Physics 432   Name_____
# Learning LoggerPro

Purpose: Acquaint yourself with the equipment we will be using throughout the course of the year.

Materials: Look for these at your lab station.
   LoggerPro Interface (the thing with three buttons)
   Motion Detector (the thing with no buttons)

Procedure:
1. Make sure the LoggerPro Interface is connected to the computer by the USB cable on the right side of the monitor and set the sonic ranger so that it is connected to the DIG/SONIC 2 port.

2. Once this is completed, log in and open LoggerPro on the desktop. You will now see two graphs and a chart. Position the Motion Detector as pictured to the side.

3. In the following parts to the lab, you will be asked to complete different graphs. In order to produce each graph, stand about 2m from the Motion Detector and have your lab partner click � Collect. Begin to walk slowly when you hear it begin to click.
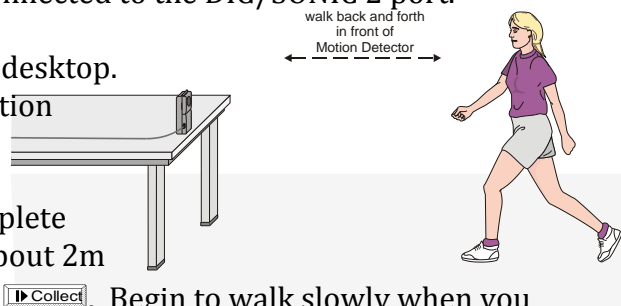
PART 1: Standing without Moving
For this portion the person will not move. Predict what each graph below will look like and draw them below. Then click collect and look at the two graphs that were created. Left click on the vertical axis and notice the different types of graphs that can be produced. Change the position vs. time graph to an acceleration vs. time graph and notice the differences. With any data trial, there is always data that is not useful so **highlight and enlarge** the portion that has your partner walked. Sketch only the data that is important for each of the following graphs: Include any additional labels.

Predictions

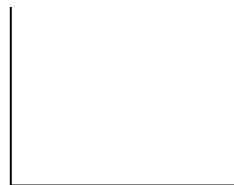   Distance   Velocity   Acceleration

Actual

   Distance   Velocity   Acceleration

   Explain why each graph looks as it does:
      d vs. t:

      v vs. t:

      a vs. t:

PART 2: Walking Towards the Motion Sensor

For this portion one lab partner will need to walk towards the motion sensor at a constant speed. Predict what each graph below will look like and draw them below. Change the top graph back to a d vs. t graph by right clicking on the vertical axis. Then click collect and look at the two graphs that were created. Sketch only the data that is important for each of the following graphs.

Predictions

Distance

Velocity

Acceleration

Actual

Distance

Velocity

Acceleration

For the distance vs time graph…
 …what type of line (straight or curved; slanted up, slanted down or horizontal) is created when walking toward the Motion Detector?

…why does that make sense?

For the velocity vs time graph…
 …what type of line (straight or curved; slanted up, slanted down or horizontal) is created when walking toward the Motion Detector?

…why does that make sense?

PART 3: Walking Away

For this portion one lab partner will need to walk away from the motion sensor at a constant speed. Predict what each graph below will look like and draw them below. Change the top graph back to a d vs. t graph by right clicking on the vertical axis. Then click collect and look at the two graphs that were created. Sketch only the data that is important for each of the following graphs.

Predictions

Distance

Velocity

Acceleration

Actual	Distance	Velocity	Acceleration

How did the graphs change when you changed the direction in which you moved?

Explain why this would happen?

Is this the graph of a speeder's motion or an accelerator's motion?

How can you tell?

Do another experiment by walking increasingly faster and faster away from the Motion Detector. Sketch the position vs. time graph below and label it either "speeder" or "accelerator." Before moving on, adjust the sampling time to a smaller interval. Record the new interval here _____.
   Sketch the d vs. t graph of when you were changing

 If there is anything you don't understand about LoggerPro, ask your instructor before you return to your desk.

Before you're done, make sure you can do the following…

CAN YOU… __ Enlarge portion of graph
__Change sampling interval
__Graph D vs t, V vs. t, and A vs. t on one

PROVE IT!