

# Steps to the Scientific Inquiry Process

## Working toward Benchmark 3

### SECTION 1

#### FORMING A QUESTION OR HYPOTHESIS

##### TITLE

Gives a descriptive name to your experiment

##### RESEARCH QUESTION

Tells the reader what you are going to do or what you are trying to figure out

- ❖ Write your idea as a question you want to answer and a hypothesis you want to test

##### HYPOTHESIS

Explains to the reader what you think will happen

Your hypothesis must answer the question!

(It is ok if your hypothesis is not correct)

- ❖ Clearly explain your hypothesis

##### BACKGROUND INFO/OBSERVATIONS

Previous knowledge or observations

- ❖ Describe the background knowledge or preliminary observations that helped you frame your question/hypothesis

### SECTION 2

#### DESIGNING AN INVESTIGATION

##### VARIABLES AND CONTROLS

Identify variables

Identify controls

- ❖ Decide what must be done to have a fair test of your question or hypothesis.

##### MATERIALS

List the materials you will be using in the experiment

##### PROCEDURE

List detailed steps so anyone could follow your procedure

Illustrate and label your setup

## SECTION 3

### COLLECTING AND PRESENTING DATA

#### OBSERVE, COLLECT AND RECORD DATA

Record data that describes characteristics using the appropriate senses

Quantitative data or observations: Data that requires measurement or numerical calculation. You need numbers for quantitative data.

- ❖ Design a data table or other format for your measurements and/or observations
- ❖ Carry out your investigation, recording the measurements and observations you need to answer your question or test your hypothesis.

#### PRESENT DATA

Transform your measurements or observations (by doing calculations, reorganizing, making graphs, etc.) to make them easier to understand.

## SECTION 4

### ANALYZING AND INTERPRETING RESULTS

#### ANALYZING

##### CONCLUSION

Summary of Data

Relate back to your hypothesis

#### INTERPRETING

##### CONCLUSION

Does your data support your hypothesis or not support it?

Discuss any sources of error

- ❖ Report the results of your investigation, identify patterns and propose explanations. Use science concepts, models and terminology in your explanations.
- ❖ Address your question (answer it or explain why you cannot) and/or explain how the test of your hypothesis came out—use your results to support your conclusions.
- ❖ Review your investigation for possible errors in the measurements or observations. Explain the limitations of your conclusions.
- ❖ Form a new hypothesis if your first one was incorrect
- ❖ What might you do differently next time?

Steps to the Scientific Inquiry Process  
Working toward Benchmark 3  
Work Pages

**SECTION 1**

**FORMING A QUESTION OR HYPOTHESIS**

**TITLE**

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**RESEARCH QUESTION**

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**HYPOTHESIS**

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**BACKGROUND INFO/OBSERVATIONS**

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## **SECTION 2**

### **DESIGNING AN INVESTIGATION**

#### **VARIABLES**

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#### **CONTROLS**

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#### **MATERIALS**

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**PROCEDURE**

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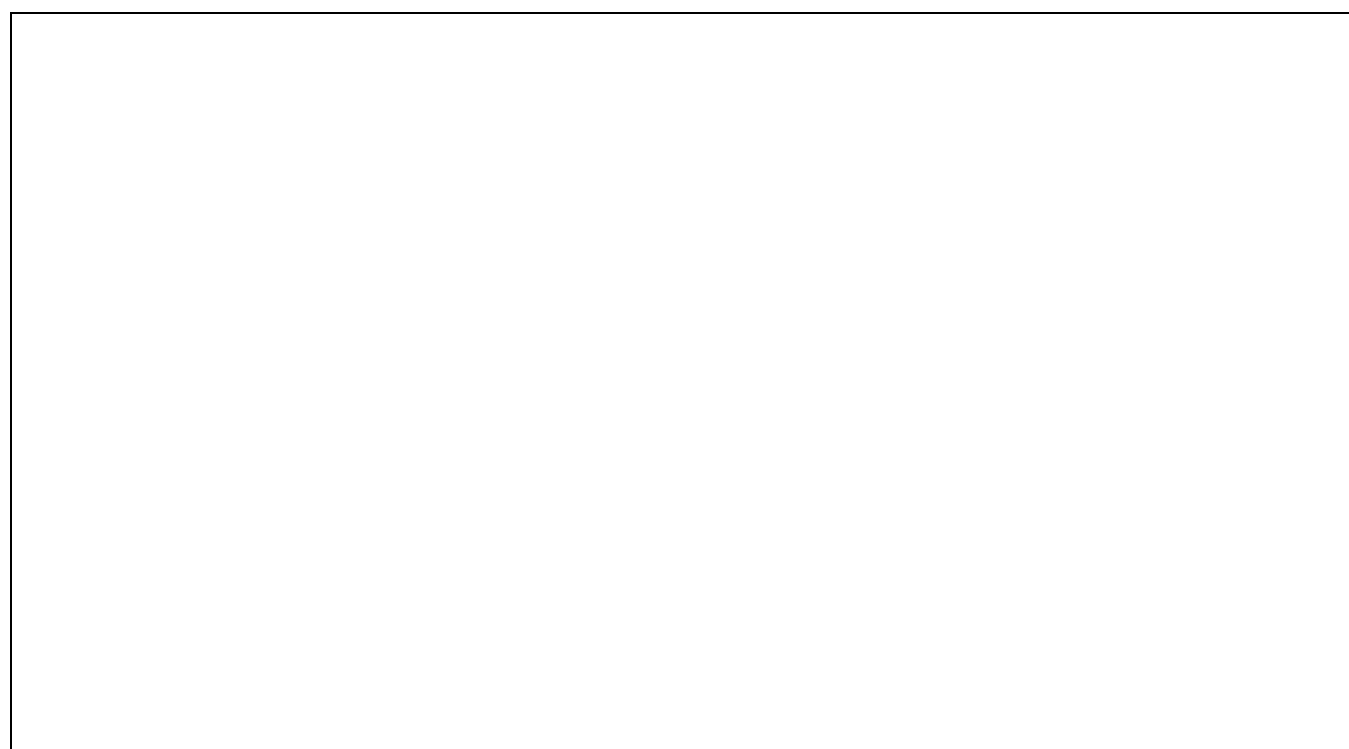
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## **SECTION 3**

### **COLLECTING AND PRESENTING DATA**

#### **OBSERVE, COLLECT AND RECORD DATA**

Create Data Table

#### **PRESENT DATA**

Convert recorded data into a graph, table or chart

## **SECTION 4**

### **ANALYZING AND INTERPRETING RESULTS**

#### **ANALYZING**

**CONCLUSION**

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#### **INTERPRETING**

**CONCLUSION**

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For your presentation you must be prepared to present a walk-through of your project including all of the areas in your plan using your props (board and other materials) and answer questions from the people viewing the project.