

Student Scaffold for Designing and Conducting Experiments

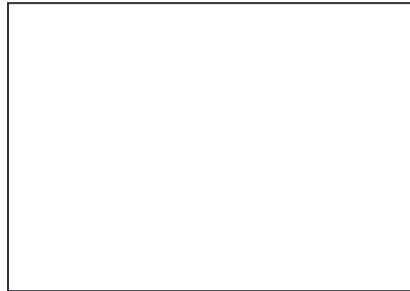
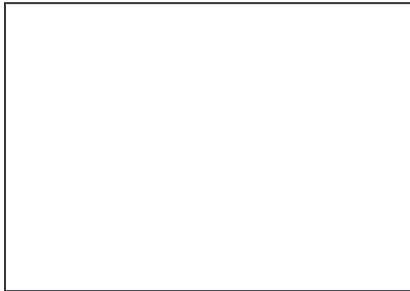
PRE-DESIGN CONSIDERATIONS

Phenomenon, object, or event being observed: _____

What am I wondering about (initial question)? :

What prior knowledge, including observations made, do I have about this?

Part A: Things I could change or vary about the phenomenon, object, or event:
(Place sticky notes of the same color in the squares below)



Part B: Things I could measure or observe about the phenomenon, object, or event: (*Place sticky notes of a new color in the squares below*)

IDENTIFYING VARIABLES

I will change:

I will measure:

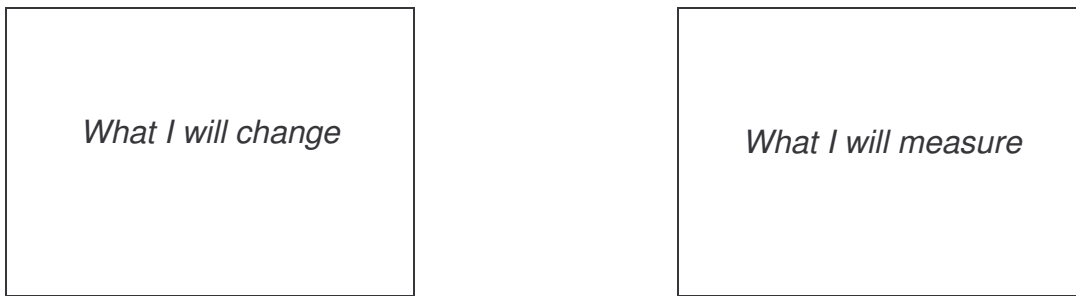
I will not change (conditions held constant so it is a fair test): *Place remaining sticky notes from Part A here.*

I will not measure: *Place remaining sticky notes from Part B here.*

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FORMULATING A QUESTION (*Refining the initial question*)

When I change: _____ → What will happen to:



Fill in the question that will guide your experiment:

When I change _____, what will
happen to _____?

DEVELOPING A PREDICTION OR HYPOTHESIS (*Note: This can be stated as a hypothesis instead of a prediction if you have prior experiences, knowledge, or observations*)

Based upon my question, I predict (or hypothesize):

THE EXPERIMENTAL DESIGN (*Note: Others should be able to follow your design without needing to ask you any questions*)

Materials I will need: _____

What I will change or vary (*also called the independent variable*)

<p><i>What I will change</i></p>

What I will do (how I will carry out the change):

Number of trials I will conduct: _____

The data I will measure or observe (*also called the dependent variable*):

<p><i>Data I will measure or observe</i></p>
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How I will collect the data: _____

How I will record and display the data (*for example- table, graph, chart, picture*)

DATA COLLECTION

When I changed: _____ → What measurements resulted?

*What I changed
(Independent
Variable)*

*What I measured or
observed
(Dependent Variable)*

Sample chart for recording measurements or observations (*Note: This is intended simply as an example to help get you started. You may design your own chart or modify this one to fit your design.*)

What I changed: _____ (specify units of measurement where appropriate)	What I measured or observed: _____ (specify units of measurement where appropriate)		
	Trial 1	Trial 2	Trial 3

GRAPHING RESULTS

What type of graph is best- line graph or bar graph? _____

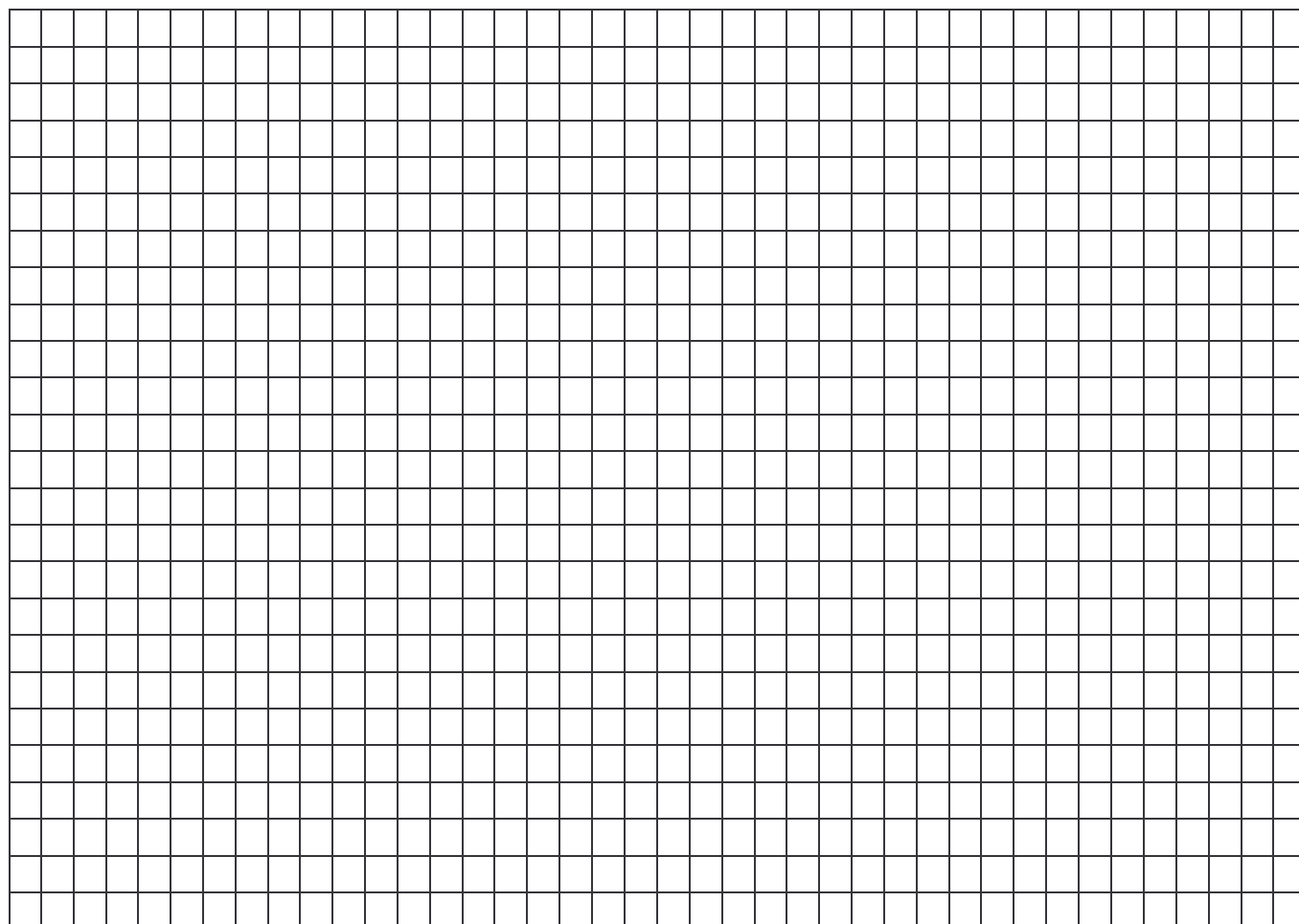
*What I measured
or observed
(specify units where
appropriate)*

**Y
axis**

*What I changed
(specify units where
appropriate)*

X axis (*Note: Both axes will need to be labeled and the appropriate scale marked*)

Title of Graph: _____



FINDING PATTERNS AND RELATIONSHIPS IN RESULTS

When I changed: _____ → What happened to?:

What I changed

What I measured or observed

CONCLUSION

Summarize what you learned as a result of this experiment. *(Include the question you investigated, your evidence- your findings, patterns, cause and effect relationships- that support or do not support your prediction or hypothesis, and any new questions that you might investigate to further confirm your conclusion or support an alternative explanation):*