

ASTRONOMY 25

INFORMAL & FORMAL LAB REPORT GUIDELINES

In this course you will write up several formal and informal laboratory reports. *Two formal lab experiments* are required, on *Field of View* and *Distance & Size of Planet*, the student is to closely follow the guidelines below and **type** up the entire report. When writing up the informal labs on *Angular Measurement* and the *Setting Circles*, you should follow the guidelines below. Your Professor will indicate any additional informal lab reports that must follow the guidelines below. It is the student's responsibility to accurately record all observations and summarize her/his findings in a report like that described below. Be cautious that you write ***everything in the lab report in your own words*** in a lab report and ***do not plagiarize*** from your Professor's lab instructions, a classmate's work, from the internet or any other sources. Be sure to reference any outside sources used. **Each student in a lab group is responsible for preparing their own lab write-up, if you work on your formal with someone else, make sure no part of your writes ups are the same as this will result in serious point deductions.** The write-up should include the following:

1.0 Purpose

This section includes a brief description (1-2 sentences) of how the lab is to be completed, what quantity is to be determined experimentally and what (if anything) it will be compared to.

2.0a Equipment

List all equipment used in the lab.

2.0b Theory

Give a brief description of the theory (if any) for this particular lab. This would include any concepts used to arrive at the conclusion (meet the purpose) and/or math relationships/equations used in the lab. The definition of any quantities and variables used should be included here. Periodically we will calculate a Percentage Difference between a theoretical value and an experimental value (a measure of accuracy) by using the formula below:

$$\text{percent difference} = \frac{|\text{theoretical} - \text{experimental}|}{\text{theoretical}} * 100$$

3.0 Procedure

In your own words, describe the procedure of this lab with sufficient detail to allow duplication by a classmate. The student shall take notes on the lab procedure while executing the lab. It is best to number the listed steps of the procedure so one can easily refer back to the step they are on. Be careful not to plagiarize the procedure from your lab instructions. The procedure must be in your own words.

4.0 Data

This section should include all of the measured values and they should be listed in a neat table (drawn with a ruler or a computer using something such as Excel) with appropriate headings and units like the example shown below. Do not include any calculations here.

time (sec)	distance (cm)

5.0 Results and Analysis

This section includes any calculations. One sample calculation of each type of calculation is all that is needed. Include any graphs. This section should also include any quantitative errors calculated from known or previously measured values.

6.0 Conclusion (three important paragraphs)

The conclusion is one of the most important sections of the lab write-up. This section provides a brief overview of the entire lab. The conclusion should address the purpose of the lab - did you do what you started out to accomplish? Summarize all of your results here, e.g. experimental values, theoretical values and percent differences. Do your results support the theory? If not, why?

Summarize any procedural errors which could have introduced some imprecision into the data and some inaccuracy in your results. Examples of such errors are reaction time error, poor seeing conditions due to light pollution, vibration and/or dust/smog, parallax error in measuring length(s), etc. Try to come up with at least two legitimate sources errors. Human or measurement errors are not specific enough.

Answer any questions asked in the lab using complete sentences or writing the question and answer. Recommend any procedural improvements which will better the accuracy of your measurements.