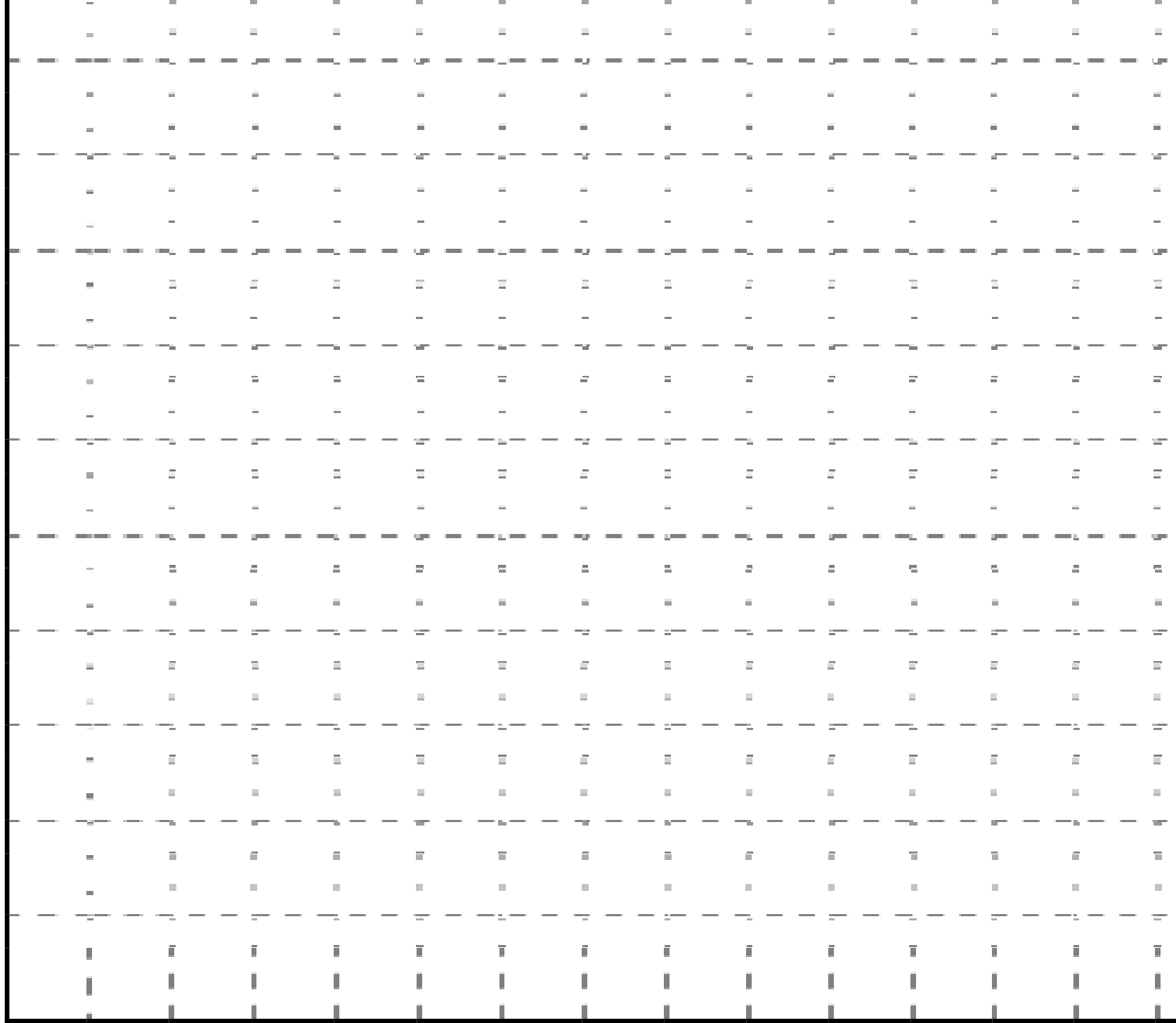
What type of graph best suits my data?

its)





Dependent Variable (un



Observations

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

(descriptive)

Remember to label axes, add so

Page 1

(Adapted from: Buttemer, H. "Inquiry on Board." Science and Children Oct. 2006.; Fullan, M., & Stiegelbauer, M. (2000). *Feasey. Making Sense of Primary Science Investigations. Hatfield: ASE, 1994.)*

ation #

---

(ive caption)

cales appropriately and include a legend.

**1 of 3**

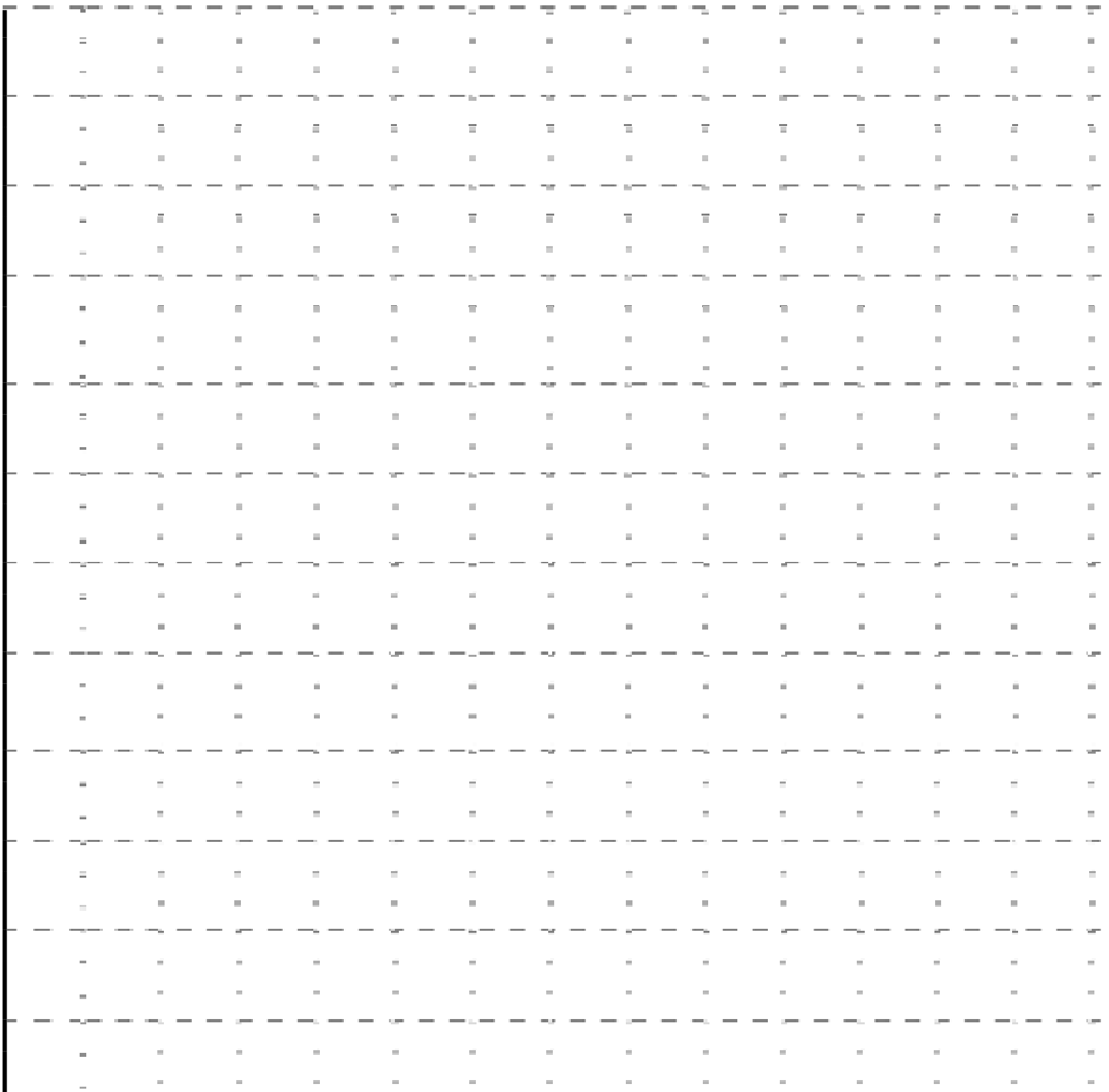
ulwiler, B. Writing in Science. Portland: Heinnean, 2007.; Goldsworthy, A., and R.

# Analyze & Interpret

Step 8: Graphing Results (continued)

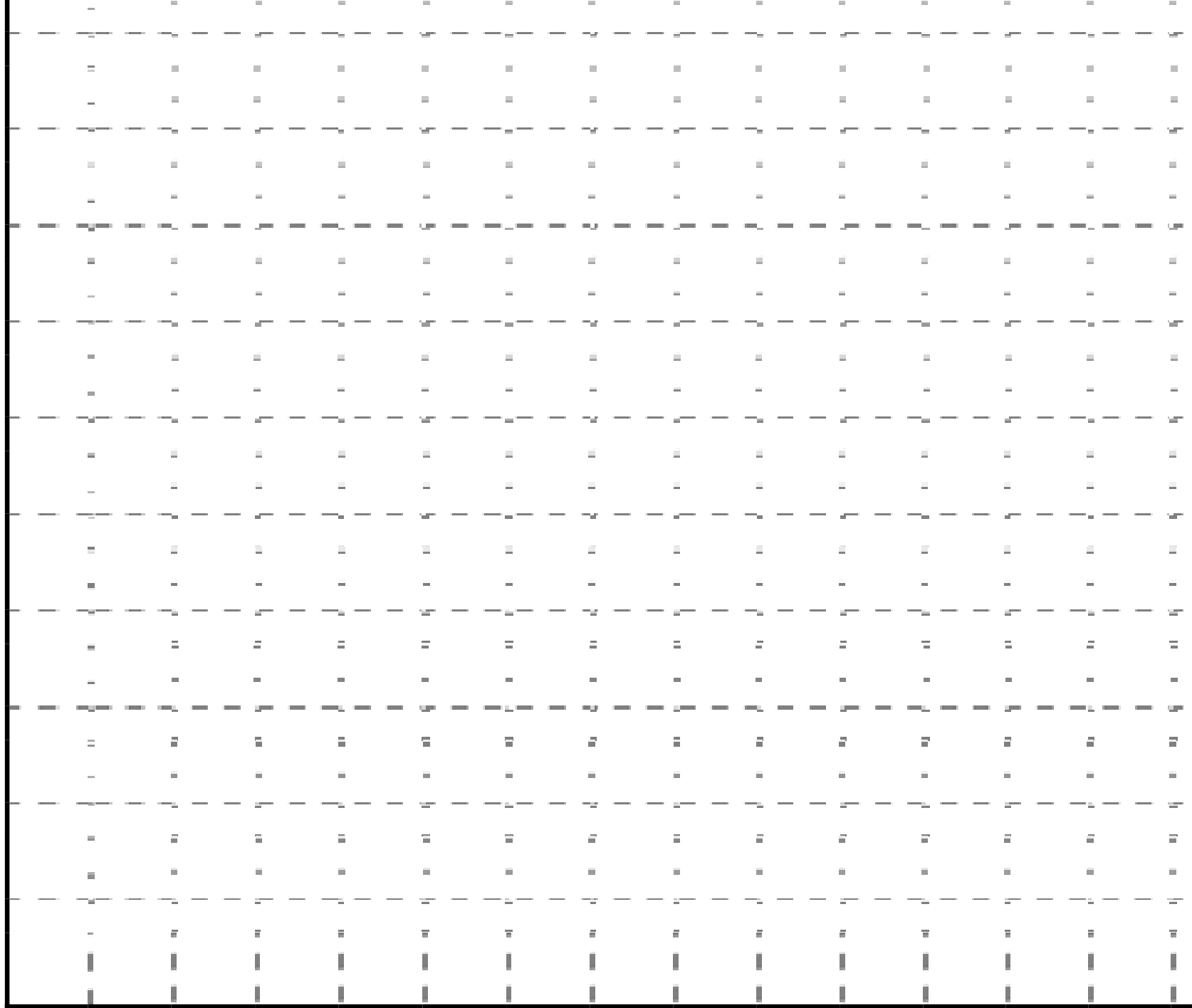
What type of graph best suits my data?

units)





Dependent Variable (units)



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

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

(descriptive)

Consider measures of central tendency

(Adapted from: Buttemer, H. "Inquiry on Board." Science and Children Oct. 2006.; Fullan, M., & Stiegelmeier, M. (2009). *Professional Learning: The Journey into the Future*. San Francisco: Jossey-Bass; Feasey. Making Sense of Primary Science Investigations. Hatfield: ASE, 1994.)

---

(ive caption)

tendency\* (mode, median and mean).

**2 of 3**

ulwiler, B. Writing in Science. Portland: Heinneman, 2007.; Goldsworthy, A., and R.



Steps to In

# Analyze &

Step 9: Finding Patterns and Relationships

From the graphs and table:

<p>What I changed:</p> <p>_____ (Independent Variable) _____ (_____) units</p>	<p>What _____</p> <p>Central V</p>
<p>Control Condition:</p>	
<p>Condition 1:</p>	
<p>Condition 2:</p>	

The trends show that when the \_\_\_\_\_ (Indep

the \_\_\_\_\_ (Describe what happens to the depen

quiry (4-8)

# Interpret

hips in Results

I saw happen:

(Dependent Variable)			( ) units
Value*	Highest Value	Lowest Value	Rank

pendent variable)

(increases/decreases)

pendent 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 _____ _____ _____

(Adapted from: Buttemer, H. "Inquiry on Board." Science and Children Oct. 2006.; Fullan, M., & Stiegelbauer, M. (2000). Making Sense of Primary Science Investigations. Hatfield: ASE, 1994.)





# Steps to In

# Comm

## Step 10: Communicating My Results

Answer the question in a general way.

When I \_\_\_\_\_  
increased / decreased

\_\_\_\_\_   
what I measured/observed

Provide evidence from your observations

For example: The \_\_\_\_\_  
dependent variable

the

was

quiry (4-8)

# Communicate

\_\_\_\_\_ the \_\_\_\_\_ the  
independent variable

\_\_\_\_\_ .  
increased / decreased

ions or tests.

\_\_\_\_\_ was \_\_\_\_\_ when  
highest value

But the

the

\_\_\_\_\_

was

v

independent variable

\_\_\_\_\_ was only \_\_\_\_\_

dependent variable

lowest/setting

was

\_\_\_\_\_ .

value/setting

Make a concluding statement based on the

Therefore, changing \_\_\_\_\_

the inde

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

(Adapted from: Buttemer, H. "Inquiry on Board." Science and Children Oct. 2006.; R. Feasey. Making Sense of Primary Science Investigations. Hatfield: ASE, 1994.)

\_\_\_\_\_ . But the

value/setting

\_\_\_\_\_ when the \_\_\_\_\_  
dependent value

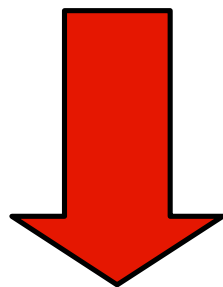
evidence.

\_\_\_\_\_ makes  
dependent variable

\_\_\_\_\_ .

Refer to your prediction.

The data does support my prediction.



The data does support my prediction because I

predicted that \_\_\_\_\_  
change in the IV

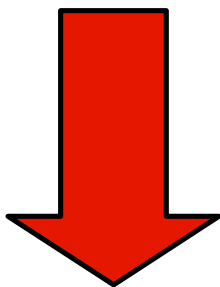
would make \_\_\_\_\_ .  
the change in the DV

I thought \_\_\_\_\_ would cause  
the IV

quiry (4-8)

# Communicate

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 \_\_\_\_\_ would  
the IV

this change because \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_.

Make an inference:

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

\_\_\_\_\_

\_\_\_\_\_

cause this change because \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

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

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



Steps to Inc

# Communi

Step 10 b): Other Considerations

1. If you had data that was different (different, inconclusive or inconsistent), what would you conclude?

2. How might you have improved your experiment?

quiry (4-8)

# Communicate

nt from other groups (or was  
hat might have caused these results?

ed your investigation?

3. What new/additional questions  
investigate?

ons do you now want to

3 of 3

ler, B. Writing in Science. Portland: Heineman, 2007.; Goldsworthy, A., and R.