

# Checklist for AP Physics Friction Lab

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## Introduction (3 pts)

1. Describes the forces being measured using terminology from Newton's Laws
2. Describes the assumptions being made when taking measurements and analyzing data
3. Describes the reasons for doing the lab including description of previous experiments that informed the design of the lab

## Procedure (5 pts)

4. Uses words, pictures, diagrams to enable reader to replicate experiment
5. Labels all variables in the experiment with symbols and names ( $m$ ,  $g$ ,  $\mu$ ,  $\theta$ , etc.)
6. Describes or lists the degree of accuracy of each measurement
7. Provides description of any part of experiment that was not ideal, e.g. friction in pulleys, uneven surfaces, faulty equipment, unknown quantities that should have been measured, etc.
8. Provides justification for the experimental design decisions

## Data (3 pts)

9. Provides tables (and plots where appropriate) listing all variables described in the procedure (data presentations that exceed 1 page should go in the appendix)
10. Includes units of measurement
11. Includes uncertainties of measurements

## Analysis (5 pts)

12. Describes equations used to analyze data and provides derivations when it is not obvious where they came from (if an equation came from a previous experiment then cite that experiment)
13. Provides uncertainty in calculated results and provides analysis of or comments on the validity of the data (e.g. if the uncertainty is larger than the measured values then the validity of the data is questionable)
14. Restates assumptions that are necessary for understanding the analysis including the reasons behind those assumptions
15. Provides multiple perspective of data, including a perspective that supports your conclusion and a perspective that contradicts your conclusion
16. Makes comparisons to the results of other experiments, including results from experiments done by third-parties

## Conclusion/formatting (4 pts)

17. Provides references to sources of information

18. Uses labels or names to the equations, tables, diagrams that the report makes frequent references
19. Lists the most important results including the final calculated values and uncertainties, new insights gained into the experimental system and new questions that might have arisen about physical laws and theories
20. Describes any unexpected results and makes a final judgment on the validity of the final results