

PHYSICS LABORATORY REPORT FORMAT

Title Page: Use the form provided.

Purpose: A statement of the general physical principle being studied and any particular results to be obtained.

Procedure: A paragraph that briefly describes the apparatus, how it was used to obtain the measurements given in your lab report and how the data will be used to verify the theory. Include a formal reference to the procedure section of the original laboratory instructions and state here any deviations from that procedure.

Data Sheets: Use the laboratory data sheet provided unless otherwise directed by the laboratory instructor. The data sheet normally includes experimental data, the principal numerical results, and the percent error.

Graphs and Diagrams: (If any)

Calculations: Show calculations in a neat, orderly outlined form. Show formulas, substitutions, and results; but do not include the details of longhand multiplication and division. Where the same types of calculations are repeated many times, only sample calculations need be included in the report.

Answers to Questions: Answer all questions in complete, grammatically correct sentences.

Analysis and Discussion of Results: All paragraphs must be double spaced. Discuss the accuracy of results obtained. Identify possible sources of error. Discuss the experimental results in relation to accepted principles; were these theories verified by the experiment? Discuss results obtained with respect to the *stated* purpose of the experiment. Do you have any recommendations for modifications in the equipment or procedure?

Notes:

1. Assemble report using a staple in the upper left corner.
2. Lab partners may work together on calculation, graphs, and diagrams. Photocopies of these items are not permissible unless stated otherwise by the laboratory instructor. Each individual must turn in a complete report. No student should copy data from anyone who is not his or her lab partner.
3. Each student should write the verbal portions of the report in their own words. Students should not copy these portions of the report from their lab partner or anyone else.

Purpose

Type the purpose here using your own words.

Procedure

The Welch Electric Field Mapping apparatus was used to map the electric field between two electrodes. The apparatus consists of a rectangular wooden board with a voltage divider consisting of a set of ten resistors connected in series along one side of the board. The electrodes are painted on a sheet of conducting paper that is placed under two clamps on the board, where each clamp is connected to one side of the voltage divider. Each clamp also makes electrical contact with one electrode on the conducting paper. An AC voltage source is then connected across the clamps. One side of a pair of headphones was then connected to a point between a pair of resistors on the voltage divider; this connection set the reference potential. The other side of the headphones was connected to a probe that was placed in contact with the conducting paper. The hum of the AC voltage could be heard in the headphones if the probe was not at the reference potential. The probe was moved around the region between the two electrodes until a number of points were found where the hum disappeared (or became as faint as possible). All these points were at the same reference potential and defined an equipotential line (or curve) on the paper. Several such lines were found by changing the location of the reference potential on the voltage divider. These data were then transferred to graph paper where the electric field lines were drawn in such a way that they intersected the experimentally-determined equipotential lines at right angles. We were then able to verify the shape of the electric field between the two electrodes.

(Note: The above is a sample paragraph only. Use your own words when writing the procedure. However, the following sentence may be copied directly.)

The detailed procedure that was followed can be found in *Physics Laboratory Instructions*, Volume II, Community College of Philadelphia, John Wiley & Sons, 2008.

(Note: Any deviations to the procedure should be explained here. Explain what the deviations were and why you made them. Alternatively, you may briefly describe or summarize each of the steps you took. These may be summaries of the steps described in the laboratory manual, but do not copy them from the lab manual. Again, any deviations from the procedure given in the lab manual should be explained. Use your own words.)

(Note that the above two sections must be typed.)

Graphs and Diagrams

(If any. See the next page.)

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onstrate the
also desired to
ow that capacitance

Theory

to a battery (or other voltage

Calculations

(Note: Calculations may be printed neatly by hand in ink. State which part of the experiment the calculation relates to and what you are calculating. Numbers must agree with what you have recorded on your data sheet. Answers should have the proper number of significant figures and include units. If you wish to type this section you must use an equation editor to enter formulas. Your instructor can show you how to do this.)

(There are no calculations associated with Experiment EM-1.)

Answers to Questions

1. What problem might occur if one should use a *large* test charge instead of a *small* test charge to measure an electric field?

Type your answer here.

2. Why are the electric field lines normal to the equipotential lines at points of intersection? (Use your own words.)

Type your answer here.

(Note: This section must be typed. Formulas, diagrams and special symbols must be created on a computer. Your instructor can show you how to do this.)

Analysis and Discussion

All paragraphs must be typed and double spaced. (Special symbols and formulas must be typed on the computer.) Discuss the accuracy of results obtained. Identify several possible sources of error. Discuss the experimental results in relation to accepted principles; were these theories verified by the experiment?

Besides the sources of error give a general discussion of the experiment. Was the purpose of the experiment achieved? Discuss parts of the experiment (if any) that were problematic or that you had difficulty with. Do you have any suggestions to improve the experiment, such as a modified procedure or different equipment? Also describe parts of the experiment (if any) that you liked or that you thought went better than you expected.

You may share advice with your classmates but the lab report you turn in must be your own work. Do not copy from someone else or let someone else copy from you.

LORD POLONIUS:

Neither a borrower nor a lender be;

For loan oft loses both itself and friend,

And borrowing dulls the edge of husbandry. —from Shakespeare's *Hamlet*