Lab Report Form -Key

Descriptive Title (1 pt): Short description of the experiment and/or results-no more than one sentence (does not have to be a complete sentence)

Purpose of the lab (1 pt): Short description of why we are doing the experiment: why do/should we care?

Introduction:

1. Generate a *scientifically oriented* question (1 pt): Should be **specific** and **testable** with details about descriptions and how you will **judge** the outcome

2. Pose a *testable hypothesis* (if applicable, use if/then/because statement format) (1 pt): Follow instructions in question ☺ If **this** happens, **then** that will happen, **because** of this scientific concept/principle/process.

Methodology (materials & statistical method used)

3. Design the procedure for the investigation if procedure is NOT provided. Note: Be descriptive so that others can replicate it (1 pt): Be sure to record what you use, how much, how long, how many time. Describe it in steps. Make sure it has detail so someone could replicate your test.

4. Identify the two variables: independent and dependent (2 pts): **Independent variables** are factors that are changed by the experimenter. **Dependent variables** are factors that are measured (not directly changed) by the experimenter and these depend on the independent variable (ex. if testing the solubility of certain compounds in water, the compounds themselves are the independent variable and whether or not they dissolve is the dependent variable)

5. Identify/describe the constraints, replication (trials), sample size, controls (positive, negative, or baseline) (1 pt): **Constants** are things that are kept the same regardless of condition (ex. amount of water and compound used to see if the compound dissolves)

Replication is the number of times you tried each condition (number of trials)

Sample size is how many different things you measured for a given dependent/independent variable set (ex. how many things you tried-can also be number of people polled in a survey).

Positive controls are things that you know will work (ex. table salt will dissolve in water**)** so you have something to compare to**. Negative controls** are things you don't know will work (ex. steel will not dissolve in water). **Baseline controls** involve keeping conditions the same as you found them (ex. water by itself) to see if anything changes over time without any other influence.

Results:

6 Create data table and diagram to organize the data collected from the investigation. Label title, columns, rows, axes, & units. (2 pts) Data table should include appropriate labels and all numbers (with units) or observations collected in an experiment. Diagram can be a graph or picture, though graphs are usually a very good way to show any or no change. All axis on graphs should be labeled and units included. Both, data table and diagram should be included whenever possible.

Conclusion:

7. Explain if your hypothesis was supported or not supported. Use quantitative evidence from the data obtained from the experiment to justify your conclusion: (2 pts)

Using evidence from the results, describe how they relate to your hypothesis (supported=agrees with it while not supported=data does not agree with it). Using quantitative evidence means using numbers from your results to either support or not support your hypothesis. Also include how the results relate to the science concepts/ideas/processes/principles/etc that we are studying.

Discussion:

8. Provide at least three experimental errors, limitations, or flaws in the experiment: (1 pt)
These are reasons that a given experiment may not have gone optimally. Limitations are things that are outside the control of the experimenter (an asteroid crashed into the experiment). Flaws are within the control of the experimenter (the method wasn't the best and had some mistakes). These things may not be clear until after the results are in (ex. did not have enough containers for each compound to be tested for solubility in water at the same time and did not have access to proper cleaning tools between trials)

9. Also, indicate three improvements that could be made to the experiment. (1 pt) If you had the chance to do this experiment again, what would you change to make it better or get more information out of it?