

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

RESEARCH QUESTION

HYPOTHESIS

BACKGROUND INFO/OBSERVATIONS

SECTION 2

DESIGNING AN INVESTIGATION

VARIABLES

CONTROLS

MATERIALS

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
