

# Physics Labs

Labs are due no later than one week after last class day of lab. There is no late, only turned in or not. Feedback is based on accuracy. Grade is based on completion.

- Title (Provided)
- Objective (Provided)
- Diagram(s) of setup/procedure
- Data (tables); minimum\* of 5 data points consisting of trials

# Physics Labs

- Graph(s)
  - use to show relationships between variables
  - General shape of data: line, curve, none
  - Best fit of shape; determine slope if linear
- Calculations – must show work for one, record all results
- Written Discussion
  - What, why, how
  - Results: “answer” to objective using data, calculations, and graphs to support
  - Experimental error: procedural difficulties, “human error”?, never calculations

# Unit 3: Newton's Laws of motion labs

1. 2<sup>nd</sup> Law (Parts 1 and 2)
2. Friction on flat surface
3. Friction on an incline
4. Circular Motion

# Lab: Newton's 2<sup>nd</sup> Law of Motion

February 14-15

- Obj: Experimentally verify the relationship between acceleration and: (1) mass (2) unbalanced (net) force:
  - Part 1: Mass is the independent variable
  - Part 2: Unbalanced (net) force is the independent variable
- Graphs: One graph for each Part.
- The discussion should include, but not limited to: the shape & meaning of each graph; the meaning & value of the slope of the Part 2 graph. Did your results verify Newton's 2<sup>nd</sup> Law of motion?

# Lab: Friction

February 27

- Copy objective and diagram from the provided [lab sheet](#)
- Data: suggested data tables plus...
- Calculations: show one full calculation for a  $\mu$
- No discussion, however, answers the Analysis questions at the end of the provided [lab sheet](#) in complete thoughts.

# Lab: Round and Round we Go

March 6

- Obj: Compare the circular motion properties of a student walking around a 2 m radius and 4 m radius circles
- Data: the time for each circle should be about 15 s; write observations as to how each walk “feels”
- Calculations: For each circle: rotational speed, linear speed, centripetal acceleration, and centripetal force. Show full calculation set for one circle and your mass.
- The discussion should include: Procedure, how each property related between circles, identify the actual force that was the centripetal force (gravity, friction, pull of Canada...)