Honors Physics

Final Project Guidelines
Part 1

Introduction

As you should be aware by now, you may both discover and uncover physics concepts anywhere in the world simply through observation.

You should also be aware that you record this demonstration of physics in the real world and then analyze your video using Vernier Video Analysis.

You should also know that you could demonstrate the same concepts in a laboratory situation, using "equipment commonly found in a high school physics laboratory."

Topics Covered

Motion in One Direction	Free Fall	Vectors
Motion in Two Dimension	Newton's Laws of Motion	Applications of Newton's Laws of Motion
Friction	Work	K, U_g, and U_{sp}
Work-K Theorem	Conservation of Mechanical Energy	Conservation of Energy (friction included)
Momentum	Impulse	Impulse-Momentum Theorem
Conservation of Momentum	Rotational Kinematics	Rotational Inertia
Torque	Newton's Second Law for Rotation	Angular Momentum
Conservation of Angular Momentum	Periodic Motion	Simple Harmonic Motion
Waves		

My Example

1. Last summer, Will and I collected some physics data. At Target of Irvine Spectrum, we observed a rolling shopping cart. At the Santa Monica Pier, we observed the West Coaster roller coaster.
2. At each location, we took a photo and a video. We also recorded the location.
3. We also knew that each scenario could be recreated in the physics laboratory.

Your Task

1. Keep this list as a photo on your phone for reference.
2. During your spring break travels, find an example of **TWO** of the above topics, except for motion in one direction.
3. At the location, place your ruler in an easily identifiable location. Take a photo with your phone. Then take a video from the same perspective.
4. In the event that you cannot safely place a ruler in the shot, have a person of known height stand in the shot.
5. Record the location of your shot (although the metadata in your photo/video should give you the same information).
6. Important: your scenario should easily be recreated in the lab.
7. Place your photos and videos in a folder called **Final Project** in your student portfolio and share it with me.
8. Due Date: Tuesday, March 29.