

Scientific Inquiry Work Samples

'The Scientific Method' = 'Scientific Inquiry'

1. **State the Problem:**
 - What is your question?
 - What observations led you to this question?
 2. **Form a Hypothesis:**
 - What do you think the answer might be?
 - What background scientific knowledge leads you to this hypothesis? (research?)
 3. **Test Your Hypothesis:**
 - Experiment.
 - Describe your plan and carry it out.
 - Consider all factors that could affect your results.
 4. **Record Your Results:**
 - What happened?
 - data: charts, tables, graphs
 5. **Conclusion:**
 - Was your hypothesis right or wrong?
 - What do your results tell you?
 - Can you explain what happened (using scientific knowledge)?
 6. **Repeat. (...& revise?)**
 - Do you get the same results?
 - Were there any errors or limitations to your experimental design?
 - Should you make any changes?
- F** **Forming a Question & Hypothesis**
-steps 1 and 2
- D** **Designing an Investigation**
-step 3 (your plan)
- C&P** **Collecting and Presenting Data**
-step 3 (carrying it out) and step 4
- A&I** **Analyzing and Interpreting Results**
-steps 5 and 6

Scientific Inquiry Checklist

Framing the Investigation

- What is your question?
- Scientific Background Information/Knowledge/Observations
- Hypothesis (can be answered yes/no or tested to see if your prediction is correct/incorrect) (+ clearly explained)

Designing the Investigation

- List of materials
- Step-by-Step procedures: first explain what you plan to do in detail.
- Consider variables, controls (leave other variables or factors the same and change just the one factor you are studying; for example: cold medicine compared to sugar pill).
- Trials –do you get similar results when you repeat the experiment many times?
- Keep notes of what you do and everything that happens while you do your experiments so you can go back and explain everything that took place.
- After finishing, write out exactly what you did.
- Sketch a diagram of your set-up, and label all the parts.

Collecting and Presenting Data

- Make data tables or charts (remember units)
- Record data (the measurements or observations you need to answer your question).
- Transform data (graph) (remember units) to help you look for patterns and an answer to your question.
- Explain what happened when you did your experiment.

Analyzing and Interpreting Data

- Report the results of your investigation.
- Conclusion: Were you able to find out if your hypothesis was correct or not?
- Explain how your results support your conclusion.
- Use scientific terms.
- Explain any possible errors that could have affected the results.
- Review your investigation for any possible errors or limitations in your measurements or observations, or in your equipment.
- Try to think of some suggestions for how your experiment could be improved next time.
- Discuss any new questions or different hypotheses that you thought of during this experiment.