# Unit 1: One-Dimensional kinematics labs

1. Army Trucks
2. Ram Trucks
3. Slow Roller
4. Freefall

August 3 and 4

# Lab: Army Trucks

- Obj: Given a pair of constant speed toy army trucks, verify the slow/fast labels using a graph of the data.
- No calcs, the discussion needs to explain how the graph shows slow/fast.

August 8

# Lab: Ram Truck

- Obj: Completely describe the motion of a toy truck by graphing the distance v. time of the truck's motion data.
- No calcs, the discussion should focus on the slope of the line/curve.

# Lab: Slow Roller

August 15

- Obj: Describe the motion of a slow rolling disc down an incline. Determine the average velocity, final velocity, and acceleration of the disc at 10 cm intervals along the incline.
- Calculations: v, $v_f$, a…show proof for one point
- Graphs: position v. time and final velocity v. time (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: Happy New Year!

August 18

- Obj: Experimentally verify the acceleration due to gravity by dropping a marble from different heights.
- Calculations: (1) g for all 3…show proof for one height, (2) average g based on all data.
- The discussion should include: % error relative to 9.8 $m/s^2$ and valid reasons why you may be more than 10% off.