All lab reports must be completed in the following format. All reports must be *neatly handwritten.*

Title: (3 points) Do not leave blank! Be creative and descriptive!

Purpose: (5 points) Briefly state the purpose of the experiment; i.e. to determine the acceleration of gravity.

Apparatus: (2 points) List the equipment used in the lab

Procedure: (20 points) List the major steps in the procedure. Use a sketch of the experimental setup if possible. Give sufficient detail so that your colleagues and instructor can easily understand and replicate what you’ve done.

Data/Graphs: (25 points) Always place your data in a neat table. Use a straight-edge and make your table *neat* and *legible*. List your data in terms of the units you are going to do your calculations in. Put the label for the *units* measured in next to the variable name in parenthesis. Label all values and include all variables in the table. Graphs should be made according to the graphing guidelines.

**Example Data Table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Position | v (m/s) | θ (°) | h1 (m) | h2 (m) | H (m) |
| A | 20.0 | 22 | 40.0 | 2.00 | 42.0 |
| B | 40.0 | 10 | 38.0 | 2.00 | 40.0 |
| C | 10.0 | 30 | 39.0 | 2.00 | 41.0 |

Sample Calculations: (20 points) Write the formula using algebraic symbols. Substitute numerical values and show computations for each type of calculation. Be sure to include units in all of your work. You do not need to show duplicate calculations. If appropriate, you may show a summary of your calculations in tables. Include calculation of percent error.

Conclusion: (25 points) State the average of your experimental values and the accepted value for the variable you are solving for (7 points). Briefly discuss any sources of experimental error (8 points). Describe any ways in which the experimental design of the lab could be improved (5 points) – be specific and describe why it is an improvement. Tell one thing you learned from the lab (but do not state the obvious, i.e., the acceleration of gravity is 9.8 m/s2) (5 points). An example might be, “I learned that the speed of sound increases with air temperature.”

Sample Conclusion: We determined the acceleration of gravity to be 9.6 m/s2. The accepted value for our location is 9.80 m/s2. Our experimental error may have been caused by residual magnetism in the coil holding the ball up. We could improve this lab by using a better release device that would allow the ball to drop without any time delay. I learned that for short distances, wind resistance appeared to have little, if any effect on the ball.