HIP 4 Fall 2018

On the internet find a picture of an object that is experiencing each of the below situations:

1. An object with zero velocity and zero acceleration.
2. An object with non-zero velocity and zero acceleration
3. An object with zero-velocity and non-zero acceleration
4. An object with non-zero velocity and non-zero acceleration

For each of the above cases you should include:

1. The original picture,
2. a hand sketched diagram of the object from the picture in which you are interested,
3. a properly constructed Free-Body Diagram on the object in which you are interested,
4. a VPython program that models the motion.

**Chapter 5:**

This chapter focuses on the cause of accelerations – force!

***General Concepts Covered:***

* A free-body diagram includes all the external forces that are acting upon an object.
* ONLY external forces acting upon the object should be included on your free-body diagram.
* All vectors on your FBD should be drawn to scale, pointing in the correct direction and fully labeled.
* The vector sum of all your forces will yield a net-force.
* Your FBD should have an “=” and an Fnet to one side of the main FBD.
* From the net force we can find the net acceleration of an object.

***New Equations encountered:***

F = ma

***Main Problem Solving Strategies Discussed:***

We have added one new step to our standard “to do” list:

1. Draw a picture!
2. Set up a “good” coordinate system
3. Draw a FBD.
4. Always check to see if you have constant accelerations or changing accelerations.