

## Data-taking for a Velocity versus Time Graph

Power-on the computer;

The password is “Poly”;

Plug the Smart Pulley in the Dig/Sonic 1 input on the Lab Pro (make sure it's the #1 input)

On the desktop, click on the Logger Pro icon;

In the upper left-hand corner, on the second tier (just above the top), click on the sensor icon (it looks like the Lab Pro device). When the window appears, left-click on the Dig/Sonic 1 box, then under “sensor,” choose “photogate.”

Three graphs should appear. Single left-click on the center graph, then grab it at the top and pull its boundary up to the top of the page. Do the same for the bottom and left-hand boundaries so the graph completely fills the page.

Double left-click on the graph to open the “graph options” window. In that window, write your name and your partner's name (this is so you can find your particular graph when you tell the communal printer to print it).

With the window remaining open:

Click *off* the “point protectors,” the “x error bar” and the “y error bar.”

Click *on* the “connect points” command.

Under “grid,” use the pull-down menu to make the “Minor Tick Style” a *dash*.

Click “done.”

Click on any number along the horizontal axis and change the last number to 2 seconds);

If your container doesn't already have a string, cut one of length approximately 3.5 feet (we won't normally use feet; today we're being different). Also, use a 50 gram mass for the hanging weight.

When you have the Smart Pulley system set up and are ready to take data, call me for a quick check.

When ready, click the green DATA button at the top of the window. The data taking will continue until you click that same button again (it will be red and say STOP while data is being taken);

Stop the hanging weight from swinging, then let the cart roll stopping it before it hits the pulley (and before the hanging weight hits the floor). Once the cart is stopped, click on the red STOP button to stop the data taking.

You should have a *velocity versus time* graph.

Select the section of the graph that is linear, then click on the *magnify* icon in the top menu;

Select the linear section and hit the *regression line* icon in the top menu (this will give you a linear regression line through the section highlighted—it will also give you an information box. The information box will give you the slope of the line, which will be the *acceleration* of the cart through that section of motion.

Instruct the computer to “print graph;”

Once you’ve printed the *velocity versus time* graph, remove the *information box*. Then click on the *Velocity* label along the vertical axis. In the window that shows, select the *position* graph. This will give you a *position versus time* graph.

Select *print graph* and print.

Being careful to put everything back where you found it, tear down the apparatus. You are done!