Scientific Method Tab (flap)

I think the scientific method is. . .	A way of telling	An organized way to	A way to ask and
Technique for			

Framing the Investigation	Designing the Experiment
1. Make an _____ 2. Ask _____ 3. Research _____ 4. Form a _____	
Collecting and Presenting Data 1. N_____ 2. D_____ T_____ 3. U_____ 4. G_____ (visual representation) 5. P_____	**Analyzing and Interpreting Results (The Conclusion)** Check _____ Check _____ Include Check _____ Synthesize _____ Answer the _____

Framing the Investigation (Flap)

Candy Observations:	**Hypothesis** Components: 1. _____ 2. _____ 3. _____ Candy Hypothesis If...
Candy Inferences:	
Candy Predictions:	Then... Because...

1. Make an Observation Observations Inferences Predictions What are my senses telling me?	2. Ask a Question
3. Background Information: Research and Observations ★Take time to ★Sources ★Carefully	4. Form a Hypothesis A hypothesis is a possible s_____to a p_____ that is t_____. ★Based on ★Is ★Related to

Designing the Investigation (Body)

Purpose: to test the h_____ and solve the p_____ or answer the q_____.

Variables

1. Manipulated/Independent Variable (MV or IV): the variable that is purposely c_____ to test the hypothesis. (Input or c_____)
2. Responding/Dependent Variable (RV or DV): The factor that may change in r_____ to the manipulated variable. (Output or e_____)
3. Constant/Control Variable: What is constant or un_____ in an experiment, allows you to tell if the MV caused the change.

Lab Write-Up

1. List e_____ and m_____ needed for the investigation.
2. Identify s_____ needs and e_____ in the lab.
3. Diagram of lab set-up that is l_____.
4. Procedure is written in a s_____ format 1, 2, 3... a sequence that is u_____ and can be r_____.

Collecting and Presenting Data – Flap

Qualitative Data	Quantitative Data
• Deals with d_____	• Deals with n_____
• Observed but not m_____ with traditional lab equipment	• Data that can be m_____
• Examples:	• Examples:
• Qualitative → Q_____	• Quantitative → Q_____

Collecting and Presenting Data – Body

Purpose: To record d_____ in a way that can be easily understood and show p_____ and r_____.

Criteria

1. Collect d_____ that is c_____ with the lab design.
2. Record r_____ and a_____ data in an o_____ way.
3. Display data to support a_____.

Ways to Display Data

1. Field Notes/Observations: D_____, explicit, n_____; words and drawings as are appropriate. (Journaling)
2. Data Table: Collect and d_____ data

Manipulated Variable	Trial 1	Trial 2	Trial 3	Average

3. Graphs: Show P_____ and Trends (data in a picture format)

   A: Bar Graph: Compare things between d_____ groups.

   B: Pie Chart: Compare parts to a w_____.

   C: Shows changes over t_____.

Analyzing and Interpreting Results: The Conclusion (Body)

Purposes: A conclusion paragraph contains a description of the p_____ of the experiment, a discussion of your major f_____, an e_____ of your findings, and recommendations for further s_____.

Criteria: Present and relate the investigation r_____ to the h_____.

6 Steps of writing a Conclusion (in paragraph form)

1. Y____/N____ - answer if the h_____ was supported or not.
2. S_____ the hypothesis, don't just restate it!
3. Use d_____ to support your c_____, if the hypothesis was correct or not. I_____, and synthesized the data.
4. Identify possible e_____ that would have i_____ the experiment.
5. Identify ways to eliminate these e_____.
6. Suggest ways to improve upon the experiment.

Writing a conclusion - Sentence frames (flap)

Step	Possible sentence frames (sentence starters)
1	"The hypothesis was/was not supported."
2	"The purpose of the experiment was to investigate the effect of the (IV) on the (DV)"
3	"The hypothesis that (insert hypothesis) was (supported/partially supported / not supported) by the data . . . (use/explain data)."
4	"Errors in this experiment include . . . these effected the lab by...
5	"To eliminate these errors . . . "
6	"Future experiments should . . . because / this would show . . ." "The experiment could be improved by . . ."