

# Physics Labs

Labs are due no later than one week after last class day of lab. 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

# Lab: Bouncing Ball

- Obj: Determine the relationship between the initial height of a ball dropped and the final height after it bounces off the ground
- Graph the results
- Discussion

# Unit 1: One-Dimensional kinematics labs

1. Army Trucks
2. DiscGo
3. Dropping stuff
4. Throwing Stuff

# Lab: Army Trucks

- Obj: Given a pair of constant speed toy army trucks, verify the slow/fast labels using a graph of the data.
- Graph of data
- Discussion needs to include explaining ***how*** the graph shows slow/fast.

# Lab: DiscGo

August 16,17

- Obj: Describe the motion of a rolling disc down an incline. Use a position v. time graph and a velocity v. time graph to determine the motion of the disc, especially any acceleration of the disc along the incline.
- Calculations: average velocity and instantaneous velocity for the disc to reach each position ...show proof for one position; average acceleration of complete roll
- Graphs: position v. time (connect dots) and final velocity v. time (best fit line/calculate the slope)
- The discussion should include: the shape & meaning of each graph and the value & meaning of the slope of the final velocity v. time. Was the acceleration constant (or at least consistent)?

# Lab: Dropping Stuff

Nope

- Obj: Experimentally determine if the acceleration due to gravity depends on the mass of the object.
- Calculations: acceleration for all objects...show proof for one, results for all
- The discussion should include: % error relative to  $9.8 \text{ m/s}^2$  for each object

# Lab: Throwing Stuff/Hangtime

August 21

- Obj: Experimentally determine the initial velocity, final velocity, and maximum height of an object propelled straight up into the vacuum you can breathe.
- Data: One event should be fine, no trials
- Calculations: show proof for initial velocity, final velocity, and maximum height. Have Mr. Teters approve before you write the discussion.